



----ENEMALTA DPS IPPC APPLICATION - FORM C----

APPENDIX C – Material Safety Data Sheets

APPENDIX D – Maintenance of Tank Bunds

0466 – Enemalta DPS IPPC Application

Enemalta plc.

Ing. Fredrick Azzopardi,

Central Administration Offices,

Church Wharf,

Marsa.

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[illegible]

APPENDICES REFERENCE

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Appendix B	Best-Available-Technology Conclusions
Appendix C	Material Safety Data Sheets
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MATERIAL SAFETY DATA SHEET

READ AND UNDERSTAND MATERIAL SAFETY DATA SHEET BEFORE
HANDLING OR DISPOSING OF PRODUCT

29371 GASOIL, DIESEL AND HEATING

1. PRODUCT AND COMPANY NAME

PRODUCT CODE AND NAME

29371 GASOIL, DIESEL AND HEATING

DESCRIPTION

Gas Oils

COMPANY

Consols Oils
Plots 3 – 6 United Road
St Day
REDRUTH
Cornwall
TR16 5HY
Tel : 01209 820274
Fax : 01209 820919
Emergency Phone Number : 07720455322

2. COMPOSITION/INFORMATION ON INGREDIENTS

<u>Name</u>	<u>% Wt</u>	<u>CAS No.</u>	<u>EC No.</u>
Fuels, diesel	95 - 99,99	68334-30-5	269-822-7
Xn R 40 Limited evidence of a carcinogenic effect.			
Xn R 65 Harmful: may cause lung damage if swallowed.			
R 66 Repeated exposure may cause skin dryness or cracking			
N R 51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.			

Product contains small amounts of additives.

3. HAZARDS IDENTIFICATION

Product classification	<p>CARCINOGENIC CATEGORY 3</p> <p>HARMFUL</p> <p>DANGEROUS FOR THE ENVIRONMENT</p>
Acute effects of exposure to man	
Inhalation	<p>Vapours or mist may cause irritation of the nose and throat, headache, nausea, vomiting, dizziness, drowsiness, euphoria, loss of coordination, and disorientation. In poorly ventilated areas or confined spaces, unconsciousness and asphyxiation may result.</p> <p>Inhalation of vapours or mist may result in the absorption of potentially harmful amounts of material.</p>
Skin contact	<p>Brief contact may cause slight irritation. Prolonged contact, as with clothing wetted with material, may cause more severe irritation and discomfort, seen as local redness and swelling.</p> <p>Believed not to be a skin sensitiser.</p>
Eye contact	<p>May cause irritation, experienced as mild discomfort and seen as slight excess redness of the eye.</p>
Ingestion	<p>If more than several mouthfuls are swallowed, abdominal discomfort, nausea and diarrhoea may occur.</p> <p>Aspiration may occur during swallowing or vomiting, resulting in lung damage.</p>
Chronic effects of exposure to man	
Medical conditions aggravated by exposure	<p>Because of its irritating properties, repeated skin contact may aggravate an existing dermatitis (skin condition).</p>

Other remarks	Possible risk of irreversible effects.
Effects of exposure to the environment	Some short-term toxicity to aquatic and marine organisms.
4. FIRST AID MEASURES	
Route of exposure	
Inhalation	Remove to fresh air. If not breathing.
Skin contact	Wash skin with plenty of soap and water
Eye contact	Immediately flush eyes with plenty of
Ingestion	Do not induce vomiting. Get medical
Other recommendations	Aspiration of this product during induced intubation. Remove and dry-clean or launder clothing with handling contaminated clothing.

with handling contaminated clothing.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media Use water fog, dry powder, foam or carbon dioxide. Use water to cool fire-exposed containers. If a leak or spill has not ignited, use water fog to disperse the vapours and to provide protection for personnel attempting to stop the leak.

Extinguishing media which must not be used for safety reasons Water jet

Special exposure hazards arising from the substance or preparation itself,

combustion products, resulting gases Hydrogen sulphide (H₂S) may be released when heated.

In case of fire - Always call the fire brigade. Small fires, such as those capable of being fought with a hand-held extinguisher, can normally be fought by a person who has received instruction on the hazards of flammable liquid fires. Fires that are

beyond that stage should only be tackled by people who have received hands-on training.

Ensure escape path is available.

Special protective equipment for firefighters The nature of special protective equipment required will depend upon the size of the fire, the degree of confinement of the fire and the natural ventilation available. Fire-resistant clothing and self-contained breathing apparatus is recommended for fires in confined spaces and poorly-ventilated areas. Full fire-proof clothing is recommended for any large fires involving this product.

6. ACCIDENTAL RELEASE MEASURES

Procedures in case of accidental release or leakage Ventilate area. Avoid breathing vapour. Use self-contained breathing apparatus or supplied air mask for large spills or

	<p>Wipe up or absorb on suitable material and shovel up. Prevent entry into sewers and</p> <p>waterways. Avoid contact with skin, eyes or clothing.</p>
7. HANDLING AND STORAGE	
Handling	<p>Local exhaust ventilation recommended if generating vapour, dust, or mist. If exhaust ventilation is not available or inadequate, use approved respirator as appropriate.</p> <p>This product may contain volatile hydrocarbons which may accumulate in the container headspace, thereby creating a flammable or explosive atmosphere.</p> <p>Hydrogen sulphide (H₂S) may be released when heated.</p>
Storage	<p>Transport, handle and store in accordance with applicable local regulations and only in labelled containers designed for this product. Ground and bond shipping container, transfer line, and receiving container. Keep away from sparks, flame and other sources of ignition. Protect containers against static electricity, lightning and physical damage. Hot work (eg cutting or welding) must not be carried out on or near any container used for storage of this product unless it has been made safe by purging or other suitable means.</p> <p>Empty product containers may contain product residue. Do not reuse empty containers without commercial cleaning or reconditioning.</p>
Specific use (s)	On road transportation and Heating
8. EXPOSURE CONTROLS/PERSONAL PROTECTION	
Respiratory protection	<p>Airborne concentrations should be kept to lowest levels possible. If vapour, mist or</p> <p>cleaning large spills or upon entry into tanks, vessels, or other confined spaces.</p>

	<p>cleaning large spills or upon entry into tanks, vessels, or other confined spaces.</p> <p>Oxygen levels should be at least 19.5 % in confined spaces or other work areas.</p>
Hand and skin protection	<p>Protective clothing such as Flame retardant uniforms, coveralls or lab coats should be worn. Launder or dry-clean when soiled. North Red PVC gloves (Ref. 725), Nitrile Rubber or Viton gloves and lace up safety boots with steel toecaps resistant to</p> <p>chemicals and petroleum distillates required.</p>
Eye protection	<p>Safety glasses, chemical type goggles or full face shield recommended to prevent eye contact.</p>
Exposure limit for the product	<p>None established for product.</p> <p>Hydrogen sulphide : ACGIH TLV-TWA 10 ppm STEL 15 ppm. UK : EH40 : OEL : TWA : 10 ppm ; STEL : 15 ppm</p>

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Clear liquid
Odour	Petroleum odour
Flash point (ASTM D93), °C	56 min
Relative density	0.82 - 0.86 @ 15°C
Viscosity	2 - 5 mm ² /s @ 40°C
Boiling point/range, °C	160 - 385

10. STABILITY AND REACTIVITY

Conditions to avoid	Sources of ignition such as flames, sparks, hot surfaces.
Materials to avoid	Avoid contact with strong oxidising agents.
Hazardous decomposition products	<p>Oxides of carbon, nitrogen and sulphur, aldehydes and ketones.</p> <p>Hydrogen sulphide (H₂S) may be released on heating and may accumulate in confined spaces.</p>

11. TOXICOLOGICAL INFORMATION

Acute

Inhalation	<p>Likely to be irritating to the respiratory tract if high concentrations of mists or vapour are inhaled.</p> <p>May cause nausea, dizziness, headaches and drowsiness if high concentrations of vapour are inhaled.</p> <p>May be toxic when hydrogen sulphide is present in the vapour.</p>
Skin contact	<p>Repeated exposure may cause skin dryness or cracking</p> <p>Believed not to be a skin sensitiser.</p>
Eye contact	Slightly irritating to the eyes.
Ingestion	<p>Unlikely to cause harm if accidentally swallowed in small doses, though larger quantities may cause nausea and diarrhoea. Will injure the lungs if aspiration occurs, eg. during vomiting.</p>
Chronic	<p>This product, or a component of this product, has caused skin cancer when repeatedly applied to the skin of laboratory animals without any effort to remove the material between applications.</p>

12. ECOLOGICAL INFORMATION

Mobility	Spillages may penetrate the soil causing ground water contamination.
Persistence and degradability	According to EC criteria : Not readily biodegradable
Potential to bioaccumulate	This product is expected to bioaccumulate.
Aquatic toxicity	Some short-term toxicity to aquatic and marine organisms.

	and EEC/1999/45 (dangerous preparations) :
Symbol (letter notation) + Indication of danger	Xn HARMFUL N DANGEROUS FOR THE ENVIRONMENT
Risk phrases	 Xn R 40 Limited evidence of a carcinogenic effect. Xn R 65 Harmful: may cause lung damage if swallowed. R 66 Repeated exposure may cause skin dryness or cracking N R 51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Safety phrases	 S 2 Keep out of the reach of children. S 24 Avoid contact with skin. S 36/37 Wear suitable protective clothing and gloves. S 43 In case of fire, use CO ₂ , dry chemical or foam. Never use water. S 61 Avoid release to the environment. Refer to special instructions/Safety data sheets. S 62 If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.
Hazardous ingredients	 Fuels, diesel
Additional information	Refer to any national measures that may be relevant.
16. OTHER INFORMATION	

	<p>Hazardous concentrations of hydrogen sulphide (H₂S) gas can accumulate in storage and rundown tanks, marine vessel compartments, sump pits or other confined spaces. When opening valves, hatches and dome covers, stand upwind, keep face as far from the</p> <p>opening as possible and avoid breathing any gases or vapours. When exposure concentrations are unknown and respiratory protection is not used, personal H₂S warning devices should be worn. These devices should not be relied on to warn of life</p> <p>threatening concentrations. H₂S fatigues the sense of smell rapidly. The rotten egg odour of H₂S disappears quickly, even though high concentrations are still present. The ACGIH TLV/TWA for H₂S is 10 ppm, the STEL 15 ppm. UK : EH40 : OEL : TWA : 10</p> <p>ppm ; STEL : 15 ppm</p> <p>The company recommends that all exposures to this product be minimized by strictly adhering to recommended occupational control procedures to avoid any potential adverse health effects.</p>
Full text of risk phrases	<p>Xn R 40 Limited evidence of a carcinogenic effect.</p> <p>Xn R 65 Harmful: may cause lung damage if swallowed.</p> <p>R 66 Repeated exposure may cause skin dryness or cracking</p> <p>N R 51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.</p>
Changes were made in sections :	3, 5,7, 8,10, 11, 12, 13, 14, 15, 16
MSDS: 29371	
DATE ISSUED 20/5/2003	Supersedes 24/10/2002
<p>All information contained in this Material Safety Data Sheet and, in particular, the health and safety and environmental information is accurate to the best of our knowledge and belief as at the date of issue specified. However, the Company makes no warranty or representation, express or implied, as to the accuracy or completeness of such information.</p> <p>The provision of this Material Safety Data Sheet is not intended, of itself, to</p>	

obviate the need for all users to satisfy themselves that the product described is suitable for their individual purposes and that the safety precautions and environmental advice are adequate for their individual purposes and situation. Further, it is the user's obligation to use this product safely and to comply with all applicable laws and regulations concerning the use of the product.

The company accepts no responsibility for any injury, loss or damage, consequent upon any failure to follow the safety and other recommendations contained in this Material Safety Data Sheet, nor from any hazards inherent in the nature of the material, nor from any abnormal use of the material.



Safety Data Sheet
according to the Regulation EC No. 453/2010
Urea prilled - AM

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier: Urea

 Registration number: **01-2119463277-33-0018**

Trade name: Urea prilled- AM

1.2. Relevant identified uses of the substance or mixture and uses advised against:

Use in industrial:

- as an intermediate for production of AdBlue.

1.3. Details of the supplier of the safety data sheet:

Duslo, a.s.

Administratívna budova ev.č. 1236

927 03 Šaľa

Slovenská republika

tel.: +421 31 775 2961

fax.: +421 31 775 3014

 e-mail: ejurisova@duslo.sk

1.4. Emergency

Company dispatching center

tel.: +421 31 775 4112

telephone number:

fax: +421 31 775 3040

 e-mail: duslo@duslo.sk
NÁRODNÉ TOXIKOLOGICKÉ INFORMAČNÉ CENTRUM,
Klinika pracovného lekárstva a toxikológie, Bratislava

 Tel.č. 02/5477 4166, Fax.č. 02/5477 4605 e-mail.: ntic@ntic.sk
2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture: Substance is not classified as dangerous according to the Regulation (EC) No 1272/2008 of the European parliament and of the council, on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

Risk identification: None.

2.2. Label elements: None.

Classification and labeling according Directive 67/548/EEC:

 Symbol: --
 R- phrases: --
 S- phrases: --
 2.3. Other hazards: No information available.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances:

Classification:						
	CAS:	EC:	Category:	H-phrases:	Pictogram:	Content (%)
urea	57-13-6	200-315-5	--	--	--	≥ 97%
Impurities:						
biuret	108-19-0	203-559-0	--	--	--	≤ 1

3.2. Mixtures:

Classification:	Contains no hazardous mixtures.					
	CAS:	EC:	Category:	H-phrases:	Pictogram:	Content (%)
	--	--	--	--	--	--

Notes: *Full text H - phrases is referred to in point 16



Safety Data Sheet
according to the Regulation EC No. 453/2010
Urea prilled - AM

4. FIRST AID MEASURES

4.1. Description of first aid measures:

Inhalation: Remove from exposure. In severe cases, or if recovery is not rapid or complete seek medical attention.

Ingestion: Wash out mouth with water. Do not induce vomiting. If patient is conscious, give water to drink. If patient feels unwell seek medical attention.

Eye Contact: Irrigate thoroughly with water for at least 10 minutes. Obtain medical attention.

Skin Contact: Rinse with plenty of water. Remove contaminated clothing and wash before reuse. If irritation persists seek medical attention.

4.2. Most important symptoms and effects, both acute and delayed:

Dust may cause mechanical irritation to eyes and respiratory tract.

4.3. Indication of any immediate medical attention and special treatment needed:

Large volume may cause stomach-enteric histis and in the extreme (for infants especially) infant cyanosis (raised cyanosis around mouth).

5. FIREFIGHTING MEASURES

5.1. Extinguishing media:

5.1.1. Suitable extinguishing media: Use extinguishers suitable to cause of fire.

5.1.2. Unsuitable extinguishing media: None.

5.2. Special hazards arising from the substance or mixture:

Irritating substances may be emitted upon thermal combustion.

5.3. Advice for firefighters:

Self-contained breathing apparatus will be required.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures:

Wear suitable protective clothing.

6.2. Environmental precautions:

Prevent large quantities from contacting vegetation or waterways. Keep animals away from large spills.

6.3. Methods and material for containment and cleaning up:

Vacuum or sweep up and place into approved containers for later disposal.

6.4. Reference to other sections:

For more information on protective equipment see section 8.

For more information on on the disposal of substance, see section 13.

7. HANDLING AND STORAGE

7.1. Precautions for safe handling:

Avoid contact with eyes. Avoid repeated or prolonged contact with skin or clothing. Avoid dust inhalation. Wear suitable protective clothing.

7.2. Conditions for safe storage, including any incompatibilities:

Tore under cool dry conditions.

7.3. Specific end use(s):

See point 1.2.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters:

Highest exposure limits (NPEL) based on Slovak Order No. 355/2006:

Substance	EC	NPEL				Remark
		average		Short-term		
		ml.m ⁻³ (ppm)	(mg.m ⁻³)	category	mg.m ⁻³	

Date of issue
8.2.2011

Date of revision

Issue No.
1.

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Safety Data Sheet
according to the Regulation EC No. 453/2010
Urea prilled - AM

ammonia	231-635-3	20	14	--	36	--
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8.2. Exposure controls:

Ensure sufficient local ventilation. Avoid abnormal dust formation. By technical and organizational measures avoid to the skin contact and do not exceed the highest exposure limit.

a) Eye/face protection:

Use suitable protective goggles.

b) Skin protection:

I. Hand protection: Protective gloves. Selection of a suitable glove material, consult the supplier of gloves.

II. Other: Put on suitable protective clothes and shoes.

c) Respiratory protection:

Use a protective dust respirator.

d) Thermal hazards:

Information is not available.

8.3. Environmental exposure controls:

Prevent uncontrolled release to environment.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties:

Appearance:	solid, prille
Granulometry:	0,5 – 3,15 mm
Color:	White
Odour:	slight ammonia-like odour.
Odour threshold:	n.a.
pH:	9 – 10 (10% solution)
Melting point/freezing point:	132,7 °C, granuled 130 – 133 °C
Initial boiling point and boiling range:	n.a.
Flash point:	(370 ± 10) °C
Evaporation rate:	n.a.
Flammability (solid, gas):	n.a.
Upper/lower flammability or explosive limits:	n.a.
Vapour pressure:	n.a.
Vapour density:	n.a.
Relative density:	n.a.
Solubility(ies):	Well soluble in water (590 g/l pri 20°C). Insoluble in organic solvents.
Partition coefficient: n-octanol/water:	n.a.
Auto-ignition temperature:	> 650 °C
Decomposition temperature:	n.a.
Viscosity:	n.a.
Explosive properties:	n.a.
Oxidising properties:	n.a.
9.2. Other information:	
Molecular weight:	60,056 kg/kmol
Specific weight:	1333,5 kg/m ³
Bulk density:	700 – 760 kg/m ³
Combustion heat:	-634,7 kJ/mol

10. STABILITY AND REACTIVITY

10.1. Reactivity:



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according to the Regulation EC No. 453/2010
Urea prilled - AM

Stable under recommended storage and handling conditions (see section 7, handling and storage).

10.2. Chemical stability:

Stable under recommended storage and handling conditions (see section 7, handling and storage).

10.3. Possibility of hazardous reactions:

Stable under recommended storage and handling conditions (see section 7, handling and storage).

10.4. Conditions to avoid:

Heating over melting point. Heating causes thermal decomposition and the gases formation: CO₂, NH₃, NO_x.

Before welding or burning the equipment must be decontaminated.

10.5. Incompatible materials:

Strong oxidants, acids, bases, hypochlorites.

10.6. Hazardous decomposition products:

NO_x, NH₃, CO₂

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects:

a) acute toxicity:

Acute oral toxicity: (rat)LD₅₀ > 2000 mg/kg

b) skin corrosion/irritation:

Skin irritation (rabbit): short term irritation – not harmful.

c) serious eye damage/irritation:

Eyes irritation (rabbit): slightly irritating.

d) respiratory or skin sensitisation:

Repeated and long-lasting contact with skin may cause sensibilization.

e) germ cell mutagenicity:

No information available.

f) carcinogenicity:

No information available.

g) reproductive toxicity:

No information available.

h) STOT – single exposure:

No information available.

i) STOT – repeated exposure:

No information available.

j) aspiration hazard:

No information available.

12. ECOLOGICAL INFORMATION

12.1. Toxicity:

Product has low water toxicity. In the event of watercourses affected by large amount of product, adverse affects on aquatic fauna and flora can occur because of high consumption of oxygen.

12.2. Persistence and degradability:

Significant biodegradation in water and soil.

12.3. Bioaccumulative potential:

Low bioaccumulation potential.

12.4. Mobility in soil:

Soluble in water.

12.5. Results of PBT and vPvB assessment:

Not evaluated.

12.6. Other adverse effects:

Improper handling may result in pollution of surface and ground waters.

13. DISPOSAL CONSIDERATIONS



Safety Data Sheet
according to the Regulation EC No. 453/2010
Urea prilled - AM

13.1. Waste treatment methods:

Depending on the degree and character of contamination use for agricultural purposes or dispose of under control by authorised waste disposal contractors.

Empty container damaged through using must be stored at the designed place and disposed of in a solid waste incineration plant.

14. TRANSPORT INFORMATION

Product is not classified as dangerous good for transport according to ADR/RID/IMDG Code.

14.1. UN number: None.

14.2. UN proper shipping name: Urea prilled – AM.

14.3. Transport hazard class(es): No information available.

14.4. Packing group: No information available.

14.5. Environmental hazards: Substance is not classified as dangerous for environment according to the ADR/RID/IMDG Code.

14.6. Special precautions for user: Transport in sealed body vehicles covered with watertight tarpaulin.

14.7. Transport in bulk according to Annex II of MARPL 73/78 and the IBC Code: No information available.

Code:

Packing: Product is packed to big-bags of 1000 kg weight, stabilized on pallets or without pallets.

15. REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture: Corrigendum to Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH);

REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006;

Commission Regulation (EC) No 790/2009 of 10 August 2009 amending, for the purposes of its adaptation to technical and scientific progress, Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures; REGULATIONS COMMISSION REGULATION (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH);

Decree No. 300/2007 Coll. of the Government of the Slovak Republic amending Decree No. 355/2006 Coll. of the Government of the Slovak Republic on health protection of employees against occupational risks related to the exposition to chemical factors;

Order No. 3/2010 of 15 April 2010 of the Ministry of Economy of the Slovak Republic;

Act No. 409/2006 Coll. of the National Council of the Slovak Republic - full text of Act No. 223/2001 Coll. on waste and on amendments of certain Acts in the wording of later regulations

15.2. Chemical safety assessment:

According to the Regulation REACH, Article 14 was carried out a chemical safety assessment of this substance.

16. OTHER INFORMATION

16.1 Used information sources:

IUCLID 5 database.



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16.2 Instructions for the training:

Instruction in work with product shall be included into the educational system about the safety work (initial training, training at the workplace, repeated training) according to concrete conditions at the workplace.

16.3. List of relevant H phrases:

H- phrases: None.

16.4. Changes made in the revision:

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16.5 Other information:

Information is available.

Issued: DUSLO, a.s. Quality Assurance

Contact : Ing. Emília Jurisová, Head of Quality Assurance

tel.. +421 31 775 2961 fax.: +421 31 775 3014 e-mail: ejurisova@duslo.sk

Safety Data Sheet

Product name :	PRESLIA 46	Page : 1/6
SDS n° :31454-44	Version :2.01	Version of :2010-04-16
This sheet supersedes the one dated :2008-09-19		

PRODUCT LABELS

LABELLING (standard or EU):	Not concerned
R-phrases :	None
S-phrases :	None
TRANSPORT LABELLING:	Not applicable.

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY UNDERTAKING

Name of the product :	PRESLIA 46
Code No. :	693
Product application :	Turbine oil
Supplier :	TOTAL UK LIMITED 40 Clarendon Road Watford, Hertfordshire, WD17 1TQ UNITED KINGDOM Tel: 01923 694000 Fax: 01923 694400 rm.gb-msds@total.co.uk
Contact :	Specific Product Related Info: 01977 636200
Emergency telephones :	UK - 01923 694000
Poisons Advice Centre :	NHS Direct: 0845 46 47 / Textphone: 0845 606 46 47
Burns Units :	NHS Direct: 0845 46 47 / Textphone: 0845 606 46 47
See local details at end of sheet :	
Manufacturer :	TOTAL UK LIMITED 40 Clarendon Road Watford, Hertfordshire, WD17 1TQ UNITED KINGDOM Tel: 01923 694000 Fax: 01923 694400 rm.gb-msds@total.co.uk

2. HAZARDS IDENTIFICATION

The product is not classified as dangerous in accordance with directive 1999/45/EC.

Health effects :	This product does not present a danger of intoxication.
Environmental impact :	Do not discharge this product into the environment.
Physico-chemical hazards :	No specific risk of fire or explosion under normal conditions of use

3. COMPOSITION/INFORMATION ON INGREDIENTS

PREPARATION

Chemical nature :	Petroleum-derived severely refined mineral-base product in which the polycyclic aromatic hydrocarbons (PCA or PAH) content, measured by IP 346, is less than 3%
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Safety Data Sheet

Product name :**PRESLIA 46**

Page : 2/6

SDS n° :31454-44

Version :2.01

Version of :2010-04-16

This sheet supersedes the one dated :2008-09-19

Substances presenting a health hazard	EC No.	CAS No.	Content	Symbol(s)	R-phrases
1,2,4-trimethylbenzene	202-436-9	95-63-6	<0,1 %	Xn ,N	R-10, 20, 36/37/38, 51/53

See section 16 for explanations of R-phrases :

4. FIRST AID MEASURES

IN CASE OF SERIOUS OR PERSISTENT CONDITIONS, CALL A DOCTOR OR EMERGENCY MEDICAL CARE.

Inhalation :	Inhalation of heavy concentrations of vapour, fumes or spray, may cause mild irritation of the throat. Transport the person into fresh air, keep warm and allow to rest.
Ingestion :	Possible risk of vomiting and diarrhoea. Do not induce vomiting to avoid the risk of aspiration into the respiratory tract. Give nothing to drink
Skin contact :	Immediately remove all soiled or stained clothing. Wash the affected area immediately and repeatedly with soap and water.
Eye contact :	Keep eyes open and rinse immediately and repeatedly with water for at least 15 minutes.
Aspiration :	If the product is believed to have entered the lungs (in case of vomiting, for example), take the person to hospital for immediate care.

5. FIRE FIGHTING MEASURES

Flash point:
See heading 9

Extinguishing media :	- suitable: Foam, carbon dioxide (CO ₂), powder. - not recommended: Do not use water jets (stick jets) for extinguishing fire, as this may help the spread of flames.
Specific hazards :	Incomplete combustion and thermolysis may produce gases of varying toxicity such as carbon monoxide, carbon dioxide, various hydrocarbons, aldehydes and soot. These may be highly dangerous if inhaled. Vapours can build explosive mixtures with air. Vapours are heavier than air and may spread on the ground to sources of ignition.
Protective measures for firefighters :	Insulated breathing apparatus must be worn in confined premises with heavy concentrations of fumes and gases.
Other :	All combustion residues and contaminated water from fire-fighting should be disposed of according to local regulations.

6. ACCIDENTAL RELEASE MEASURES

See sections 8 and 13.

Personal protection :	Ensure good ventilation. Remove sources of ignition. Do not smoke.
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Safety Data Sheet

Product name :	PRESLIA 46	Page : 3/6
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		This sheet supersedes the one dated :2008-09-19

After spillage / leakage :	<ul style="list-style-type: none">- On land: Surfaces on which the product has been spilled may become slippery. Do not allow the product to enter sewers or rivers or contaminate the soil. Recover with mechanical means such as pumps and skimmers.- On water: Floating absorbant material, then mechanical recovery. If the product is spilt into rivers or sewers, notify the authorities of the possible presence of surface effluent.
Spill cleanup methods :	<ul style="list-style-type: none">- Recovery: Contain and collect the spilled product. Use sand on the surfaces concerned if necessary. Contain and collect the spilled product with sand or any other inert absorbent material. In the event of a major spill, inform the relevant authorities if the situation cannot be brought under control rapidly and efficiently.- Elimination: Dispose of waste in compliance with regulations. Avoid discharge of the material in a stream or a sewer or cause ground contamination.

7. HANDLING AND STORAGE

HANDLING :

Prevention of user exposure :	Ventilate extensively if the formation of vapours, fumes, mists or aerosol is a risk. Make all the necessary arrangements in order to reduce exposure risk, notably to products in use or to wastes. Keep away from combustible substances; keep away from food and beverages.
Prevention of fire and explosion :	Empty containers may contain flammable or explosive vapours. There is a fire hazard associated with rags, paper or any other material used to remove spills which become soaked with product. Avoid accumulation of these: they are to be disposed off safely after use.
Precautions :	Avoid static electricity build up with connection to earth. Set up machinery and equipment so as to avoid the risk of accidental spills or splashes onto hot machine parts and electrical contacts (on joint failure, for example).

STORAGE :

Technical measures :	Make the necessary arrangements to prevent water and soil pollution.
Storage precautions :	<ul style="list-style-type: none">- Suitable: Store at ambient temperature, protected against contact with water and moisture, and away from any source of ignition. Keep containers closed when not in use- To be avoided: Do not store exposed to the elements.
Incompatible products :	Dangerous reaction with strong oxidizing agents.
Packaging materials :	<ul style="list-style-type: none">- Recommended: Use only hydrocarbon-resistant containers, joints, pipes, etc. Keep in original container if possible.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Technical measures :	Use the product in a properly ventilated atmosphere. When working on enclosed place (tanks, reservoirs...), make sure that atmosphere is not suffocating and/or wear recommended equipment.
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Safety Data Sheet

Product name :**PRESLIA 46**

Page : 4/6

SDS n° :31454-44

Version :2.01

Version of :2010-04-16

This sheet supersedes the one dated :2008-09-19

Ingredient name	CAS no.	Reference	LT Exp 8 Hrs	ST Exp 15 Min	Date
1,2,4-trimethylbenzene	95-63-6	EU.	100 (20) mg/m3 (ppm)		

Hand protection :

Impermeable hydrocarbon-proof gloves.
recommended material: nitrile , neoprene.
The break through times of the same type of glove of different manufacturers can be very different - even if the layer thickness is similar. Therefore the break through times have to be found out from the manufacturer of the protective gloves themselves.
The demands on the gloves are determined by the conditions in practice (e.g. multiple use, mechanical load, temperature, strength and duration of exposition).
Before choosing suitable gloves, it is recommended that the user tests the gloves.

Eye protection :

Goggles, in case of risk of splashing.

Skin and body (other than the hands) protection :

As required, wear a face mask, hydrocarbon-proof clothing, and safety boots (when handling drums).
Don't wear rings, watches or anything similar which can retain the product and may give rise to skin conditions.

Hygienic work practices :

Avoid prolonged and repeated contact with the skin, especially with used or waste product
Immediately remove all soiled or stained clothing.
If the product comes into contact with the skin, wash the affected area immediately and copiously with soap and water.
Do not use abrasives, solvents or fuels.
Do not dry hands with rags that have been contaminated with product.
Do not put product contaminated rags into workwear pockets.
Do not eat, drink or smoke whilst handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance :

Liquid.

Colour :

Yellow to amber.

Odour :

Characteristic.

Density/specific gravity :

881 kg/m3
Temperature (°C) 15

Flash point :

> 200 °C (ASTM D 93)

Température d'auto-inflammation :

> 250 °C (ASTM E 659-78)

Solubility :

Insoluble in water.
Soluble in many common solvents.

Partition coefficient (log Pow) :

Log Pow > 6
Temperature (°C) (20°C)

Viscosity :

46 mm2/s
Temperature (°C) 40

10. STABILITY AND REACTIVITY

Stability :

The product is stable at normal storage, handling and use temperatures.

Conditions to avoid :

Heat (temperatures above flash point), sparks, ignition points, flames, static electricity

Materials to avoid :

Avoid contact with strong oxidizers

Safety Data Sheet

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Hazardous decomp. products :	Incomplete combustion and thermolysis produces potentially toxic gases such as carbon monoxide, carbon dioxide, various hydrocarbons, aldehydes and soot.
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11. TOXICOLOGICAL INFORMATION

Acute toxicity / Local effect :

Inhalation, comments:	Not classified according to the criteria of classification in force. Inhalation of high concentrations of vapour or aerosols may cause irritation of the upper respiratory tract.
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Skin contact, comments:	Not classified according to the criteria of classification in force.
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Ingestion, comments:	In case of ingestion of small quantities, no important effect observed. in case of ingestion of larger amounts: abdominal pain, diarrhea, ...
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CHRONIC TOXICITY OR LONG-TERM TOXICITY :

Skin contact :	Characteristic skin affections (oil blisters) may develop following prolonged and repeated exposure through contact with stained clothing
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Sensitization :	To our knowledge, the product does not cause aggravated sensitivity.
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12. ECOLOGICAL INFORMATION

Comments about ecotoxicity :	Experimental data on the finished product are not available. It is considered to present a little danger for aquatic life. no information available for used product
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Mobility :	- Air: there is a slow loss by evaporation. - Soil: Given its physical and chemical characteristics, the product generally shows little mobility in the ground. - Water: The product is insoluble; it spreads on the surface of the water
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Persistence and degradability :	No experimental information about the finished product. However the "mineral oil" fraction of the new product is intrinsically biodegradable. Some components of the product may not be biodegradable.
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13. DISPOSAL CONSIDERATIONS

Waste disposal :	Dispose of in a safe manner, in accordance with local regulations. If need be, collection by an authorised waste contractor and regeneration or incineration at an approved installation.
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Waste class :	The waste classification is dependant on the composition of the product at the time of disposal. The waste classification mentioned here represents only a recommendation. The waste producer is responsible for the correct specification of the waste. The specification of the waste classification should be in arrangement with the authorised waste disposal company. Industrial waste number EU 13 02 05
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Disposal of contaminated packaging :	Proceed in compliance with the prevailing regulations.
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14. TRANSPORT INFORMATION

UN N°: not applicable

Road (ADR) / Rail (RID) :

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Product name :	PRESLIA 46	Page : 6/6
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Class : Not restricted for transport.

Transport by barge (ADNR) :

Marine (IMO-IMDG) :

Air (ICAO/IATA) :

15. REGULATORY INFORMATION

Not applicable

Risk phrases : None

Safety phrases : None

EU directives : Hazardous preparations directive 1999/45/EC modified (Directive 2001/60/EC).

16. OTHER INFORMATION

HSE Infoline: 08701 545500 / Minicom: 02920 808537

This safety data sheet complies with article 31 of the REACH directive 1907/2006/EC

Explanations of R-phrases in section 2 :
R-10 Flammable.
R-20 Harmful by inhalation.
R-36/37/38 Irritating to eyes, respiratory system and skin.
R-51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

*Revision date: 2010-04-16

*Supersedes the data sheet of: 2008-09-19

* Information revised since the previous version of the SDS :

SDS No. : LT-DS-2757

*Safety Data Sheet status : Approved.

This safety data sheet serves to complete but not to replace the technical product sheets. The information contained herein is given in good faith and is accurate to the best of knowledge at the date indicated above. It is understood by the user that any use of the product for purposes other than those for which it was designed entails potential risk. The information given herein in no way dispenses the user from knowing and applying all provisions regulating his activity. The user bears sole liability for the precautions required when using the product. The regulatory texts indicated herein are intended to aid the user to fulfil his obligations. This list is not to be considered complete and exhaustive. It is the user's responsibility to ensure that he is subject to no other obligations than those mentioned.



MATERIAL SAFETY DATA SHEET

in accordance with 1907/2006/EC (REACH)

1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY / UNDERTAKING

Product Name: 725 Nickel Anti-Seize Compound (Bulk)

Revision: 29 July 2010

Date of issue: 19 April 2007

MSDS No. 157B-23

Hazardous according to criteria of Safe Work Australia.

Company:

A.W. CHESTERTON COMPANY
860 Salem Street
Groveland, MA 01834-1507, USA
Tel.: +1 978-469-6446 Fax: +1 978-469-6785
(Mon. - Fri. 8:30 - 5:00 PM EST)
E-mail (MSDS questions): ProductMSDSs@chesterton.com
E-mail: customer.service@chesterton.com
MSDS requests: www.chesterton.com

Supplier:

For Chemical Emergency:

24 hours per day, 7 days per week

Call Infotrac: 1-800-535-5053

Outside N. America: +1 352-323-3500 (collect)

Use: Petroleum base. Use on stainless steel, steel, iron, aluminum, copper, brass, titanium, etc. Do not use on oxygen systems.

2. HAZARDS IDENTIFICATION

Harmful. Limited evidence of a carcinogenic effect. May cause sensitisation by skin contact. High vapor concentrations and direct contact may cause eye and respiratory tract irritation. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Ingredients ¹	% Wt.	CAS No.	EC No.	Symbol	R-phrases
Stoddard Solvent*	1-5	8052-41-3	232-489-3	Xn	10-51/53-65-66-67
Nickel	25-30	7440-02-0	231-111-4	Xn	40-43
Aluminum	5-10	7429-90-5	231-072-3	F	11-15
Graphite	1-5	7782-42-5	231-955-3	—	—
Methanol	0.1-0.5	67-56-1	200-659-6	F, T	11-23/24/25-39/23/24/25

Other Ingredients¹:

Distillates (Petroleum), Hydrotreated
Naphthenic**

35-45	64742-53-6	265-156-6	—	—
	or	or		
	24742-52-5	265-155-0		

*Contains less than 0.1 % w/w Benzene. **Contains less than 3 % DMSO extract as measured by IP 346. See section 15 for text of risk phrases on the label and section 16 for others.

4. FIRST AID MEASURES

Inhalation:	Remove to fresh air. If not breathing, administer artificial respiration. Contact physician.
Skin Contact:	Wash skin with soap and water. Contact physician if irritation persists.
Eye Contact:	Flush eyes for at least 15 minutes with large amounts of water. Contact physician if irritation persists.
Ingestion:	Do not induce vomiting. Contact physician immediately.
Advice to Physician:	Treat symptoms.

5. FIRE-FIGHTING MEASURES

Extinguishing Methods:	Carbon Dioxide, dry chemical, foam or water fog
Unusual Fire and Explosion Hazards:	none
Special Fire Fighting Measures:	Cool exposed containers with water. Recommend Firefighters wear self-contained breathing apparatus.
Flammability Classification:	—
HAZCHEM Emergency Action Code:	2 Z

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions:	Utilize exposure controls and personal protection as specified in Section 8.
Environmental Precautions:	Keep out of sewers, streams and waterways.
Methods of Clean Up:	Scoop up and transfer to a suitable container for disposal. Refer to section 13 for disposal advice.

7. HANDLING AND STORAGE

Handling:	Observe good work practice - avoid eating, drinking and smoking in the work area while using any hydrocarbons.
Storage:	Store in a cool, dry area.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Hazardous Ingredients	OSHA		ACGIH TLV		AUSTRALIA	
	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³
Stoddard Solvent	500	2900	100	525	—	790
Nickel*	—	1	(inhalable)	1.5	—	1
Aluminum*	(total)	15	(resp)	1	—	10
	(resp)	5				
Graphite*	(total)	15	(resp)	2	(resp)	3
	(resp)	5				
Methanol	200	260	200	(skin)	200	262
			STEL:		STEL:	
			250		250	328
Oil Mist, Mineral	—	5	—	5	—	5
				STEL:		
				10		

*The nickel, aluminum and graphite in this product do not separate from the mixture or in of themselves become airborne, therefore, do not present a hazard in normal use.

Date: 29 July 2010

MSDS No.: 157B-23

Respiratory Protection: Not normally needed. If exposure limits are exceeded, use approved organic vapor respirator.**Ventilation:** No special requirements. If exposure limits are exceeded, provide adequate ventilation.**Protective Gloves:** Chemical resistant gloves

Nickel:

Contact type	Glove material	Layer thickness	Breakthrough time*
Full	nitrile rubber	0.11 mm	> 480 Min.
Splash	nitrile rubber	0.11 mm	> 480 Min.

*Determined according to EN374 standard.

Eye Protection: Safety glasses**Other:** none**9. PHYSICAL AND CHEMICAL PROPERTIES**

Physical state	paste	Odour	petroleum odor
Colour	gray	Vapour pressure @ 20°C	not determined
Initial boiling point	not determined	% Aromatics by weight	approx. 0.28%
Melting point	not determined	pH	not applicable
% Volatile (by volume)	5%	Density	1.29 kg/l
Flash point	95°C (204°F)	Weight per volume	10.7 lbs/gal
Method	PM Closed Cup	Coefficient (water/oil)	< 1
Viscosity	1,000,000 cps @25°C	Vapour density (air=1)	> 1
Autoignition temp.	not determined	Rate of evaporation (ether=1)	< 1
Explosion limits	not determined	Solubility in water	negligible
		Other	none

10. STABILITY AND REACTIVITY

Stability:	Stable
Hazardous Polymerization:	Will not occur.
Hazardous Decomposition Products:	Carbon Dioxide, Carbon Monoxide and other toxic fumes
Conditions to Avoid:	Open flames, heat, sparks and red hot surfaces.
Materials to Avoid:	Strong oxidizers like liquid Chlorine and concentrated Oxygen.

11. TOXICOLOGICAL INFORMATION**Primary Route of Exposure Under Normal Use:** Inhalation, skin and eye contact.**Acute Effects:** High vapor concentrations and direct contact may cause eye and respiratory tract irritation.

Substance	Test	Result
Stoddard Solvent	LC50 inhalation, rat	> 5.5 mg/l/4 h
Stoddard Solvent	LC50 dermal, rabbit	> 3000 mg/kg
Stoddard Solvent	LD50, oral, rat	> 5000 mg/kg
Nickel	LD50 oral, rat	> 9000 mg/kg
Methanol	LC50 inhalation, rat	64000 ppm(V)/4 h
Methanol	LD50 oral, rat	5628 mg/kg
Methanol	Human lethal dose	143 mg/kg

Date: 29 July 2010

MSDS No.: 157B-23

Chronic Effects:	Prolonged or repeated skin contact may defat the skin and cause dermatitis. The National Toxicology Program (NTP) has listed Nickel powder as a potential carcinogen based on inhalation studies. The International Agency for Research on Cancer (IARC) considers certain forms of Nickel to be cancer causing, but has not published a list of specific Nickel compounds. The Nickel in this product is not in powder form and should not present a hazard in normal use.
Other Information:	WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

12. ECOLOGICAL INFORMATION

Ecotoxicological data have not been determined specifically for this product. The information given below is based on a knowledge of the components and the ecotoxicology of similar substances.

Mobility:	Solubility in water: negligible. In determining environmental mobility, consider the product's physical and chemical properties (see Section 9).
Degradability:	Stoddard Solvent: can degrade in air; inherently biodegradable. Mineral oil: not readily biodegradable. Nickel, Aluminum, Graphite: inorganic substances.
Accumulation:	Mineral oil: not expected to bioaccumulate.
Ecotoxicity:	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

13. DISPOSAL CONSIDERATIONS

Appropriate treatment standards for nickel must be met prior to disposal. This product is classified as a hazardous waste according to 91/689/EEC. Check local, state and national/federal regulations and comply with the most stringent requirement.

EWC-code: 06 04 05

14. TRANSPORT INFORMATION

TDG:	NONHAZARDOUS, NOT REGULATED	U.S. DOT : Shipping Name: NONHAZARDOUS Hazard Class: NOT REGULATED UN/NA # : NOT APPLICABLE Packaging Group # NOT APPLICABLE Emergency Response Guide Book No. - NOT APPLICABLE
IMDG:	NONHAZARDOUS, NOT REGULATED	
IATA/ICAO:	NONHAZARDOUS, NOT REGULATED	
ADR/RID:	NONHAZARDOUS, NOT REGULATED	

15. REGULATORY INFORMATION

European Classification¹:	Xn - Harmful	
R-Phrase(s):	R40	Limited evidence of a carcinogenic effect.
	R43	May cause sensitisation by skin contact.
	R52/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
S-Phrase(s):	S36/37	Wear suitable protective clothing and gloves.
	S61	Avoid release to the environment. Refer to special instructions/safety data sheets.
Name of the substances on the label:	Nickel	
Other information:	none	
Canadian Classification¹:	D2A: Very toxic materials causing other effects	
Risk Phrase(s):	Limited evidence of a carcinogenic effect. May cause sensitisation by skin contact.	
Precautionary and First Aid Measure(s):	Wear suitable protective clothing and gloves.	
	After contact with skin, wash with plenty of soap and water.	
Other Information:	none	

Date: 29 July 2010

MSDS No.: 157B-23

16. OTHER INFORMATION											
US EPA SARA TITLE III		Hazardous Materials Identification System (HMIS)									
312 Hazards :	313 Chemicals :	4 = Severe Hazard 3 = Serious Hazard 2 = Moderate Hazard 1 = Slight Hazard 0 = Minimal Hazard * = See Section 8	<table border="1"> <tr> <td>HEALTH</td> <td>2</td> </tr> <tr> <td>FLAMMABILITY</td> <td>1</td> </tr> <tr> <td>REACTIVITY</td> <td>1</td> </tr> <tr> <td>Personal Protection</td> <td>*</td> </tr> </table>	HEALTH	2	FLAMMABILITY	1	REACTIVITY	1	Personal Protection	*
HEALTH	2										
FLAMMABILITY	1										
REACTIVITY	1										
Personal Protection	*										
Immediate Nickel 7440-02-0 25-30% Delayed Aluminum 7429-90-5 5-10%											
JAPAN PRTR	Class I Chemicals :	Class II Chemicals :									
	Nickel	none									
Risk phrases in section 3: R10: Flammable. R11: Highly flammable. R15: Contact with water liberates extremely flammable gases. R23/24/25: Toxic by inhalation, in contact with skin and if swallowed. R39/23/24/25: Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed. R40: Limited evidence of a carcinogenic effect. R43: May cause sensitisation by skin contact. R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. R65: Harmful: may cause lung damage if swallowed. R66: Repeated exposure may cause skin dryness or cracking. R67: Vapours may cause drowsiness and dizziness.											
Changes to the MSDS in this revision: Sections 3, 6, 11, 13, 16.											
This information is based solely on data provided by suppliers of the materials used, not on the mixture itself. No warranty is expressed or implied regarding the suitability of the product for the user's particular purpose. The user must make their own determination as to suitability.											

1 . Identification of the material and supplier

Product name	Turbinol X-EP 32 F
SDS no.	465728
Product use	Turbine Oil For specific application advice see appropriate Technical Data Sheet or consult our company representative.
Supplier	BP Australia Pty Ltd (ABN 53 004 085 616) Melbourne Central, 360 Elizabeth Street, Melbourne, Victoria 3000, Australia Tel: +61 (03) 9268 4111 Fax: +61 (03) 9268 3321
EMERGENCY TELEPHONE NUMBER	1-800 14 14 74
OTHER PRODUCT INFORMATION	Technical Help Line 1 300 139 700 (Local Call)
Product code	465728-AU07

2 . Hazards identification

Statement of hazardous/dangerous nature	NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.
--	---

3 . Composition/information on ingredients

Highly refined base oil and additives

This product does not contain any hazardous ingredients at or above regulated thresholds.

4 . First-aid measures

Eye contact	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.
Skin contact	In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if irritation develops.
Inhalation	If inhaled, remove to fresh air. Get medical attention if symptoms appear.
Ingestion	Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If potentially dangerous quantities of this material have been swallowed, call a physician immediately.

5 . Fire-fighting measures

Extinguishing media	
Suitable	In case of fire, use water fog, foam, dry chemical or carbon dioxide extinguisher or spray.
Not suitable	Do not use water jet.
Hazardous decomposition products	Decomposition products may include the following materials: carbon dioxide carbon monoxide
Unusual fire/explosion hazards	This material is not explosive as defined by established regulatory criteria.
Special fire-fighting procedures	None identified.
Protection of fire-fighters	Fire-fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear.

6 . Accidental release measures

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Personal precautions	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).
Environmental precautions	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
Large spill	Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. Note: see section 1 for emergency contact information and section 13 for waste disposal.
Small spill	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble or absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

7 . Handling and storage

Handling	Wash thoroughly after handling. Avoid strong oxidisers.
Storage	Keep container tightly closed. Keep container in a cool, well-ventilated area.
Combustibility Classification	Combustible liquid Class C2 (AS 1940).

8 . Exposure controls/personal protection

Ingredient name	Occupational exposure limits
Base oil - unspecified	NOHSC (Australia). TWA: 5 mg/m ³ 8 hour(s). Form: Oil mist, mineral

Whilst specific OELs for certain components are included in this SDS, it should be noted that other components of the preparation will be present in any mist, vapour or dust produced. For this reason, the specific OELs may not be applicable to the product and are provided for guidance purposes.

Biological Limit Values	No biological limit allocated.
Exposure controls	
Occupational exposure controls	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapours below their respective occupational exposure limits.
Hygiene measures	Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period.
Personal protective equipment	
Respiratory protection	Avoid breathing of vapours, mists or spray. Select and use respirators in accordance with AS/NZS 1715/1716. When mists or vapours exceed the exposure standards then the use of the following is recommended: Approved respirator with organic vapour and dust/mist (Type P1) filters. Filter capacity and respirator type depends on exposure level.
Skin and body	Avoid prolonged or repeated contact with skin. Wear protective clothing if prolonged or repeated contact is likely.
Hand protection	Wear protective gloves if prolonged or repeated contact is likely. Chemical-resistant gloves. Recommended: Nitrile gloves. The correct choice of protective gloves depends upon the chemicals being handled, the conditions of work and use, and the condition of the gloves (even the best chemically resistant glove will break down after repeated chemical exposures). Most gloves provide only a short time of protection before they must be discarded and replaced. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Gloves should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions.
Eye protection	Safety glasses with side shields.

9 . Physical and chemical properties

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Physical state	Liquid.
Colour	Clear. Amber.
Odour	Bland.
Flash point	222 °C (Open cup) Cleveland.
Vapour pressure	Not available.
Vapour density	Not available.
Viscosity	Kinematic: 32 mm ² /s (32 cSt) at 40°C Kinematic: 5.7 mm ² /s (5.7 cSt) at 100°C
pH	Not available.
Boiling point / range	Not available.
Melting point / range	Not available.
Pour point	-15 °C
Relative density/Specific gravity	0.849 [at 15°C]
Solubility	insoluble in water.

10 . Stability and reactivity

Stability	The product is stable.
Conditions to avoid	Avoid extreme temperatures, strong oxidizers, fire.
Incompatibility with various substances/Hazardous Reactions	No hazardous reactions identified.
Hazardous decomposition products	Decomposition products may include the following materials: carbon dioxide carbon monoxide

11 . Toxicological information

Effects and symptoms	
Eyes	Unlikely to cause more than transient stinging or redness if accidental eye contact occurs.
Skin	Unlikely to cause harm to the skin on brief or occasional contact but prolonged or repeated exposure may lead to dermatitis.
Inhalation	At normal ambient temperatures this product will be unlikely to present an inhalation hazard because of its low volatility. Inhalation of oil mist or vapours at elevated temperatures may cause respiratory irritation. May be harmful by inhalation if exposure to vapour, mists or fumes resulting from thermal decomposition products occurs.
Ingestion	Unlikely to cause harm if accidentally swallowed in small doses, though larger quantities may cause nausea and diarrhoea.
Chronic toxicity	
Carcinogenic effects	No component of this product at levels greater than or equal to 0.1% is identified as a carcinogen by ACGIH, the International Agency for Research on Cancer (IARC), the European Commission (EC), or the National Occupational Health and Safety Commission (Australia).
Mutagenic effects	No known significant effects or critical hazards.

12 . Ecological information

Ecotoxicity	Not classified as environmentally hazardous in accordance with the 'Approved Criteria for Classifying Hazardous Substances' [NOHSC (1008)/2004 as amended and adapted].
Biodegradability	
Persistence/degradability	The biodegradability of this material has not been determined.

Product name Turbinol X-EP 32 F

Product code 465728-AU07

Page: 3/5

Version 1

Date of issue 15 January 2008

Format Australia

Language ENGLISH

Build 3.6.0

(Australia)

13 . Disposal considerations

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Disposal considerations / Waste information

The generation of waste should be avoided or minimised wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Special Precautions for Landfill or Incineration

No additional special precautions identified.

14 . Transport information

International transport regulations

Not classified as dangerous for transport (ADG, IMDG, ICAO/IATA).

Special precautions for user

No known special precautions required. See Section: "Handling and storage" for additional information.

15 . Regulatory information

Standard for the Uniform Scheduling of Drugs and Poisons

Not regulated.

Control of Scheduled Carcinogenic Substances

Ingredient name

Schedule

No Listed Substance

Other regulations

Inventories

Europe inventory: All components are listed or exempted.

United States inventory (TSCA 8b): All components are listed or exempted.

Australia inventory (AICS): All components are listed or exempted.

Canada inventory: All components are listed or exempted.

China inventory (IECSC): All components are listed or exempted.

Japan inventory (ENCS): All components are listed or exempted.

Korea inventory (KECI): All components are listed or exempted.

Philippines inventory (PICCS): All components are listed or exempted.

16 . Other information

Key to abbreviations

AMP = Acceptable Maximum Peak
ACGIH = American Conference of Governmental Industrial Hygienists, an agency that promulgates exposure standards.
ADG = Australian Code for the Transport of Dangerous Goods by Road and Rail
ADG Code = Australian Code for the Transport of Dangerous Goods by Road and Rail
CAS Number = Chemical Abstracts Service Registry Number
HAZCHEM Code = Emergency action code of numbers and letters which gives information to emergency services. Its use is required by the ADG Code for Dangerous Goods in bulk.
ICAO = International Civil Aviation Organization.
IATA = International Air Transport Association, the organization promulgating rules governing shipment of goods by air.
IMDG = International Maritime Organization Rules, rules governing shipment of goods by water.
IP 346 = A chemical screening assay for dermal toxicity. The European Commission has recommended that Method IP 346 be used as the basis for labelling certain lubricant oil base stocks for carcinogenicity. The EU Commission has stipulated that the classification as a carcinogen need not apply if it can be shown that the substance contains less than 3% DMSO extract as measured by IP 346. (See Note L, European Commission Directive 67/548/EEC as amended and adapted.) DMSO is a solvent.
NOHSC = National Occupational Health & Safety Commission, Australia
TWA = Time weighted average
STEL = Short term exposure limit
UN Number = United Nations Number, a four digit number assigned by the United Nations Committee of Experts on the Transport of Dangerous Goods.

History

Date of issue

15/01/2008.

Date of previous issue

No previous validation.

Prepared by

Product Stewardship

Notice to reader

Product name Turbinol X-EP 32 F

Product code 465728-AU07

Page: 4/5

Version 1

Date of issue 15 January 2008

Format Australia

Language ENGLISH

Build 3.6.0

(Australia)

All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or completeness of the data and information in this data sheet. 88 of 270

The data and advice given apply when the product is sold for the stated application or applications. You should not use the product other than for the stated application or applications without seeking advice from us.

It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. The BP Group shall not be responsible for any damage or injury resulting from use, other than the stated product use of the material, from any failure to adhere to recommendations, or from any hazards inherent in the nature of the material. Purchasers of the product for supply to a third party for use at work, have a duty to take all necessary steps to ensure that any person handling or using the product is provided with the information in this sheet. Employers have a duty to tell employees and others who may be affected of any hazards described in this sheet and of any precautions that should be taken.

Product name Turbinol X-EP 32 F

Product code 465728-AU07

Page: 5/5

Version 1

Date of issue 15 January 2008

Format Australia

Language ENGLISH

Build 3.6.0

(Australia)

MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: TERESSO 32
Product Description: Base Oil and Additives
MSDS Number: 8191
Intended Use: Lubricant

COMPANY IDENTIFICATION

Supplier: Imperial Oil Products Division
240 4th Avenue
Calgary, ALBERTA. T2P 3M9 Canada
24 Hour Environmental / Health Emergency Telephone 519-339-2145
Transportation Emergency Phone Number 519-339-2145
Product Technical Information 1-800-268-3183
Supplier General Contact 1-800-567-3776

SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

No Reportable Hazardous Substance(s) or Complex Substance(s).

SECTION 3 HAZARDS IDENTIFICATION

This material is not considered to be hazardous according to regulatory guidelines see Section 15.

HEALTH EFFECTS

Low order of toxicity. Excessive exposure may result in eye, skin, or respiratory irritation. High-pressure injection under skin may cause serious damage.

NFPA Hazard ID:	Health: 0	Flammability: 1	Reactivity: 0
HMIS Hazard ID:	Health: 0	Flammability: 1	Reactivity: 0

Note: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 4 FIRST AID MEASURES

INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

SECTION 5	FIRE FIGHTING MEASURES
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EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames.

Inappropriate Extinguishing Media: Straight streams of water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply. Fire-fighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Hazardous Combustion Products: Smoke, Fume, Sulphur Oxides, Aldehydes, Oxides of carbon, Incomplete combustion products

FLAMMABILITY PROPERTIES

Flash Point [Method]: >200C (392F) [ASTM D-92]

Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0

Autoignition Temperature: N/D

SECTION 6	ACCIDENTAL RELEASE MEASURES
------------------	------------------------------------

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

SPILL MANAGEMENT

Land Spill: Stop leak if you can do so without risk. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do so without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist

before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dyke far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Prevent small spills and leakage to avoid slip hazard.

Static Accumulator: This material is a static accumulator.

STORAGE

Do not store in open or unlabelled containers.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits/standards for materials that can be formed when handling this product: When mists / aerosols can occur, the following are recommended: 5 mg/m³ - ACGIH TLV, 10 mg/m³ - ACGIH STEL.

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

No special requirements under ordinary conditions of use and with adequate ventilation.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

No special requirements under ordinary conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapour warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

No protection is ordinarily required under normal conditions of use.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practise good housekeeping.

ENVIRONMENTAL CONTROLS

See Sections 6, 7, 12, 13.

SECTION 9	PHYSICAL AND CHEMICAL PROPERTIES
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Typical physical and chemical properties are given below. Consult the Supplier in Section 1 for additional data.

GENERAL INFORMATION

Physical State: Liquid

Colour: yellow

Odour: Characteristic

Odour Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15 C): 0.87

Flash Point [Method]: >200C (392F) [ASTM D-92]

Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0

Autoignition Temperature: N/D

Boiling Point / Range: N/D

Vapour Density (Air = 1): N/D

Vapour Pressure: [N/D at 20°C] | < 1 kPa (7.5 mm Hg) at 38C

Evaporation Rate (N-Butyl Acetate = 1): < 0.1

pH: N/A

Log Pow (n-Octanol/Water Partition Coefficient): > 3.5

Solubility in Water: Negligible

Viscosity: 32 cSt (32 mm²/sec) at 40°C

Oxidizing properties: See Sections 3, 15, 16.

OTHER INFORMATION

Freezing Point: N/D

Melting Point: N/A

Pour Point: -24°C (-11°F)
DMSO Extract (mineral oil only), IP-346: < 3 %wt

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.

MATERIALS TO AVOID: Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

Acute Toxicity

Route of Exposure	Conclusion / Remarks
INHALATION	
Toxicity (Rat): LC50 > 5000 mg/m ³	Minimally Toxic. Based on test data for structurally similar materials.
Irritation: No end point data.	Negligible hazard at ambient/normal handling temperatures. Based on assessment of the components.
INGESTION	
Toxicity (Rat): LD50 > 2000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Skin	
Toxicity (Rabbit): LD50 > 2000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Irritation (Rabbit): Data available.	Negligible irritation to skin at ambient temperatures. Based on test data for structurally similar materials.
Eye	
Irritation (Rabbit): Data available.	May cause mild, short-lasting discomfort to eyes. Based on test data for structurally similar materials.

CHRONIC/OTHER EFFECTS

Contains:

Base oil severely refined: Not carcinogenic in animal studies. Representative material passes IP-346, Modified Ames test, and/or other screening tests. Dermal and inhalation studies showed minimal effects; lung non-specific infiltration of immune cells, oil deposition and minimal granuloma formation. Not sensitising in test animals.

Additional information is available by request.

CMR Status: None.

--REGULATORY LISTS SEARCHED--

1 = IARC 1
2 = IARC 2A

3 = IARC 2B
4 = ACGIH ALL

5 = ACGIH A1
6 = ACGIH A2

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material -- Not expected to be harmful to aquatic organisms.

MOBILITY

Base oil component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY**Biodegradation:**

Base oil component -- Expected to be inherently biodegradable

BIOACCUMULATION POTENTIAL

Base oil component -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

REGULATORY DISPOSAL INFORMATION

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14 TRANSPORT INFORMATION

LAND (TDG) : Not Regulated for Land Transport

LAND (DOT) : Not Regulated for Land Transport

SEA (IMDG) : Not Regulated for Sea Transport according to IMDG-Code

AIR (IATA) : Not Regulated for Air Transport

SECTION 15	REGULATORY INFORMATION
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WHMIS Classification: Not controlled

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the (M)SDS contains all the information required by the Controlled Products Regulations.

CEPA: All components of this material are either on the Canadian Domestic Substances List (DSL), exempt, or have been notified under CEPA.

NATIONAL CHEMICAL INVENTORY LISTING: TSCA, DSL

The Following Ingredients are Cited on the Lists Below:

Chemical Name	CAS Number	List Citations
DIPHENYLAMINE	122-39-4	1
XYLENES	1330-20-7	1

--REGULATORY LISTS SEARCHED--

1 = TSCA 4
2 = TSCA 5a2

3 = TSCA 5e
4 = TSCA 6

5 = TSCA 12b
6 = NPRI

SECTION 16	OTHER INFORMATION
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N/D = Not determined, N/A = Not applicable

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:

Revision Changes:

Section 05: Fire Fighting Measures - Fire Fighting Instruction was modified.

Section 06: Notification Procedures - Header was modified.

Section 13: Empty Container Warning was modified.

Section 09: Phys/Chem Properties Note was modified.

Section 08: Hand Protection was modified.

Section 09: Vapour Pressure was modified.

Section 06: Accidental Release- Spill Management- Water was modified.

Section 09: Relative Density - Header was modified.

Section 09: Flash Point C(F) was modified.

Section 15: National Chemical Inventory Listing was modified.

Section 15: Canadian List Citations Table was modified.

Section 11: Chronic Tox - Component - WHMIS was added.

Section 11: Chronic Tox - Component - Header was added.

Section 11: Other Health Effects Header was added.

Composition: No components was added.

Section 11: Other Health Effects Header was deleted.

Composition: No components was deleted.

Section 11: Chronic Tox - Component was deleted.

Section 11: Chronic Tox - Component - Header was deleted.

Section 09: Form - Header was deleted.

Section 09: Physical State was deleted.

WHMIS Classification: Not controlled

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DGN: 5007106 (1011716)

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Prepared By: Imperial Oil Limited, IH and Product Safety

SULFURIC ACID, 52 - 100 %

MSDS Number: S8234 --- Effective Date: 09/14/00

1. Product Identification

Synonyms: Oil of vitriol; Babcock acid; sulphuric acid

CAS No.: 7664-93-9

Molecular Weight: 98.08

Chemical Formula: H₂SO₄ in H₂O

Product Codes:

J.T. Baker: 5030, 5137, 5374, 5802, 5815, 5889, 5960, 5961, 5971, 6902, 9673, 9674, 9675, 9676, 9679, 9680, 9681, 9682, 9684, 9687, 9691, 9693, 9694

Mallinckrodt: 2468, 2876, 2878, 2900, 2904, 3780, 4222, 5524, 5557, H644, H976, H996, V344, V651

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
-----	-----	-----	-----
Sulfuric Acid	7664-93-9	52 - 100%	Yes
Water	7732-18-5	0 - 48%	No

3. Hazards Identification

Emergency Overview

POISON! DANGER! CORROSIVE. LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED OR CONTACTED WITH SKIN. HARMFUL IF INHALED. AFFECTS TEETH. WATER REACTIVE. CANCER HAZARD. STRONG INORGANIC ACID MISTS CONTAINING SULFURIC ACID CAN CAUSE CANCER. Risk of cancer depends on duration and level of exposure.

J.T. Baker SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 3 - Severe (Poison)

Flammability Rating: 0 - None

Reactivity Rating: 3 - Severe (Water Reactive)

Contact Rating: 4 - Extreme (Corrosive)

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES

Storage Color Code: White (Corrosive)

Potential Health Effects

Inhalation:

Inhalation produces damaging effects on the mucous membranes and upper respiratory tract. Symptoms may include irritation of the nose and throat, and labored breathing. May cause lung edema, a medical emergency.

Ingestion:

Corrosive. Swallowing can cause severe burns of the mouth, throat, and stomach, leading to death. Can cause sore throat, vomiting, diarrhea. Circulatory collapse with clammy skin, weak and rapid pulse, shallow respirations, and scanty urine may follow ingestion or skin contact. Circulatory shock is often the immediate cause of death.

Skin Contact:

Corrosive. Symptoms of redness, pain, and severe burn can occur. Circulatory collapse with clammy skin, weak and rapid pulse, shallow respirations, and scanty urine may follow skin contact or ingestion. Circulatory shock is often the immediate cause of death.

Eye Contact:

Corrosive. Contact can cause blurred vision, redness, pain and severe tissue burns. Can cause blindness.

Chronic Exposure:

Long-term exposure to mist or vapors may cause damage to teeth. Chronic exposure to mists containing sulfuric acid is a cancer hazard.

Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders or eye problems or impaired respiratory function may be more susceptible to the effects of the substance.

4. First Aid Measures

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician immediately.

Ingestion:

DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Call a physician immediately.

Skin Contact:

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Excess acid on skin can be neutralized with a 2% solution of bicarbonate of soda. Call a physician immediately.

Eye Contact:

Immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Call a physician immediately.

5. Fire Fighting Measures

Fire:

Concentrated material is a strong dehydrating agent. Reacts with organic materials and may cause ignition of finely divided materials on contact.

Explosion:

Contact with most metals causes formation of flammable and explosive hydrogen gas.

Fire Extinguishing Media:

Dry chemical, foam or carbon dioxide. Do not use water on material. However, water spray may be used to keep fire exposed containers cool.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Structural firefighter's protective clothing is ineffective for fires involving this material. Stay away from sealed containers.

6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Neutralize with alkaline material (soda ash, lime), then absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

J. T. Baker NEUTRASORB(R) or TEAM(R) 'Low Na+' acid neutralizers are recommended for spills of this product.

7. Handling and Storage

Store in a cool, dry, ventilated storage area with acid resistant floors and good drainage. Protect from physical damage. Keep out of direct sunlight and away from heat, water, and incompatible materials. Do not wash out container and use it for other purposes. When diluting, always add the acid to water; never add water to the acid. When opening metal containers, use non-sparking tools because of the possibility of hydrogen gas being present. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

For Sulfuric Acid:

- OSHA Permissible Exposure Limit (PEL) -

1 mg/m³ (TWA)

- ACGIH Threshold Limit Value (TLV) -

1 mg/m³(TWA), 3 mg/m³ (STEL), A2 - suspected human carcinogen for sulfuric acid contained in strong inorganic acid mists.

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded and engineering controls are not feasible, a full facepiece respirator with an acid gas cartridge and particulate filter (NIOSH type N100 filter) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P particulate filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air purifying respirators do not protect workers in oxygen-deficient atmospheres. Where respirators are required, you must have a written program covering the basic requirements in the OSHA respirator standard. These include training, fit testing, medical approval, cleaning, maintenance, cartridge change schedules, etc. See 29CFR1910.134 for details.

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance: Clear oily liquid.

Odor: Odorless.

Solubility: Miscible with water, liberates much heat.

Specific Gravity: 1.84 (98%), 1.40 (50%), 1.07 (10%)

pH: 1 N solution (ca. 5% w/w) = 0.3; 0.1 N solution (ca. 0.5% w/w) = 1.2; 0.01 N solution (ca. 0.05% w/w) = 2.1.

% Volatiles by volume @ 21C (70F): No information found.

Boiling Point: ca. 290C (ca. 554F) (decomposes at 340C)

Melting Point: 3C (100%), -32C (93%), -38C (78%), -64C (65%).

Vapor Density (Air=1): 3.4

Vapor Pressure (mm Hg): 1 @ 145.8C (295F)

Evaporation Rate (BuAc=1): No information found.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage. Concentrated solutions react violently with water, spattering and liberating heat.

Hazardous Decomposition Products:

Toxic fumes of oxides of sulfur when heated to decomposition. Will react with water or steam to produce toxic and corrosive fumes. Reacts with carbonates to generate carbon dioxide gas, and with cyanides and sulfides to form poisonous hydrogen cyanide and hydrogen sulfide respectively.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Water, potassium chlorate, potassium perchlorate, potassium permanganate, sodium, lithium, bases, organic material, halogens, metal acetylides, oxides and hydrides, metals (yields hydrogen gas), strong oxidizing and reducing agents and many other reactive substances.

Conditions to Avoid:

Heat, moisture, incompatibles.

11. Toxicological Information

Toxicological Data:

Oral rat LD50: 2140 mg/kg; inhalation rat LC50: 510 mg/m³/2H; standard Draize, eye rabbit, 250 ug (severe); investigated as a tumorigen, mutagen, reproductive effector.

Carcinogenicity:

Cancer Status: The International Agency for Research on Cancer (IARC) has classified "strong inorganic acid mists containing sulfuric acid" as a known human carcinogen, (IARC category 1). This classification applies only to mists containing sulfuric acid and not to sulfuric acid or sulfuric acid solutions.

-----\Cancer Lists\-----			
---NTP Carcinogen---			
Ingredient	Known	Anticipated	IARC Category
-----	----	-----	-----
Sulfuric Acid (7664-93-9)	No	No	None
Water (7732-18-5)	No	No	None

12. Ecological Information

Environmental Fate:

When released into the soil, this material may leach into groundwater. When released into the air, this material may be removed from the atmosphere to a moderate extent by wet deposition. When released into the air, this material may be removed from the atmosphere to a moderate extent by dry deposition.

Environmental Toxicity:

LC50 Flounder 100 to 330 mg/l/48 hr aerated water/Conditions of bioassay not specified;
 LC50 Shrimp 80 to 90 mg/l/48 hr aerated water /Conditions of bioassay not specified;
 LC50 Prawn 42.5 ppm/48 hr salt water /Conditions of bioassay not specified.
 This material may be toxic to aquatic life.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: SULFURIC ACID (WITH MORE THAN 51% ACID)

Hazard Class: 8

UN/NA: UN1830

Packing Group: II

Information reported for product/size: 440LB

International (Water, I.M.O.)

Proper Shipping Name: SULPHURIC ACID (WITH MORE THAN 51% ACID)

Hazard Class: 8

UN/NA: UN1830

Packing Group: II

Information reported for product/size: 440LB

15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----

Ingredient	TSCA	EC	Japan	Australia
Sulfuric Acid (7664-93-9)	Yes	Yes	Yes	Yes
Water (7732-18-5)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----

Ingredient	--Canada--	Korea	DSL	NDSL	Phil.
Sulfuric Acid (7664-93-9)	Yes	Yes	No	Yes	
Water (7732-18-5)	Yes	Yes	No	Yes	

-----\Federal, State & International Regulations - Part 1\-----

Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
Sulfuric Acid (7664-93-9)	1000	1000	Yes	No
Water (7732-18-5)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----

Ingredient	-RCRA-	-TSCA-	
	CERCLA	261.33	8(d)
Sulfuric Acid (7664-93-9)	1000	No	No
Water (7732-18-5)	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: Yes
SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No
Reactivity: Yes (Pure / Liquid)

Australian Hazchem Code: 2P

Poison Schedule: No information found.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: **3** Flammability: **0** Reactivity: **2** Other: **Water reactive**

Label Hazard Warning:

POISON! DANGER! CORROSIVE. LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED OR CONTACTED WITH SKIN. HARMFUL IF INHALED. AFFECTS TEETH. WATER REACTIVE. CANCER HAZARD. STRONG INORGANIC ACID MISTS CONTAINING SULFURIC ACID CAN CAUSE CANCER. Risk of cancer depends on duration and level of exposure.

Label Precautions:

Do not get in eyes, on skin, or on clothing.

Do not breathe mist.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

Do not contact with water.

Label First Aid:

In all cases call a physician immediately. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before re-use. Excess acid on skin can be neutralized with a 2% bicarbonate of soda solution. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Product Use:

Laboratory Reagent.

Revision Information:

MSDS Section(s) changed since last revision of document include: 8.

Disclaimer:

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Prepared by: Strategic Services Division
Phone Number: (314) 539-1600 (U.S.A.)

SODIUM METABISULFITE

1. Product Identification

Synonyms: Sodium pyrosulfite; pyrosulfurous acid, disodium salt

CAS No.: 7681-57-4 Sodium Metabisulfite; 7631-90-5 Sodium Bisulfite.

Molecular Weight: 190.11

Chemical Formula: Na₂S₂O₅ (sodium metabisulfite) and NaHSO₃ (sodium bisulfite)

Product Codes:

J.T. Baker: 3550, 3551

Mallinckrodt: 7776, 7777

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent
Hazardous		
-----	-----	-----

Sodium Metabisulfite	7681-57-4	100%
Yes		
Sodium Bisulfite	7631-90-5	< 0.001%
No		

3. Hazards Identification

Emergency Overview

WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. MAY CAUSE ALLERGIC RESPIRATORY REACTION. REACTS WITH ACIDS AND WATER RELEASING TOXIC SULFUR DIOXIDE GAS.

J.T. Baker SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate

Flammability Rating: 0 - None

Reactivity Rating: 2 - Moderate

Contact Rating: 3 - Severe

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD;

PROPER GLOVES

Storage Color Code: Green (General Storage)

Potential Health Effects

Inhalation:

Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath. May cause allergic reaction in sensitive individuals.

Ingestion:

May cause gastric irritation by the liberation of sulfurous acid. An asthmatic reaction may occur after ingestion. Large doses may result in nausea, vomiting, diarrhea, abdominal pains, circulatory disturbance, and central nervous system depression. Estimated fatal dose is 10 gm.

Skin Contact:

Causes irritation to skin. Symptoms include redness, itching, and pain.

Eye Contact:

Causes irritation, redness, and pain. Contact may cause irreversible eye damage. Symptoms may include stinging, tearing, redness, swelling, corneal damage and blindness.

Chronic Exposure:

No information found.

Aggravation of Pre-existing Conditions:

Some individuals are said to be dangerously sensitive to minute amounts of sulfites in foods. Symptoms may include broncho constriction, shock, gastrointestinal disturbances, angio edema, flushing, and tingling sensations. Once allergy develops, future exposures can cause asthma attacks with shortness of breath, wheezing, and cough.

4. First Aid Measures

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion:

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

Skin Contact:

Wipe off excess material from skin then immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention.

Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures

Fire:

Not considered to be a fire hazard.

Explosion:

Not considered to be an explosion hazard.

Fire Extinguishing Media:

Use any means suitable for extinguishing surrounding fire. Do not allow water runoff to enter sewers or waterways.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust. Cautiously spray residue with plenty of water, providing ventilation to clear sulfur dioxide fumes generated from water contact. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

7. Handling and Storage

Keep in a tightly closed container. Protect from physical damage. Store in a cool, dry, ventilated area away from sources of heat, moisture and incompatibilities. Releases toxic sulfur dioxide gas when in contact with water, ice. Keep away from acids, water, ice, and oxidizing agents. Use only with appropriate protective equipment. Do not use in unventilated areas such as holds of fishing boats, walk in coolers or confined spaces. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

-ACGIH Threshold Limit Value (TLV):

5mg/m³ (TWA) for sodium bisulfite & for sodium metabisulfite, A4 Not classifiable as a

human carcinogen.

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded, a half-face respirator with an acid gas cartridge may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece respirator with an acid gas cartridge may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. (neoprene, polyvinyl chloride).

Eye Protection:

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

White to yellow white crystalline granules.

Odor:

Slight odor of sulfur dioxide.

Solubility:

Very soluble in water, insoluble in alcohol.

Specific Gravity:

1.48

pH:

Aqueous solution is acidic.

% Volatiles by volume @ 21C (70F):

0

Boiling Point:

Not applicable.

Melting Point:

150C (302F)

Vapor Density (Air=1):

No information found.

Vapor Pressure (mm Hg):

No information found.

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Strength diminishes somewhat with age. Gradually decomposes in air to sulfate, generating sulfurous acid gas. Contact with moisture (water, wet ice, etc.), will release toxic sulfur dioxide gas.

Hazardous Decomposition Products:

Oxides of sulfur and sodium may form when heated to decomposition.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Water, acids, alkalis, sodium nitrite, oxidizers, aluminum powder.

Conditions to Avoid:

Moisture, heat, flames, ignition sources and incompatibles.

11. Toxicological Information

Sodium Metabisulfite [7681-57-4]: No LD50/LC50 information found relating to normal routes of occupational exposure. Investigated as a tumorigen, mutagen and reproductive effector. Sodium Bisulfite [7631-90-5]: Oral rat LD50: 2000 mg/kg. Investigated as a tumorigen and mutagen.

-----\Cancer Lists\-----			
Ingredient Category	---NTP Carcinogen---		IARC
	Known	Anticipated	

Sodium Metabisulfite (7681-57-4)	No	No	3
Sodium Bisulfite (7631-90-5)	No	No	3

12. Ecological Information

Environmental Fate:

No information found.

Environmental Toxicity:

No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				

Ingredient	TSCA	EC	Japan	
Australia				

Sodium Metabisulfite (7681-57-4)	Yes	Yes	Yes	
Yes				
Sodium Bisulfite (7631-90-5)	Yes	Yes	Yes	
Yes				
-----\Chemical Inventory Status - Part 2\-----				

Ingredient	Korea	--Canada--		
Phil.	DSL	NDSL		

Sodium Metabisulfite (7681-57-4)	Yes	Yes	No	
Yes				
Sodium Bisulfite (7631-90-5)	Yes	Yes	No	
Yes				
-----\Federal, State & International Regulations - Part 1\-----				

	-SARA 302-		-----SARA	
313-----				
Ingredient	RQ	TPQ	List	
Chemical Catg.				

Sodium Metabisulfite (7681-57-4)	No	No	No	No
Sodium Bisulfite (7631-90-5)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----

Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8 (d)
Sodium Metabisulfite (7681-57-4)	No	No	Yes
Sodium Bisulfite (7631-90-5)	5000	No	Yes

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
 SARA 311/312: Acute: Yes Chronic: No Fire: No Pressure: No
 Reactivity: Yes (Mixture / Solid)

Australian Hazchem Code: None allocated.

Poison Schedule: None allocated.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: **3** Flammability: **0** Reactivity: **1**

Label Hazard Warning:

WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. MAY CAUSE ALLERGIC RESPIRATORY REACTION. REACTS WITH ACIDS AND WATER RELEASING TOXIC SULFUR DIOXIDE GAS.

Label Precautions:

Avoid contact with eyes, skin and clothing.

Avoid breathing dust.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

For Reagent and Technical Grades: Not For Food Use. For TAC Grades: Do not use in meats or in foods recognized as a source of Vitamin B-1, nor in fruits or vegetables to be served or sold raw to consumers or to be presented to consumers as fresh.

Label First Aid:

If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, wipe off excess material from skin then immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash

clothing before reuse. In all cases, get medical attention.

Product Use:

Laboratory Reagent.

Revision Information:


No Changes.

Disclaimer:

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Prepared by: Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)

SODA SANAYİİ A.Ş. 		
SAFETY DATA SHEET According to EU Regulation No Regulation (EC) 453/2010	Sodium Bicarbonate (Food/Feed Grade)	Date : 01.09.2010 Rev. Date :
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1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

1.1. Identification of the substance/preparation

Product name : Sodium Bicarbonate
 Chemical Name : Sodium hydrogencarbonate
 Synonyms : Sodium bicarbonate
 Molecular formula : NaHCO_3
 Molecular Weight : 84.02 g/mol

1.2. Use of the Substance/Preparation

Recommended use : Food and Feed Additive

1.3. Company/Undertaking Identification

Address : SODA SANAYİİ A.Ş.
 Soda Fabrikası
 33004 MERSİN/TÜRKİYE

1.4. Emergency telephone numbers

Telephone Number : +90 324 241 6600
 Fax Number : +90 324 451 3440
 Emergency Tel. No : +90 324 241 6600
 E-mail : soda@sisecam.com.tr


2. HAZARDS IDENTIFICATION

Appearance : crystalline, powder

Colour : white

Odour : odourless

- Substance non classified according to Directive 67/548/EEC.

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3. COMPOSITION/INFORMATION ON INGREDIENTS

Sodium bicarbonate

CAS-No. : 144-55-8
 EINECS-No. : 205-633-8

Norm

Sodium Bicarbonate, NaHCO ₃ (%)	99.30 min
Sodium Carbonate, Na ₂ CO ₃ (%)	0.50 max
Chloride Ion, Cl ⁻ (ppm)	100 max
Iron, Fe ⁺³ (ppm)	6 max
Sulphate, SO ₄ ⁼ (ppm)	100 max
Insoluble Part (ppm)	200 max
pH (% 1 sol'n.)	8.5 max
Copper, Cu (ppm)	1 max
Arsenic, As (ppm)	1 max
Lead, Pb (ppm)	2 max
Mercury, Hg (ppm)	0.1 max
Loss on Drying (%)	0.25 max
Ammonium Compounds	App. Exp.
Cadmium Cd (ppm)	0.5 max.

4. FIRST AID MEASURES

4.1. Inhalation

- Remove the subject from dusty environment and let him blow his nose.

4.2. Eye contact

- Rinse thoroughly with plenty of water, also under the eyelids.
- If eye irritation persists, consult a specialist.

4.3. Skin contact

- Wash off with plenty of water.

4.4. Ingestion


The following actions are recommended :

- If a large amount is swallowed, get medical attention.

If victim is conscious:

- If swallowed, rinse mouth with water (only if the person is conscious).

If victim is unconscious but breathing:

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- not applicable

5. FIRE-FIGHTING MEASURES

5.1. Suitable extinguishing media

- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

5.2. Extinguishing media which must not be used for safety reasons

- None.

5.3. Special exposure hazards in a fire

- Not combustible.

5.4. Special protective equipment for fire-fighters

- No special precautions required.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions

- Refer to protective measures listed in sections 7 and 8.

6.2. Environmental precautions

- Do not flush into surface water or sanitary sewer system.
 - Prevent any mixture with an acid into the sewer/drain (gas formations).

6.3. Methods for cleaning up

- Sweep up and shovel into suitable containers for disposal.
 - Avoid dust formation.
 - Keep in properly labelled containers.
 - Keep in suitable, closed containers for disposal.
 - Treat recovered material as described in the section "Disposal considerations".

7. HANDLING AND STORAGE

7.1. Handling


- Keep away from Incompatible products.

7.2. Storage

- Keep in a dry place.
 - Store in original container.
 - Keep container closed.
 - Keep away from Incompatible products.

7.3. Specific use(s)

- For further information, please contact: Supplier

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7.4. Packaging material

- Exterior Woven PP+interior laminated
- Kraft

7.5. Other information

- Avoid dust formation.
- Refer to protective measures listed in sections 7 and 8.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Exposure Limit Values

Sodium bicarbonate

Time Weighted Average for 8 hour workdays; TWA = 10 mg/m³

8.2. Exposure controls

- Ensure adequate ventilation.
- Provide appropriate exhaust ventilation at places where dust is formed.
- Refer to protective measures listed in sections 7 and 8.
- Apply technical measures to comply with the occupational exposure limits.

8.2.1. Occupational exposure controls

8.2.1.1. Respiratory protection

- Use only respiratory protection that conforms to international/ national standards.
- In case of dust clouds/fog/fumes, dust mask type P1.

8.2.1.2. Hand protection

- Wear suitable gloves.

8.2.1.3. Eye protection

- Dust proof goggles, if dusty.

8.2.1.4. Skin and body protection

- None.

8.2.1.5. Hygiene measures

- When using do not eat, drink or smoke.
- Wash hands before breaks and at the end of workday.
- Handle in accordance with good industrial hygiene and safety practice.

8.2.2. Environmental exposure controls

- Dispose of rinse water in accordance with local and national regulations.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. General Information (appearance, odour)

Appearance	: crystalline, powder
Colour	: white
Odour	: odourless

9.2. Important health safety and environmental information

pH	: 8.5 <i>Concentration</i> : 52 g/l
Boiling point/range	: <i>Remarks</i> : not applicable, Thermal decomposition

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Flash point	: <i>Remarks:</i> not applicable
Flammability	: <i>Lower explosion limit:</i> : <i>Remarks:</i> The product is not flammable.
Explosive properties	: <i>Explosion danger:</i> <i>Remarks:</i> Not explosive
Oxidizing properties	: <i>Remarks:</i> Non oxidizer
Vapour pressure	: <i>Remarks:</i> not applicable
Relative density / Density	: 2.22
Bulk density	: from 0.5 - 1.2 kg/dm ³
Solubility	: Water 96 g/l @ <i>Temperature:</i> 20 °C : Other: slightly soluble in Alcohol
Partition coefficient (noctanol/ water)	
Viscosity	: <i>Remarks:</i> not applicable : 1.2 mPa.s
Vapour density	: <i>Remarks:</i> not applicable

9.3. Other data

Melting point/range	: <i>Remarks:</i> not applicable, Decomposition
Autoinflammability	: <i>Remarks:</i> The product is not flammable.
Decomposition temperature	: > 60 °C

10. STABILITY AND REACTIVITY**10.1. Stability**

- Stable under recommended storage conditions.

10.2. Conditions to avoid

- none

10.3. Materials to avoid

- Acids

10.4. Hazardous decomposition products

- none

11. TOXICOLOGICAL INFORMATION**11.1 Toxicological data*****Acute oral toxicity***

- LD50, rat, > 4,000 mg/kg

Acute inhalation toxicity

- LC50, rat, > 4.74 mg/l

Acute dermal toxicity


- LD50, *Remarks:* no data available

Skin irritation

- rabbit, Mild skin irritation

Eye irritation

- rabbit, Mild eye irritation

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Sensitization

- no data available

Chronic toxicity

- no observed effect

Genetic toxicity in vitro

- Genotoxicity in vitro, Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

Teratogenicity

- Oral route (gavage), 10 days, Various species, 330 mg/kg, Did not show teratogenic effects in animal experiments.

Possible hazards (summary)

- Health injuries are not known or expected under normal use.

11.2. Health effects
Inhalation

- Mechanical irritation from the particulates generated by the product.

Eye contact

- Mechanical irritation from the particulates generated by the product.

Skin contact

- Mechanical irritation from the particulates generated by the product.

Ingestion

- Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.

12. ECOLOGICAL INFORMATION
12.1. Ecotoxicity effects
Acute toxicity

- Fishes, Oncorhynchus mykiss, LC50, 96 h, 7,700 mg/l
- Fishes, Oncorhynchus mykiss, NOEC, 96 h, 2,300 mg/l
- Fishes, Lepomis macrochirus, LC50, 96 h, 7,100 mg/l
- Fishes, Lepomis macrochirus, NOEC, 96 h, 5,200 mg/l
- Crustaceans, Daphnia magna, EC50, 48 h, 4,100 mg/l
- Crustaceans, Daphnia magna, NOEC, 48 h, 3,100 mg/l

12.2. Mobility

- Water, Soil/sediments

Remarks: Solubility

- Water, Soil/sediments

Remarks: Mobility

12.3. Persistence and degradability
Abiotic degradation


- Water, hydrolyses

Result: acid/base equilibrium as a function of pH

Degradation products: carbonic acid/bicarbonate/carbonate

Biodegradation

- Remarks: The methods for determining the biological degradability are not applicable to inorganic substances.

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12.4. Bioaccumulative potential

- Result: not applicable

12.5. Results of PBT assesstment

- Sodium bicarbonate is not considered to be a PBT substance.

12.6. Other adverse effects

- no data available

13. DISPOSAL CONSIDERATIONS

13.1. Waste from residues / unused products

- Contact waste disposal services.
- If recycling is not practicable, dispose of in compliance with local regulations.
- or
- Dilute with plenty of water.
- Neutralise with acid.
- In accordance with local and national regulations.

13.2. Packaging treatment

- To avoid treatments, as far as possible, use dedicated containers.
- or
- Clean container with water.
- Dispose of rinse water in accordance with local and national regulations.
- The empty and clean containers are to be reused in conformity with regulations.
- or
- Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities.

14. TRANSPORT INFORMATION

- | | |
|--------------------------------|-----------------|
| - Sea (IMO/IMDG) | - not regulated |
| - Air (ICAO/IATA) | - not regulated |
| - European Road/Rail (ADR/RID) | - not regulated |


15. REGULATORY INFORMATION

15.1. EC Label

- Sodium bicarbonate is currently not listed in ANNEX VI of EU CLP Regulation Np 1272/2008. Based on available physical, health and environmental data there is no need to classify or label according to the criteria of the CLP regulation.

15.2. Inventory Information

EU list of existing chemical substances (EINECS) : - In compliance with inventory.

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15.3. Other regulations

- European Waste Catalogue, Decision (2000/532/EC), Waste codes should be assigned by the user based on the application for which the product was used.

16. OTHER INFORMATION

16.1. Administrative information

To our actual knowledge, the information contained herein is accurate as of the date of this document. However, neither Soda Sanayii A.Ş., nor any of its affiliates makes any warranty, express or implied, or accepts any liability in connection with this information or its use. This information is for use by technically skilled persons at their own discretion and risk and does not relate to the use of this product in combination with any other substance or any other process.

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SAFETY DATA SHEET

1 - IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Identification of the substance or preparation:

Name: SDI NEW.

Product code: 504.

Company/undertaking identification:

Registered company name: ORAPI.

Address: 12 RUE PIERRE MENDES-FRANCE.69120.VAULX EN VELIN.FRANCE.

Telephone: 33-(0)4-78-80-46-70. Fax:33-(0)4-72-04-58-91. Telex:.

Emergency telephone: 33-(0)1-45-42-59-59.

Association/Organisation: INRS .

Use of the substance/preparation:

N/A

2 - COMPOSITION/INFORMATION ON INGREDIENTS

Full text of risk phrases appearing in section 2: see section 16.

Hazardous substances present on their own:

(present in the preparation at a sufficient concentration to give it the toxicological characteristics it would have in a 100% pure state)

INDEX	CAS	EC	Name	Symb.	R:	%
602-004-00-3	75-09-2	200-838-9	DICHLOROMETHANE	Xn	40.C3	50 <= x % < 100

Other substances representing a hazard:

No known substance in this category present.

Substances present at a concentration below the minimum danger threshold:

INDEX	CAS	EC	Name	Symb.	R:	%
	8028-48-6	232-433-8	ORANGE ESSENTIAL OIL	Xn	10 65	0 <= x % < 2.5

Other substances with occupational exposure limits:

No known substance in this category present.

3 - IDENTIFICATION OF HAZARDS

This product is not classed as flammable. Refer to the recommendations regarding the other products present on the site

Possibility of category three carcinogenic effects.

4 - FIRST AID MEASURES

As a general rule, in case of doubt or if symptoms persist, always call a doctor.

NEVER induce swallowing in an unconscious person.

In the event of exposure by inhalation:

If a large quantity is inhaled, move the patient into the fresh air and keep him/her warm and still.

In the event of splashes or contact with eyes:

Wash thoroughly with soft, clean water for 15 minutes holding the eyelids open.

Refer the patient to an ophthalmologist, in particular if there is any redness, pain or visual impairment.

In the event of splashes or contact with skin:

Remove contaminated clothing and wash the skin thoroughly with soap and water or a recognised cleaner.

DO NOT use solvents or thinners.

In the event of swallowing:

In the event of swallowing, if the quantity is small (no more than one mouthful), rinse the mouth with water and consult a doctor.

Keep still. DO NOT induce vomiting.

If swallowed accidentally, call a doctor to assess the need for monitoring and subsequent treatment in hospital. Show him the label.

5 - FIRE-FIGHTING MEASURES

Considered as non flammable and non-explosible. However, under certain conditions with contribution of an important energy source, can form explosive mixtures with l'air.

Suitable extinguishing media:

Use atomised water to cool containers exposed to fire

Special protective equipment for fire-fighters:

Due to the toxicity of the gas emitted on thermal decomposition of the products, fire-fighting personnel are to be equipped with autonomous insulating breathing apparatus.

6 - ACCIDENTAL RELEASE MEASURES

Personal precautions:

Consult the safety measures listed under headings 7 and 8.

Avoid inhalation of vapours

Avoid contact with skin and eyes

Environmental precautions:

Contain and control the leaks or spills with non-combustible absorbent materials such as sand, earth, vermiculite, diatomaceous earth in drums for waste disposal.

Prevent any material from entering drains or waterways.

Use drums to dispose of waste recovered in accordance with applicable regulations (see heading 13).

If the product contaminates waterways, rivers or drains, alert the relevant authorities in accordance with statutory procedures

Methods for cleaning up:

Clean preferably with a detergent, do not use solvents.

7 - HANDLING AND STORAGE

The regulations relating to storage premises apply to workshops where the product is handled.

Handling:

Handle in well-ventilated areas.

Avoid inhalation of vapours

Avoid contact with skin, eyes and clothings

Fire prevention:

Prevent access by unauthorised personnel.

Recommended equipment and procedures:

For personal safety, see §8.

Observe precautions stated on label and also industrial safety regulations

Packages which have been opened must be reclosed carefully and stored in an upright position

Prohibited equipment and procedures:

Smoking, eating and drinking are prohibited in premises where the preparation is used

Never open the packages under pressure

Storage:

Keep the container tightly closed in a dry place.

The floor must be impermeable and form a collecting basin so that, in the event of an accidental spillage, the liquid cannot spread beyond this area.

8 - EXPOSURE CONTROLS/PERSONAL PROTECTION



Use personal protection equipment as per Directive 89/686/EEC.

Technical measures:

Ensure adequate ventilation, if possible with extractor fans at work posts and appropriate general extraction.

If this ventilation is insufficient to maintain the concentration of solvent vapors below the exposure limits, wear breathing apparatus

Exposure limit values per INRS ND 2098-174-99 and ND 2114-176-99:

France	VME-ppm:	VME-mg/m3:	VLE-ppm:	VLE-mg/m3:	Notes:	TMP N°:
75-09-2	50	180	100	350	C3	12
Germany	Class:	MAK-ppm:	MAK-mg/m3:	Notes:	Notes:	
75-09-2	II,2	100	350	3,D		
ACGIH(TLV)	TWA-ppm:	TWA-mg/m3:	STEL-ppm:	STEL-mg/m3:	Notes:	Notes:
75-09-2	50	174	-	-	A3	-

Exposure limit values (2003):

UK/WELs	TWA:	STEL:	Ceiling:	Definition:	Criterion:
75-09-2	100 ppm	300 ppm	-	-	-
UK/MEL	TWA:	STEL:	Ceiling:	Definition:	Criterion:
75-09-2	100 ppm	300 ppm	-	-	-

Respiratory protection:

Where workers encounter concentrations higher than the exposure limits, they must wear suitable, approved masks.

Hand protection:

Protective creams may be used for exposed skin, but they should not be applied after contact with the product.

Due to the solvents present, it is recommended that polyvinyl alcohol or nitrile rubber gloves be worn

Eye and face protection:

Use eye protectors designed to protect against liquid splashes

Skin protection:

For further information, see § 11 of S.D.S. - Toxicological information.

9 - PHYSICAL AND CHEMICAL PROPERTIES

General information:

Physical state: fluid liquid

Important health, safety and environmental information:

pH of the substance or preparation: not relevant.

The pH is impossible to measure or its value is not relevant.

Boiling point/boiling range: 40 °C.

Flash point interval: not relevant.

vapour pressure: Above 300 kPa (3 bar).

Density: > 1

Density: 1.33

water solubility: Insoluble.

Other information:

melting point/melting range: 0 °C.

Self-ignition temperature: 605 °C.

Decomposition point/decomposition range : not relevant.

Minimum olfactory limit : 200 - 300 ppm

10 - STABILITY AND REACTIVITY

When exposed to high temperatures, the preparation may release dangerous decomposition products such as carbon monoxide and dioxide, smoke and nitrogen oxide

Conditions to avoid:

Product is sensitive to light and moisture (formation of hydrogen chloride gas)

Materials to avoid:

Strong reaction with alkaline metals, alkaline earths and strong alkaline products (sodium hydroxyde and potassium hydroxyde)

Hazardous decomposition products:

Temperatures above 120°C : thermal decomposition giving toxic and corrosive products : chlorhydric acid, chlorine and phosgene

11 - TOXICOLOGICAL INFORMATION

Exposure to vapors from solvents contained in the preparation beyond the exposure limits stated may produce effects harmful to health, such as:

Irritation of mucous membrane and respiratory system, kidneys, liver and central nervous system.

Symptoms produced will include headaches, numbness, dizziness, fatigue, muscular asthenia and, in extreme cases, loss of consciousness.

Prolonged or repeated contact with the preparation may strip the skin of its natural oil and thus cause non-allergic dermatitis on contact and absorption through the epidermis.

Splashes in the eyes may cause irritation and reversible damage

It is generally agreed that substances contained carry the risk of noxious, irreversible, non-lethal effects after a single exposure

It is generally agreed that substances contained are likely to cause category 3 carcinogenic effects.

In the event of exposure by inhalation:

Irritating to respiratory system, nausea, dizziness and consciousness troubles. CL50 (rat, 6h) : 1500 ppm

In the event of swallowing:

Nausea, vomiting, troubles of the respiratory system because of the tracheobronchitis and consciousness troubles. DL50 (rat) > 2000 mg/kg

In the event of splashes or contact with skin:

Irritating, may rapidly cause pain. DL50 (mouse) > 2000 mg/kg.

In the event of splashes or contact with eyes:

Superficial lesion of cornea possible.

Other data:

Absence of causal relationship between incidence of cancer and exposure to product when the product is manipulated in accordance to the rules of industrial hygien.

12 - ECOLOGICAL INFORMATION

No ecological data on the product itself is available.

The product must not be allowed to run into drains or waterways.

Mobility:

Moderately water soluble product

Persistence and degradability:

Partly soluble in water. Slowly biodegradable in water and ground.

Bioaccumulative potential:

Slightly bioaccumulable

Ecotoxicity:

Harmful for aquatic organisms.

13 - DISPOSAL CONSIDERATIONS

Do not pour into drains or waterways.

Waste:

Recycle or dispose of waste in compliance with current legislation, preferably via a certified collector or company.

Do not contaminate the ground or water with waste, do not dispose of waste into the environment.

Soiled packaging:

Empty container completely. Keep label(s) on container.

Give to a certified disposal contractor.

14 - TRANSPORT INFORMATION

Transport product in compliance with provisions of the ADR for road, RID for rail, IMDG for sea and ICAO/IATA for air transport (ADR 2005 - IMDG 2004 - ICAO/IATA 2005).

UN2810=TOXIC LIQUID, ORGANIC, N.O.S.

Dichloromethane

ADR/RID	Class	Code	Pack gr.	Label	Ident.	LQ	Provis.
	6.1	T1	III	6.1	60	LQ19	274-614



IMDG	Class	2°Label	Pack gr.	LQ	EMS	Provis.			
	6.1	-	III	5 L	F-A,S-A	223 274 944			
IATA	Class	2°Label	Pack gr.	Passager	Passager	Cargo	Cargo	note	
	6.1	-	III	611	60 L	618	220 L	A3 A4 A137	
	6.1	-	III	Y611	2 L	-	-	-	

15 - STATUTORY INFORMATION

This preparation was classified in compliance with the directive known as <All preparations> 1999/45/EC and its adaptations

In addition directive 2004/73/EC with the 29° adaptation of directive 67/548/EEC (Hazardous substances) have been taken into account.

This product is not classed as flammable.

Preparation classification:

Harmful.



Contains:

602-004-00-3

DICHLOROMETHANE

Particular hazards associated with the preparation and safety recommendations:

R 40	Limited evidence of a carcinogenic effect.
S 36/37	Wear suitable protective clothing and gloves.
S 25	Avoid contact with eyes.
S 60	This material and its container must be disposed of as hazardous waste.
S 23	Do not breathe gas/fumes/vapour/spray (appropriate wording to be specified by the manufacturer).
S 24	Avoid contact with skin.
S 41	In case of fire and/or explosion do not breathe fumes.

16 - OTHER INFORMATION

Since the user's working conditions are not known by us, the information supplied on this safety data sheet is based on our current level of knowledge and on national and community regulations.

The product must not be used for any purposes other than those specified under heading 1 without first obtaining written handling instructions.

It is at all times the responsibility of the user to take all necessary measures to comply with legal requirements and local regulations.

The information given on this safety data sheet must be regarded as a description of the safety requirements relating to our product and not a guarantee of its properties

Full text of risk phrases appearing in section 2:

R 10	Flammable.
R 40.C3	Limited evidence of a carcinogenic effect.
R 65	Harmful. may cause lung damage if swallowed.

Material Safety Data Sheet

according to Regulation (EC) 1907/2006



Product name : Satamin 3121
Revision : 12.08.2010 **Version :** 1.0.0
Print date : 12.08.2010

01. Identification of the substance/preparation and of the company/undertaking

Product name

Satamin 3121 (11-3121)

Use of the substance / preparation

additive for mineral oil products

Manufacturer/Supplier

ERC GmbH
Buchholz

Street/P.O.Box

Bäckerstr. 13

Country code/Postal code/Town/City

21244 Buchholz

Contact

email: mmueller@erc-online.de

Emergency information

+49-4181-216-150, Dr. Müller (09:00 - 16:00 h)

02. Hazards identification

Hazard designation

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. · Limited evidence of a carcinogenic effect. · Harmful: may cause lung damage if swallowed.

Classification : N ; R 51/53 · Carc. Cat.3 ; R 40 · Xn ; R 65 · R 67 · R 66

03. Composition/information on ingredients

Hazardous components

FUEL OIL, NO.2 ; EC-No. : 270-671-4; CAS-No. : 68476-30-2

Percentage : ≥ 25 %

Classification : N ; R 51/53 Carc. Cat.3 ; R 40 Xn ; R 65 R 66

GASOIL (PETROLEUM), HYDRODESULFURIZED ; EC-No. : 265-182-8; CAS-No. : 64742-79-6

Percentage : ≥ 25 %

Classification : N ; R 51/53 Xn ; R 65 R 67 R 66

BUTYL CELLOSOLVE ; EC-No. : 203-905-0; CAS-No. : 111-76-2

Percentage : ≥ 1 %

Classification : Xn ; R 20/21/22 Xi ; R 36/38

For the wording of the listed risk phrases refer to section 16.

04. First-aid measures

General

Unconsciousness: lateral position - call a physician.

After inhalation

Remove concerned person out of danger area. Let in fresh air.

After skin contact

Wash away with soap and water and rinse.

After eye contact

Flush with plenty of water (10 - 15 min.). Call a physician.

After ingestion

Drink plenty of water. Do not induce vomiting - call a physician.

05. Fire-fighting measures

Suitable extinguishing media

Material Safety Data Sheet

according to Regulation (EC) 1907/2006



Product name : Satamin 3121
 Revision : 12.08.2010 Version : 1.0.0
 Print date : 12.08.2010

Suitable extinguishing media Water haze. Sand, foam, CO₂, dry extinguisher.

Unsuitable extinguishing media

Waterjet.

Special protective equipment

When extinguishing fires, use breathing apparatus with an independent source of air.

Additional information

Cool endangered containers with water in case of fire. Do not allow the quenching water into the sewage system.

06. Accidental release measures

Personal precautions

Keep away from ignition sources on account of the organic solvent content and air room well. Do not inhale vapours. Take the precautions customary when handling chemicals.

Environmental precautions

Take up with a liquid absorbing material and proceed according to the waste disposal regulations. Do not empty into drains.

Methods for cleaning up/collecting

Remove mechanically, take-up residues with absorbing material.

07. Handling and storage

Information for safe handling

Normal precautions taken when handling chemicals should be observed. Additionally, the product should only be used in areas from which all naked lights and other sources of ignition have been excluded.

Information about protection against explosions and fires

Take precautionary measures against static discharges.

Requirements to be met by storerooms and containers

Containers should be kept dry and sealed. Avoid heating over 50°C. Avoid cooling to under 0°C.

Further information about storage conditions

Storage class (VCI) : 3B

08. Exposure controls/personal protection

Components with critical values that require monitoring at the workplace (exposure limits)

BUTYL CELLOSOLVE ; CAS-No. : 111-76-2

Specification : TRGS 900 - maximum limit in the atmosphere at the workplace (D)

Value : 20 ppm / 98 mg/m³

Category : 4(II)

Remarks : H,Y

Version date : 01.04.2007

Specification : TRGS 903 - biological maximum limits (D)

Parameter : Butoxy acetic acid / urine / in cases of long term exposure after several shifts

Value : 100 mg/l

Version date : 31.03.2004

Specification : Short term exposure limit (EC)

Value : 50 ppm / 246 mg/m³

Remarks : H

Version date : 08.06.2000

Specification : threshold limit value (EC)

Value : 20 ppm / 98 mg/m³

Remarks : H

Version date : 08.06.2000

Personal protective equipment

Respiratory protection

Material Safety Data Sheet

according to Regulation (EC) 1907/2006



Product name : Satamin 3121
 Revision : 12.08.2010 Version : 1.0.0
 Print date : 12.08.2010

None, but avoid breathing vapours if possible. If workplace limits are exceeded, a gas mask approved for this purpose must be worn. Combination filter mask A2 - P2 for short-term work.

Hand protection

Solvent-resistant protective gloves must be worn. Gloves, for example PVC at least 0,8 mm thick. See protective gloves instruction sheet.

Eye protection

Use safety glasses.

09. Physical and chemical properties

Image

Form : Liquid.
 Colour : Coloured. Clear.
 Odour : Like mineral oil.

Relevant safety data

Boiling point / range :	(1013 hPa)	>	160 °C	
Flash point :		>	61 °C	Brookfield
Vapour pressure :	(50 °C)	<	100 hPa	
Density :	(20 °C)	ca.	1 g/cm ³	
Viscosity :	(20 °C)	<	10 mPa.s	

10. Stability and reactivity

Conditions to avoid

None, if handled according to order.

Materials to avoid

Reaction with oxidizing agents possible.

Hazardous decomposition products

When exposed to high temperatures may produce hazardous decomposition products such as carbon monoxide and dioxide, smoke, oxides of nitrogen.

11. Toxicological information

Toxicological tests

Results of the dangerous components in the product-mixture. Oral: LD 50 rat: approx.: 1500 mg/kg.

Additional toxicological information

Inhalation/eye contact: in high concentrations irritating to the mucous membranes, narcotic effect and influence on power of reaction and loss of coordination possible.

12. Ecological information

Details on elimination (persistence / degradability)

The product is difficult to biologically degrade. May be separated mechanically in purification plants.

Additional ecological information

Do not empty into waters or drains.

13. Disposal considerations

Product

In accordance with local official regulations. Pass on to an appropriate incinerating plant or depository or recycling. Recycling possible, contact manufacturer. Contaminated packaging must be emptied of all residues and, following appropriate cleaning, may be sent to a recycling plant. Uncleaned packaging must be disposed of in the same manner as the medium.

Waste key

Recommendation 13 08 99 (75/442/EWG)

14. Transport information

Land transport ADR/RID

Material Safety Data Sheet

according to Regulation (EC) 1907/2006



Product name : Satamin 3121
 Revision : 12.08.2010 Version : 1.0.0
 Print date : 12.08.2010

Classification

Class : 9 Kemlercode : 90
 Substance number : 3082 Classification-Code : M6
 LQ 7 · Tunnel restriction code : E

Proper shipping name

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

Hazardous components

FUEL OIL, NO.2 · GASOIL (PETROLEUM), HYDRODESULFURIZED

Packaging

Packaging group : III
 Label : 9

Maritime transport IMDG/GGVSea

Classification

IMDG-Code : 9 EmS number : F-A / S-F
 UN number : 3082 Marine Poll. : P
 LQ 5 I

Proper shipping name

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

Hazardous components

FUEL OIL, NO.2 · GASOIL (PETROLEUM), HYDRODESULFURIZED

Packaging

Packaging group : III
 Label : 9

Air transport ICAO-TI and IATA-DGR

Classification

Class : 9
 UN number : 3082

Proper shipping name

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

Hazardous components

FUEL OIL, NO.2 · GASOIL (PETROLEUM), HYDRODESULFURIZED

Packaging

Packaging group : III
 Label : 9

15. Regulatory information

Classification according to EC directives

Danger symbol and danger designation



Xn ; Harmful



N ; Dangerous for the environment

Hazard-determining components of labelling

FUEL OIL, NO.2 ; CAS-No. : 68476-30-2

R-phrases

51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
 40 Limited evidence of a carcinogenic effect.
 65 Harmful: may cause lung damage if swallowed.
 67 Vapours may cause drowsiness and dizziness.
 66 Repeated exposure may cause skin dryness or cracking.

Material Safety Data Sheet

according to Regulation (EC) 1907/2006



Product name : Satamin 3121
Revision : 12.08.2010 **Version :** 1.0.0
Print date : 12.08.2010

S-phrases

29/35 Do not empty into drains; dispose of this material and its container in a safe way.
 61 Avoid release to the environment. Refer to special instructions/Safety data sheets.
 62 If swallowed, do not induce vomiting; seek medical advice immediately and show this container or label.
 51 Use only in well-ventilated areas.
 36/37 Wear suitable protective clothing and gloves.

National regulatory information

Emission control act ("TA-Luft")

Sum organic substances class III : 65 - 70 %

Water pollution classification

Class : 2 according VwVwS

16. Other information

Further information

R-Phrases of components

20/21/22 Harmful by inhalation, in contact with skin and if swallowed.
 36/38 Irritating to eyes and skin.
 40 Limited evidence of a carcinogenic effect.
 51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
 65 Harmful: may cause lung damage if swallowed.
 66 Repeated exposure may cause skin dryness or cracking.
 67 Vapours may cause drowsiness and dizziness.

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.



SAF-ACID DESCALING COMPOUND

MSDS Number

BYFBP

National Stock Number

6850-01-059-9964

Product Name

SAF-ACID DESCALING COMPOUND

Manufacturer

DREW CHEMICAL CORP

Product Identification

Product ID:SAF-ACID DESCALING COMPOUND

MSDS Date:02/10/1995

FSC:6850

NIIN:01-059-9964

MSDS Number: BYFBP

Responsible Party

DREW CHEMICAL CORP

ONE DREW PLAZA

BOONTON , NJ 07005

US

Emergency Phone: 800-274-5263

Info Phone: 201-263-7600

Cage: 52454

Contractor

DREW CHEMICAL CORP,DIV OF ASHLAND CHEMICAL CO

BOONTON, NJ 07005

US

606-324-1133

Cage: 52454

Ingredients

SULFAMIC ACID

CAS: 5329-14-6

RTECS: WO5950000

OSHA PELN/K

ACGIH TLV: N/K

INHIBITORS; (INHIBITOR COMPOSITION)

OSHA PELN/K

ACGIH TLV: N/K

MAGNESIUM OXIDE

CAS: 1309-48-4

RTECS: OM3850000



OSHA PEL15 MG/M3 PARTICULATE

ACGIH TLV: 10 MG/M3; FUME

Hazards

LD50 LC50 Mixture:NONE SPECIFIED BY MANUFACTURER.
Routes of Entry: Inhalation:YES Skin:YES Ingestion:NO
Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
Health Hazards Acute and Chronic:EYES:EXPOS CAUSES IRREVERSIBLE DMG.
SYMPS MAY INCLUDE STINGING, TEARING, REDNESS, SWELLING, CORNEAL DMG
& BLINDNESS. SKIN:EXPOS CAUSES IRREVERSIBLE DMG. SYMPS MAY INCLUDE
REDNESS, SWELLING, BURNS, & S EV DMG. PRE-EXISTING SKIN DISORDERS
MAYBE AGGRAVATED BY EXPOS TO MATL. INHAL:EXPOS TO DUST IS POSS.
(EFTS OF OVEREXP)
Explanation of Carcinogenicity:NOT RELEVANT
Effects of Overexposure:HLTH HAZS:EXPOS MAY BE HARMFUL/FATAL. SYMPS MAY
INCLUDE SEV IRRIT & BURNS TO NOSE, THROAT & RESP TRACT.
PRE-EXISTING LUNG DISORDERS (E.G. ASTHMA-LIKE CNDTNS) MAY BE
AGGRAVATED BY EXPOS TO MATL. INGEST :MAY BE HARMFUL/FATAL. SYMPS
MAY INCLUDE SEV IRRIT & BURNS OF MOUTH, THROAT & DIGESTIVE TRACT.
Medical Cond Aggravated by Exposure:PRE-EXISTING SKIN & LUNG DISORDERS
(E.G. ASHTMA-LIKE CONDITIONS) MAY BE AGGRAVATED BY EXPOSURE TO THIS
MATERIAL.

First Aid

First Aid:SKIN:IMMED FLUSH W/WATER FOR @ LST 15 MIN WHILE REMOVING
CONTAM CLTHG & SHOES. SEEK IMMED MED ATTN. WASH CLTHG BEFORE REUSE
& DECONTAM/DISCARD CONTAM SHOES. EYES:IMMED FLUSH GENTLY W/WATER
FOR @ LST 1 5 MIN WHILE HOLDING EYELIDS APART. IF SYMPS DEVELOP AS
RSLT OF VAP EXPOS, IMMED MOVE INDIVIDUAL AWAY FROM EXPOS & INTO
FRESH AIR BEFORE FLUSHING AS REC. SEEK IMMED MED ATTN. INGEST:SEEK
IMMED MED ATTN . DO NOT INDUCE VOMIT. VOMIT WILL CAUSE FURTHER DMG
TO MOUTH & THROAT. IF INDIVIDUAL IS CONSCIOUS & ALERT, IMMED RINSE
MOUTH W/WATER & GIVE MILK/WATER TO DRINK. IF POSS, DO NOT LEAVE
INDIVIDUAL UNATTE NDED. INHAL:IMMED REMOVE TO (SUPDAT)

Fire Fighting

Extinguishing Media:ALCOHOL FOAM/WATER FOG/CARBON DIOXIDE/DRY CHEMICAL.
Fire Fighting Procedures:WEAR NIOSH/MSHA APPRVD SCBA & FULL PROT EQUIP
. REFER TO CTL MEASURES OF MSDS. WATER MAY BE USED TO EXTING FIRE
BY COOLING, & DILUTING LIQ W/WATER.
Unusual Fire/Explosion Hazard:NONE SPECIFIED BY MANUFACTURER.

Accidental Release

Spill Release Procedures:SM SPILL:COVER CONTAM SURF W/SODIUM
BICARBONATE/SODA ASH/FLAKED LIME MIX (50-50). MIX & ADD WATER IF
NEC TO FORM SLURRY. SCOOP UP SLURRY & WASH SITE W/SODA ASH SOLN.
PROPER MIXING PROC ARE ESSENTL. TRA INED PERS SHOULD CONDUCT PROC.
UNTRAINED PERS SHOULD BE REMOVED FROM SPILL AREA. LG SPILL:SHOVEL
MATL INTO CNTNRS. THORO SWEEP AREA OF SPILL TO CLEAN UP ANY
RESIDUAL MATERIAL.
Neutralizing Agent:SODIUM BICARBONATE/SODA ASH/FLAKED LIME MIXTURE
(50-50).

Handling

Handling and Storage Precautions:PREVENT SKIN CONTACT.
Other Precautions:CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN
EMPTIED. SINCE EMPTIED CONTAINERS RETAIN PRODUCT RESIDUES (VAPOR,
LIQUID AND/OR SOLID), ALL HAZARD PRECAUTIONS GIVEN IN THE DATA
SHEET MUST BE OBSERVED.

Exposure Controls

Respiratory Protection:IF WORKPLACE EXPOS LIM(S) OF PROD/ANY COMPONENT
IS EXCEEDED (SEE INGS), NIOSH/MSHA APPRVD AIR SUPPLIED RESP IS
ADVISED IN ABSENCE OF PROPER ENVIRON CTL. OSHA REGS ALSO PERMIT
OTHER NIOSH/MSHA APPRVD R ESPS (NEG PRESS TYPE) UNDER SPECIFIED
CNDTNS (SEE YOUR INDUST HYGIENIST). ENGINEERING/ADMIN CTLS SHOULD



BE IMPLEMENTED TO REDUCE EXPOS.

Ventilation:PROVIDE SUFFICIENT MECHANICAL (GENREAL AND/OR LOCAL EXHAUST) VENTILATION TO MAINTAIN EXPOSURE BELOW TLV(S).

Protective Gloves:WEAR RESISTANT GLOVES SUCH AS: POLYVINYL CHLORIDE.

Eye Protection:ANSI APPROVED CHEMICAL WORKERS GOGGLES AND FULL LENGTH FACESHIELD .

Other Protective Equipment:EMERGENCY EYE WASH & DELUGE SHOWER WHICH MEET ANSI DESIGN CRITERIA . WEAR IMPERVIOUS CLOTHING AND BOOTS.

Work Hygienic Practices:NONE SPECIFIED BY MANUFACTURER.

Supplemental Safety and Health

FIRST AID PROC: FRESH AIR. SEEK IMMED MED ATTN; KEEP PERSON WARM & QUIET. IF PERSON IS NOT BREATHING, BEGIN ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT ADMINISTER OXYGEN.

Chemical Properties

Appearance and Odor:FREE FLOWING SOLID GREEN POWDER.

Percent Volatiles by Volume:

Stability

Stability Indicator/Materials to Avoid:YES

STRONG MINERAL ACIDS, STRONG ALKALIES, STRONG OXIDIZING AGENTS, AMINES, WATER, HALOGENATED HYDROCARBONS.

Stability Condition to Avoid:NONE SPECIFIED BY MANUFACTURER.

Hazardous Decomposition Products:MAY FORM:NITROGEN COMPOUNDS, SULFUR COMPOUNDS, NITROGEN OXIDES, MAGNESIUM OXIDE, CARBON MONOXIDE.

Disposal

Waste Disposal Methods:DISP MUST BE I/A/W FED, STATE & LOC REGS . SM SPILL:FLUSH DOWN DRAIN W/LG AMTS OF WATER IN ACCORD W/APPLIC REGS. LG SPILL:COLLECT & ADD SLOWLY TO LG VOL OF AGITATED SOLN OF SODA ASH & SLAKED LIM E. ADD NEUT SOLN TO EXCESS RUNNING WATER IN ACCORDANCE WITH APPLICABLE REGULATIONS.

Disclaimer (provided with this information by the compiling agencies):

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Material Safety Data Sheet as per regulation (EC) 1907/2006

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Commercial Product Name: PentoMag 2000

Article-No.:

Revision date: 14.07.2010


Version: 1.0/en

Print date: 14.07.2010

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Commercial Product Name	PentoMag 2000
Company designation	PENTOL GmbH Degussaweg 1 79639 Grenzach-Wyhlen / Germany Telephone: +49 7624 300-0 Fax: +49 7624 300-190
Emergency telephone number	+ 49 761 19240 Vergiftungs-Informationen-Zentrale am Universitätsklinikum Freiburg
Contact person	E-Mail (competent person): office.d@pentol.net
Use	Combustion optimisation in fuel oil fired power plants.

2. HAZARDS IDENTIFICATION

Classification and labelling according to Directive 67/548/EEC.	Carc.Cat.3; R40 Xn; R65 R43 R66 R52/53
R-phrases(s)	R40: Limited evidence of a carcinogenic effect. R43: May cause sensitisation by skin contact. R52/53: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. R65: Harmful: may cause lung damage if swallowed. R66: Repeated exposure may cause skin dryness or cracking.
Hazard symbols	Xn  Xn: Harmful

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical characterization Mixture of magnesia compounds in organic carrier substance

Hazardous ingredients

Ingredient	CAS No.	EG-No.	Index-No.	Classification	Concentration
Fuels, diesel, no. 2	68476-34-6	270-676-1		Carc.Cat.3; R40 Xn; R65 R66 N; R51/53	10.0 – 25.0 % by weight
Tall-oil rosin	8052-10-6	232-475-7		R43	2.5 – 10.0 % by weight

4. FIRST AID MEASURES

General advice	Move victim out of danger zone.
If inhaled	Move victim to fresh air. Put victim at rest and keep warm. Keep airways free. If victim is at risk of losing consciousness, position and transport on their side. Consult a physician if case of symptoms.
In case of skin contact	Take off immediately all contaminated clothing.

Material Safety Data Sheet as per regulation (EC) 1907/2006

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Commercial Product Name: PentoMag 2000

Article-No.:

Revision date: 14.07.2010

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In case of eye contact

Following skin contact first remove the agent with a dry cloth and then rinse the skin with plenty of water.

Remove product with dry cloth.

In case of contact with eyes, rinse immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart.

In case of troubles or persistent symptoms, consult an ophthalmologist.

If swallowed

Do not induce vomiting.

Rinse mouth immediately and drink large quantities of water.

Immediately get medical attention.

Notes to physician

Hazards:

In case of swallowing or vomiting, aspiration possible.

Symptoms:

shortage of breath. Headache. unconsciousness. drowsiness. Dizziness.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

In case of fire, use sand, extinguishing powder or alcohol resistant foam.

Extinguishing media which must not be used for safety reasons

High power water jet.

Special exposure hazards arising from the substance or preparation itself, its combustion products, or released gases

Evaporated product is heavier than air and, therefore, sinks to the ground. Even distant sources of ignition may be an origin of danger.

Special protective equipment for firefighting

Wear suitable chemical protection clothing and self-contained breathing apparatus.

Additional information on fire-fighting

Use water spray/stream to protect personnel and to cool endangered containers.

Contaminated fire-fighting water must be collected separately.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Avoid contact with skin and eyes.

Do not breathe vapour or spray.

Wear personal protection equipment.

Provide adequate ventilation.

Remove all sources of ignition.

Vapours may form explosive mixtures with air.

Keep away from unprotected people. Keep upwind.

Environmental precautions

Do not allow to enter into soil/subsoil.

Do not empty into drains or the aquatic environment.

Methods for cleaning up

Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents).

Treat the assimilated material according to the section on waste disposal.

Other information

Keep away from sources of ignition – No smoking.

7. HANDLING AND STORAGE

Advice on safe handling

Keep container tightly closed in a cool, well-ventilated place.

Protect from direct sunlight.

Avoid contact with skin and eyes.

Material Safety Data Sheet as per regulation (EC) 1907/2006

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Commercial Product Name: PentoMag 2000

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Advice on protection against fire and explosion

Combustible liquid.
Keep away from sources of ignition – No smoking.
Take precautionary measures against static discharges.

Storage space and container requirements

Keep container tightly closed in a cool, well-ventilated place.
The floor should be leak tight, jointless and not absorbent.
Protect from direct sunlight.
Avoid product spills.

Hints on storage assembly

Do not store together with: Oxidizing agents, strong.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Respiratory protection

Not required if used as intended.
Wear respiratory protection when in the presence of vapour, dust, and aerosols.
Combination filter device (DIN EN 141). Code Colour: brown

Hand protection

Suitable material:	NBR (Nitrile rubber).
Material thickness:	0,35 mm
Suitable material:	FKM (fluororubber).
Material thickness:	0,4 mm
Suitable material:	CR (polychloroprenes, Chloroprene rubber).
Material thickness:	0,5 mm
remarks:	Permanent contact not longer than 4 hours.
Suitable material:	PVC (Polyvinyl chloride).
Material thickness:	0,5 mm
remarks:	Permanent contact not longer than 4 hours.

Eye protection

Tightly sealed safety glasses.
Face protection shield.

Skin and body protection

Wear suitable protective clothing.
Chemical resistant suit.
Safety boots

General protective and hygiene measures

Do not eat, drink or smoke at the workplace.
Avoid contact with skin and eyes.
Keep away from food, drink and animal feedingstuffs.
Wash hands before breaks and at the end of work.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form	Liquid
Colour	Greybrown
Odour	Hydrocarbons
Flash point / °C	64 °C
Measuring method:	Closed cup
Density	1,7 – 1,75 g/ml

Material Safety Data Sheet as per regulation (EC) 1907/2006

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Commercial Product Name: PentoMag 2000

Article-No.:

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Viscosity, dynamic < 1.600 cP
temperature: (at 20 °C)

10. STABILITY AND REACTIVITY

Hazardous decomposition products Can be released in case of fire: Carbon monoxide.

Materials to avoid Oxidizing agents, strong.
Risk of selfignition.

Conditions to avoid Heat

11. TOXICOLOGICAL INFORMATION

Oral toxicity > 2.000 mg/kg (Fuels, diesel, no. 2)

Test criterion: LD50:
Test species: Rat.
remarks: Datas from IUCLID.

Inhalative toxicity > 4 mg/kg (Fuels, diesel, no. 2)

Duration of dosage: 4 h
Test criterion: LC50:
Test species: Rat.

Dermal toxicity > 2.000 mg/kg (Fuels, diesel, no. 2)

Test criterion: LD50:
Test species: Rabbit.
remarks: Datas from IUCLID.

12. ECOLOGICAL INFORMATION

Environmental hazards Do not empty into drains or the aquatic environment.

13. DISPOSAL CONSIDERATIONS

Waste Code The following Waste Codes are only suggestions:
13 08 00 Oil wastes not otherwise specified

Reutilization If recycling is not practicable, dispose waste according to applicable state and federal regulations.

Uncleaned empty packaging Waste key packaging:
15 01 10 Packaging containing residues of or contaminated by dangerous substances
Cleaned containers may be recycled.

14. TRANSPORT INFORMATION

	Land transport GGVS/ ADR/RID
Description of the goods	Not a hazardous material with respect to transportation regulations.

Commercial Product Name: PentoMag 2000

Article-No.:

Revision date: 14.07.2010

Version: 1.0/en

Print date: 14.07.2010

15. REGULATORY INFORMATION

Hazard symbols

Xn



Xn: Harmful

Hazardous component(s) to be indicated on label

Fuels, diesel, no. 2, Tall-oil rosin

R-phrases(s)

R40: Limited evidence of a carcinogenic effect.
R43: May cause sensitisation by skin contact.
R52/53: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R65: Harmful: may cause lung damage if swallowed.
R66: Repeated exposure may cause skin dryness or cracking.

S-phrases(s)

S23: Do not breathe spray.
S24/25: Avoid contact with skin and eyes.
S27/28: After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of water and soap.
S29: Do not empty into drains.
S36/37/39: Wear suitable protective clothing, gloves and eye/face protection.
S62: If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

16. OTHER INFORMATION

R phrases applying to ingredients

R40: Limited evidence of a carcinogenic effect.
R43: May cause sensitisation by skin contact.
R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R65: Harmful: may cause lung damage if swallowed.
R66: Repeated exposure may cause skin dryness or cracking.

Further information

The datas so far as available are taken from the databases GESTIS / GESTIS International Limit Values, IUCLID respectivly of external safety data sheets.

This Safety Data Sheet was issued according to current EC guidelines.

The information given in the Safety Data Sheet corresponds to the best and latest of our knowledge, but they do not guarantee product properties and do not give reasons for a contractual legal relationship.

The data are supposed to give advice for the safe handling of the mentioned product with regard to storage, processing, transport and waste disposal. The information cannot be applied to other products.

SAFETY DATA SHEET

1 Identification of the substance or preparation and of the company/undertaking

1.1 Product identifier

Product Name: ENGINE WATER TREATMENT 9-108
 Datasheet Number: 777703 6. 0. 0
 Product Part Number: 777703 (25Ltr)
 Head Office:: Wilhelmsen Ships Service AS
 Address: Strandveien 20, N1324 Lysaker, Norway, Tel: (+47) 67 58 45 50

1.2 Relevant identified uses of the substance or mixture and uses advised against

Water treatment

1.3 Details of the supplier of the safety data sheet

Name of Supplier: Wilhelmsen Ships Service AS
 Address of Supplier: Willem Barentszstraat 50
 3165AB Rotterdam
 +31 4877 888
 The Netherlands
 Telephone: +31 4877 777
 Fax:
 Responsible Person: Patrick.Rijsdijk, Product HSE Manager, Tel.: +31 6 349 440 35
 Email: Patrick.Rijsdijk@wilhelmsen.com

1.4 Emergency telephone number

-ONLY TO BE USED IN CASE OF AN INCIDENT-
 NCEC: +44 1865 407333, CHEMTREC (800) 424 9300
 American Chemistry Council +1 703 527 3887,
 Greece +30 210 7793777
 Australia: +61 3 9630 0998
 Giftinformasjonssentralen in Norway Tel.: +47 22591300

2 Hazards identification

2.1 Classification of the substance or mixture

- Council Directive 1999/45/EEC Classification, packing and labelling of dangerous preparations.
- Refer to current The Dangerous Substances Directive (67/548/EEC)
- Regulations 1272/2008/EEC. Classification, labeling and packing of dangerous substances and preparations

2.2 Label elements



Toxic



Dangerous for the Environment

- Contains:
- sodium nitrite
- sodium hydroxide

2 Hazards identification (....)

- Sodiumtetraborate
- Sodium tolytriazole

Risk Phrases

- Toxic if swallowed (R25)
- Causes burns (R34)
- Very toxic to aquatic organisms (R50)

Safety Phrases

- Avoid contact with skin and eyes (S24/25)
- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice (S26)
- This material and its container must be disposed of in a safe way (S35)
- Wear suitable protective clothing, eye/face protection and gloves (S36/37/39)
- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible) (S45)

2.3 Other hazards

- Odour: Odourless
- Appearance: Liquid, light, yellow
- Inhalation: Inhalation may cause severe irritation and, dependent on dose, chemical burns.

3 Composition/information on ingredients

3.1 Mixtures

Chemical Name	Concentration	CAS Number	EC Number	R/H Phrases*	Symbols
sodium nitrite	30-60%	7632-00-0	231-555-9	R8, 25, 50	O,T, N
GHS CLASSIFICATION: Acute Tox. 3, Eye Irrit. 2 Aquatic Acute 1, Ox. Sol.2				H301, H400 H319, H272	GHS09, GHS06 GHS03
sodium hydroxide	1-5%	1310-73-2	215-185-5	R35	C
GHS CLASSIFICATION: Eye Dam. 1, Skin Corr.1B Met.Corr. 1				H318, H314 H290	GHS05
Sodiumtetraborate	1-2%	1330-43-4	215-540-4	R60, 61	T
GHS CLASSIFICATION: Repr. 1B, Eye Irrit. 2				H360, H319	GHS07
Sodium tolytriazole	1-5%	64665-57-2	265-004-9	R22, 34	C
GHS CLASSIFICATION: Skin Corr. 1B, Acute Tox. 4				H314, H302	GHS05, GHS07

*See Section 16

4 First aid measures

4.1 Description of first aid measures

- IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
- When in doubt or symptoms persist, seek medical attention

4 First aid measures (....)

-
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- Irrigate eyes thoroughly whilst lifting eyelids
- Obtain immediate medical attention
-
- IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
- Seek immediate medical attention
-
- IF INHALED: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing.
- Seek medical attention if irritation persists

4.2 Most important symptoms and effects, both acute and delayed

- Prolonged skin or eye contact may cause chemical burns
- The ingestion of significant quantities may cause damage to lungs

4.3 Indication of immediate medical attention and special treatment needed

5 Fire-fighting measures

5.1 Extinguishing media

- Not flammable. In case of fire use extinguishing media appropriate to surrounding conditions

5.2 Special hazards arising from the substance or mixture

- Smoke from fires is toxic. Take precautions to protect personnel from exposure

5.3 Advice for firefighters

- Wear chemical protection suit and positive-pressure breathing apparatus
-

6 Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

- Wear protective clothing as per section 8
- Wash thoroughly after dealing with spillage

6.2 Environmental Precautions

- Do not allow to enter public sewers and watercourses
- Do not flush spilt material into any public water system

6.3 Methods and material for containment and cleaning up

- Ventilate the area and wash spill site after material pick-up is complete
- Absorb spillage in earth or sand

6.4 Reference to other sections

- None
-

7 Handling and storage

7.1 Precautions for safe handling

- Avoid breathing dust/fume/gas/mist/vapours/spray.
-

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7 Handling and storage (....)

- Do not get in eyes, on skin, or on clothing.
- Eyewash bottles should be available

7.2 Conditions for safe storage, including any incompatibilities

- Keep container tightly closed, in a cool, well ventilated place (S3/7/9)
- Avoid contact with acid

7.3 Specific end use(s)**8 Exposure controls/personal protection****8.1 Control parameters**

- sodium hydroxide
WEL (short term) 2 mg/m³
- Sodiumtetraborate
TLV (TWA) 1 mg/m³ ()

8.2 Exposure controls

- Engineering controls should be provided which maintain airborne concentrations as low as practicable

Occupational exposure controls

- In case of high airborne concentrations, wear suitable positive pressure respiratory protection equipment
- Wear rubber or PVC gloves
- Wear plastic or rubber gloves, boots and apron
- Wear goggles giving complete eye protection



Gloves



Suit



Respirator



Boots

9 Physical and chemical properties**9.1 Information on basic physical and chemical properties**

- Odour: Amine odour
- Appearance: Liquid, light, yellow
- pH 13.2 - 14 at 100 % concentration
- Boiling point 100 °C at 760 mm /Hg
- Completely soluble in water
- Density 1.31 g/cm³ at 20 deg C
- Auto-ignition point - not known

9.2 Other information

- None

10 Stability and reactivity**10.1 Reactivity**

- This article is considered stable under normal conditions

10 Stability and reactivity (....)

10.2 Chemical stability

- Considered stable under normal conditions

10.3 Possibility of hazardous reactions

- No hazardous reactions known if used for its intended purpose

10.4 Conditions to avoid

- Keep away from heat and sources of ignition

10.5 Incompatible materials

- Contact with reducing agents liberates toxic gas
- Contact with reducing agents may form explosive gases
- Contact with amines liberates toxic gas

10.6 Hazardous Decomposition Products

- Decomposition products may include nitrogen oxides
-

11 Toxicological information

11.1 Information on toxicological effects

- LD50 (oral,rat) (Sodium nitrite) 85 mg/kg

Inhalation

- Can cause damage to the lungs

Contact with skin

- Prolonged skin or eye contact may cause chemical burns

Contact with eyes

- Prolonged skin or eye contact may cause chemical burns
- Can cause damage to the eyes

Ingestion

- Not regarded as a potential route of exposure.
 - The ingestion of significant quantities may cause damage to mucous membranes
 - Toxic if swallowed.
-

12 Ecological information

12.1 Toxicity

- LC50 (fish) (Sodium nitrite) 0.56 - 1.78 mg/l (96 hr)
- LC50 (fish) (Sodium tetraborate) 650 mg/l (96 hr)
- LC50 (rainbow trout) (Sodium tolytriazole) 23.7 mg/l (96 hr)
- EC50 (daphnia) (Sodium nitrite) 12.5-100 mg/l (48 hr)
- EC50 (daphnia) (Sodium tetraborate) 100 mg/l (48 hr)

12.2 Persistence and degradability

- No information available

12.3 Bioaccumulation Potential

- Bioaccumulation of the components in this product is insignificant.
-

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12 Ecological information (....)

12.4 Mobility in soil

- Completely soluble in water

12.5 Results of PBT and vPvB assessment

- Not a PBT according to REACH Annex XIII

12.6 Other Adverse Effects

13 Disposal considerations

13.1 Waste treatment methods

- Disposal should be in accordance with local, state or national legislation
- Do not discharge into drains or the environment, dispose to an authorised waste collection point

Classification

- EU Waste class: 16-03-03
-

14 Transport information

Corrosive



Toxic

14.1 UN Number

- UN2922

14.2 UN Proper Shipping Name

- CORROSIVE LIQUID, TOXIC, N.O.S. (Sodium Hydroxide, Sodium Nitrite mixture)

14.3 Transport hazard class(es)

- 8+6.1

14.4 Packing group

- III

14.5 Environmental hazards

- This product contains components which are classified in the EU as dangerous for the environment.

14.6 Special precautions for user

- No special precautions are required for this product

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code

- Not applicable

Other information

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14 Transport information (...)**Road/Rail (ADR/RID)**

Proper Shipping Name:	CORROSIVE LIQUID, TOXIC, N.O.S. (Sodium Hydroxide, Sodium Nitrite mixture)		
ADR UN No.:	UN2922	ADR Hazard Class:	8
ADR Packing Group:	III	ADR subrisk:	6.1
ADR Flashpoint:	n/a		

Sea (IMDG)

Proper Shipping Name:	CORROSIVE LIQUID, TOXIC, N.O.S. (Sodium Hydroxide, Sodium Nitrite mixture)		
IMDG UN No.:	UN2922	IMDG Hazard Class.:	8
IMDG Pack Group.:	III	IMDG EmS:	F-A, S-B
IMDG subrisk:	6.1	IMDG Flashpoint:	n/a

Air (ICAO/IATA)

Proper Shipping Name:	CORROSIVE LIQUID, TOXIC, N.O.S. (Sodium Hydroxide, Sodium Nitrite mixture)		
ICAO Un No.:	UN2922	ICAO Hazard Class.:	8
ICAO Packing Group.:	III	ICAO subrisk:	6.1
ICAO Flashpoint:	n/a		

DOT / CFR (US Department of Transportation)

DOT Proper Shipping Name:	CORROSIVE LIQUID, TOXIC, N.O.S. (Sodium Hydroxide, Sodium Nitrite mixture)		
Hazardous Material:	Sodium Hydroxide, Sodium Nitrite		
Hazard Class:	8	Identification Number:	UN2922
Product RQ (lbs):	n/a	DOT subrisk:	6.1
DOT Flashpoint:	n/a		

15 Regulatory information**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

- This Safety Data Sheet has been prepared in accordance with article 31 and annex II in REACH and Directive 453/2010/EU.
-
- SUBSTANCES OF VERY HIGH CONCERN (SVHC) ACCORDING TO REACH, ARTICLE 57:
CAS: 1330-43-4 - Sodiumtetraborate

15.2 Chemical Safety Assessment

None

16 Other information

ENGINE WATER TREATMENT 9-108

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16 Other information (....)

Text of R and S phrase codes used in this safety data sheet:- H272: May intensify fire; oxidizer.; H290: May be corrosive to metals.; H301: Toxic if swallowed.; H302: Harmful if swallowed.; H314: Causes severe skin burns and eye damage.; H318: Causes serious eye damage.; H319: Causes serious eye irritation.; H360: May damage fertility or the unborn child.; H400: Very toxic to aquatic life.; R22: Harmful if swallowed; R25: Toxic if swallowed; R34: Causes burns; R35: Causes severe burns; R50: Very toxic to aquatic organisms; R60: May impair fertility; R61: May cause harm to the unborn child; R8: Contact with combustible material may cause fire.

The data given here is based on current knowledge and experience. This Safety Data Sheet describes the product in terms of safety requirements and does not signify any warranty with regard to the product's properties

The data given here only applies when product used for proper application(s). The product is not sold as suitable for other applications - usage in such may cause risks not mentioned in this sheet. Do not use for other application(s) without seeking advice from manufacturer

The information provided about the product on this Safety Data Sheet has been compiled from knowledge of the individual constituents

OTHER CONTACT INFORMATION MAJOR CHEMICAL OFFICES

For addresses of other Wilhelmsen Ships Service offices, please refer to www.wilhelmsen.com/shipsservice

Wilhelmsen Ships Service Level 1, 39 Park Street South Melbourne, Vic 3205 Australian Tel:+61 3 9630 0900
Emergency 24hrs: +61 3 9630 0998

Wilhelmsen Ships Service INC 210 Edgewater Street US-10305 Staten Island New York United States Telephone
daytime: (+1) 718 815 1310 Fax: (+1) 718 233 3268

Wilhelmsen Ships Service INC 2200 W. Pacific Coast Highway US-90810 Long Beach California, United States
Tel (+1) 562 624 8888 Fax (+1) 562 624 1011

Wilhelmsen Ships Service INC 701 Ashland Ave. Ashland Center Two, Bay 12 US- 19032 Folcroft Pennsylvania
United States Tel (+1) 610 586 7801 Fax (+1) 215 701 0646

Wilhelmsen Ships Service INC. 9400 New Century Drive US-77507 Pasadena Texas United States Telephone
daytime: (+1) 281 867 2000 Fax: (+1) 281 867 2800

Wilhelmsen Ships Service Ltd. Unit 3A NewtonsCourt Crossways DA2 6QL Dartford, Kent United Kingdom Tel
(+44) 1322 282 412 Fax (+44) 1322 284 774

Wilhelmsen Ships Service Ltda Rua Bispo Lacerda nos.61/67 Del Catilho BR 21051120 Rio de Janeiro Brazil Tel
(+55) 21 25 82 8000 Fax (+55) 21 25 82 8001

Wilhelmsen Ships Service (S) Pte Ltd 186 Pandan Loop Singapore 128376 Tel (+65) 6395 4545

Wilhelmsen Ships Service Co., Ltd 12-31 Torihama-cho Kanazawa-ku Yokohama-shi JP-236 0002, Japan Tel
(+81) 45 775 0012 Fax (+81) 45 775 0070

Wilhelmsen Ships Service Hellas SA 100, D. Moutsopoulou & Serifou str GR-185 41 Piraeus Greece Tel (+ 30)
210 4239100 Fax (+ 30) 210 4212480

WMS AS U.A.E. Fl 24 Executive Heights, Tecom C Sheikh Zayed Road (East) Dubai United Arab Emirates Tel
(+971) 4 382 3888



SAFETY DATA SHEET

Product: Hylomar Universal Blue. Light, Medium & Heavy.				
Supplier: Hylomar Limited. Cale Lane. New Springs. Wigan. WN2 1JT Tel; +44 (0)1942 617000. Fax; +44 (0)1942 617001 E-mail; geoff.brown@hylomar.co.uk US Emergency Response No 1-800-373-7542				
2. Hazards identification		HARMFUL, Contains Dichloromethane. Limited evidence of a carcinogenic effect. UK maximum exposure limit (WEL) 8hr TWA = 100ppm. Exposure well in excess of the WEL may result in loss of consciousness and can prove suddenly fatal. Converted in the body to carbon monoxide, which reduces the oxygen carrying capacity of the blood.		
3. Composition/Information on hazardous ingredients				
Material		%	Risk	CAS Number
Dichloromethane		25 – 65	R40	75-09-02
Mono Ethylene Glycol		0.1 – 0.5	R22	107-21-1
4. First aid - Effects of Over Exposure By		4.1 Eye Contact: Severe eye irritation, water & redness. Risk of eye lesions.		
		4.2 Skin Contact: Can be absorbed by intact skin. Slight irritation. In case of prolonged contact risk of burns. In case of repeated contact dry & chapped skin, risk of chronic dermatitis.		
		4.3 Inhalation: Slight nose irritation. At high concentrations, feelings of intoxication, restlessness, dizziness, nausea, vomiting, drowsiness, narcosis, cardiac arrhythmia, risk of chemical pneumonitis, pulmonary oedema. In case of repeated or prolonged exposure, headaches, fatigue & risk of nervous system effects		
		4.4 Ingestion: Breath smells of chloroform. Severe irritation of the mouth, throat, oesophagus & stomach. Nausea, vomiting, abdominal cramps and diarrhoea. Feelings of intoxication, restlessness, dizziness & drowsiness. Risk of cardiac arrhythmia, liver & kidney alterations.		
		Treatment of Over Exposure By:		
		4.5 Eye Contact: Flush eyes with running water for 15 minutes, while keeping the eyelids wide open. Consult with an ophthalmologist in all cases.		
		4.6 Skin Contact: Remove all contaminated shoes & clothing. Clean with soap & water. Clean clothing. Consult with Doctor in case of persistent pain or redness		
		4.7 Inhalation: Remove to fresh air, lying person down with the head higher than the body. Keep warm. Oxygen or cardiopulmonary resuscitation if necessary. Consult with Doctor in case of respiratory & nervous symptoms.		
		4.8 Ingestion: Consult with Doctor in all cases, take to hospital. If subject is completely conscious rinse mouth with water – do not allow vomiting. If the subject is unconscious loosen collar & tight clothing, lay victim on his/her left side. Oxygen or cardiopulmonary resuscitation if necessary. Keep warm. Pulmonary resuscitation (Oxygen therapy). Prevention or treatment of pulmonary oedema & bacterial secondary infection. Rest & 48 hours medical surveillance.		
		4.9 General: Can induce an increase of the carboxyhemoglobin level. Do not give adrenergic drugs		
5. Fire fighting measures		4.10 Suitable Extinguishing Media : Water spray, foam, powder & CO2		
		4.11 Unsuitable Extinguishing Media : No restriction		
		4.12 Exposure Hazards: Non-combustible. Formation of dangerous gas/vapours in case of decomposition (see Section 10). No flash point but gas/vapours may form flammable mixtures in presence of air.		
		4.13 Protective Equipment for Fire Fighters: Wear self-contained breathing apparatus when in close proximity or in confines spaces. Protect intervention team with water spray when approaching fire.		
6. Accidental release measures		6.1 Personal Precautions: Local ventilation. Protective clothing, gloves, goggles & overalls		
		6.2 Environmental Precautions: Avoid discharge into environment (sewers, rivers, and soils). Notify appropriate authorities in case of discharge.		

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	6.3 Clean-Up and Neutralisation Methods: If possible dam large quantities with sand or earth. Remove product with inert absorbent, sand or vermiculite. Place everything in a closed, labelled container compatible with the product. Store in a safe isolated place. Disposal, see section 13.
7. Handling and storage	7.1 Precautions for Safe Handling: Observe normal standards of industrial hygiene for handling chemicals. Avoid contact with skin & eyes. Avoid breathing vapours. 7.2 Storage Precautions: Store in a cool, dry place between 5° - 25°C with adequate ventilation. 7.3 Other Information : Shelf life is 2 years when stored in original unopened containers as detailed in para 7.2
8. Exposure controls/Personal protection	8.1 Technical Protective Measures : Atmospheric levels of vapour should be maintained at the lowest level reasonably practicable below the control limit 8.2 Exposure Control Limits : UK Maximum Exposure Limit (WEL) 8 hour TWA = 100 ppm (STEL 15 min TWA = 300 ppm) 8.3 Respiratory Protection: Face mask with type A cartridge in cases where control limits may be exceeded. Self contained breathing apparatus in case of large uncontrolled emissions or in all circumstances when the mask & cartridge do not give adequate protection. Use only HSE approved equipment. 8.4 Hand Protection: Solvent resistant gloves 8.5 Skin Protection : Overalls 8.6 Eye / Face Protection : Safety glasses with eye shields, or goggles 8.7 Recommended monitoring methods: Drager tube, methylene chloride 100/a
9. Physical and chemical properties	9.1 Physical State : Thixotropic gel 9.2 Colour : Blue 9.3 Odour : Sweet 9.4 Boiling Point / Range : 40°C 9.5 Flammability : N/A 9.6 Flashpoint : None 9.7 Auto ignition Temperature : 600°C 9.8 Explosive Limits : Can form explosive mixtures with oxygen 9.9 Vapour Pressure : 355mm Hg @ 20°C, 515mm Hg @ 30°C 9.10 Vapour Density : 2.93 (air = 1) 9.11 Relative density / Specific Gravity : 1.32 9.12 Solubility in Fats and Oils: Degreases. Miscible with most organic solvents 9.13 Viscosity : Light thixotropic gel
10. Stability and reactivity	10.1 Conditions to Avoid: Contact with red-hot surfaces or naked flames may generate acid fumes. 10.2 Materials to Avoid: Alkali metals may cause reaction. 10.3 Hazardous Decomposition Products : Contact with red-hot surfaces or naked flames may generate small quantities of toxic acid fumes or hydrogen chloride
11. Toxicological Information	Acute Toxicity: LD50 Oral Rat; 1410 – 2524 mg/kg, LD50 Dermal Rat; >2000 mg/kg, LC50 Inhalation Rat; 6 hr 15000 ppm, Irritation; Rabbit – irritant to skin & eyes, Sensitization, no data. Chronic Toxicity: Inhalation, after repeated exposure, various species, target organ; liver, kidney, lungs, central nervous system > = 1000 ppm. Mutagenic effect in vitro but not vivo. No effect on reproduction. Oral route, after repeated exposure, target organ; liver > = 200 mg/kg. Inhalation after prolonged exposure, mouse, target organ; liver/lungs, carcinogenic effect. Inhalation after a single exposure, cardiac sensitization following adrenergic stimulation. Comments: Irritant effect for skin & eyes. Risk of anaesthetic effect & cardiac sensitization. Carcinogenic effect not applicable to human. Risk of effect on the kidney, liver & lung. Risk of the central nervous system effect. The compound is metabolised into carbon monoxide in various animal species & humans leading to methemoglobinemia

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12. Ecological information	<p>Acute ecotoxicity: Fishes, various species LC50, 96 hr between 135 – 502 mg/l. Fishes, Salmo gairdneri, LOEC 96 hr, 5.5 mg/l. Conditions fish embryos crustaceans, Daphnia EC 50, 48 hr between 135 – 2270 mg/l. Algae, various species, EC 50, 48 hr > 662 mg/l</p> <p>Chronic ecotoxicity: Fishes, Poecilia reticulata, LC50, 14 days 295 mg/l, Fishes Pimephales promelas, NOEC equilibrium 8 days 357 mg/l</p> <p>Mobility: Air, Henry's Law constant (H) between 200 – 400 Pa.m3/mol. Conditions 20°C. Water evaporation, t1/2 between 0.3 – 48 hrs. Conditions environmental concentration: 1ppb – 1 ppm. Soil sediments, log KOC = 1.68. Result significant evaporation & percolation. Conditions: calculated value.</p> <p>Abiotic degradation: Air indirect photo-oxidation, t1/2 = 6 months, conditions: sensitizer OH radical. Water, hydrolysis, t1/2 > 1.5 years. Result: non-significant hydrolysis and photolysis. Soil. Result: non-significant hydrolysis.</p> <p>Biotic degradation: Aerobic test: Ready biodegradability/MITI, degradation between 5 – 25% (BOD) 28 days. Result: non-readily biodegradable. Aerobic test: intrinsic biodegradability, degradation = 100%, 28 days, result intrinsically biodegradable. Conditions, adapted culture Aneobic t1/2 = 11 days</p> <p>Potential for bioaccumulation: Bioconcentration: Fishes, Cyprinus carpio, BCF between 6.4 – 40, 42 days. Conditions: test concentration 0.025 ppm Bioconcentration: Log PO/W between 1.25 – 1.3. Conditions: measured value</p> <p>Comments:- Product is not significantly hazardous for the environment as; low toxicity for aquatic organisms, low bioaccumulation potential, considerable volatility, weak persistence (global, half life ca 6 months)</p>
13. Disposal considerations	<p>Disposal Considerations : Residues should be stored in drums and advice sought from Specialist Waste Disposal Contractors</p> <p>Statutory provisions; local Waste disposal Authority</p>
14. Transport information	<p>UN Number: 2810</p> <p>Packing Group: III. Class 6.1</p> <p>Proper Shipping Name: Toxic liquid organic N.O.S. Contains Dichloromethane</p> <p>Marine Pollutant: No</p>
15. Regulatory Information	<p>15.1 Classification : Carc, Cat 3, Harmful</p> <p>15.2 Risk Phrases :</p> <p>15.3 R40 Limited evidence of a carcinogenic effect.</p> <p>15.3 Safety Phrases :</p> <p>15.4 S2. Keep out of reach of Children.</p> <p>S23. Do not breathe fumes.</p> <p>S24/25. Avoid contact with eyes & skin.</p> <p>S36/37. Wear suitable protective clothing & gloves</p> <p>15.5 Specific EC Controls: CHIP 3.1 Regulations 2005 Article 31 REACH</p> <p>15.6 Relevant UK Legislative Controls :</p>
16. Other information	<p>16.1 Training Advice: n/a</p> <p>16.2 Recommended Uses and Restrictions: For use as a flange and thread sealant</p> <p>16.3 Suppliers of Key Data :</p> <p>Suppliers Safety Data Information.</p> <p>CHIP 3.1 regulations 2005</p> <p>Article 31 REACH</p> <p>EH40 amended October 2007</p> <p>Annex 1(67/548/EEC)</p>

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SAFETY DATA SHEET

Every effort has been made to ensure that the information in this Safety Data Sheet is accurate and reliable, but the company cannot accept liability for any loss, injury or damage, which may result from its use. Data given in this Safety Data Sheet is solely for the guidance in safe handling and use of the product by customers - they do not constitute a specification. Customers are reminded that there may be applications of our products, which are, protected by patent, under which they have no rights whatsoever. If any difficulties should arise, we will be happy to discuss them. Customers are encouraged to carry out their own tests. Before using any product, read the label carefully.

G. Brown 25/06/2009.

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MATERIAL SAFETY DATA SHEET

According to EU Directive 93/112/EEC
READ AND UNDERSTAND MATERIAL SAFETY DATA SHEET
BEFORE HANDLING OR DISPOSING OF PRODUCT

32794 HEAVY FUEL OIL,> 420 MM²/S (AT 50C),D=0.991 max

1. PRODUCT AND COMPANY NAME

PRODUCT CODE AND NAME

32794 HEAVY FUEL OIL,> 420 MM²/S (AT 50C),D=0.991 max

DESCRIPTION

Heavy Fuel Oil

COMPANY

FUEL & MARINE MARKETING LLC
3336 Richmond Ave
Houston, TX 77098
U.S.A.
Tel : +1(713)752-3942
Fax : +1(713)752-3981
Emergency Phone Number : +44/(0)18 65 407 333
Medical Emergency Number : +1/(504)680-1900

2. COMPOSITION/INFORMATION ON INGREDIENTS

Name	% Wt	CAS No.	EC No.
Heavy fuel oil	100	68476-33-5	270-675-6
T R 45	May cause cancer.		
R 52/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.		

3. HAZARDS IDENTIFICATION

Warning statement

CONTAINS COMPONENTS WHICH MAY CAUSE CANCER IN MAN
HYDROGEN SULPHIDE MAY BE RELEASED WHEN HEATED
FLAMMABLE HEADSPACE VAPOURS MAY BE PRESENT
HARMFUL TO THE AQUATIC ENVIRONMENT

Acute effects of exposure to man

Inhalation

Contains or may release hydrogen sulphide (H₂S) gas. H₂S concentrations above permissible concentrations can cause headache, dizziness, nausea, vomiting, and diarrhoea. At concentrations above 300 ppm, respiratory paralysis, causing unconsciousness and death, can occur.

Skin contact

Prolonged or widespread skin contact may result in the absorption of potentially harmful amounts of material.
Brief contact may cause slight irritation. Prolonged contact, as with clothing wetted with material, may cause more severe irritation and discomfort, seen as local redness and swelling.
Believed not to be a skin sensitiser.

Eye contact

May cause irritation, experienced as mild discomfort and seen as slight excess redness of the eye.

32794 HEAVY FUEL OIL,> 420 MM²/S (AT 50C),D=0.991 maxIngestion

If more than several mouthfuls are swallowed, abdominal discomfort, nausea and diarrhoea may occur.

Chronic effects of exposure to manMedical conditions aggravated by exposure

Because of its irritating properties, repeated skin contact may aggravate an existing dermatitis (skin condition).

Other remarks

This product, or a component of this product, has caused skin cancer when repeatedly applied to the skin of laboratory animals without any effort to remove the material between applications.

Effects of exposure to the environment

Some short-term toxicity to aquatic and marine organisms.

4. FIRST AID MEASURES**Route of exposure**Inhalation

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, qualified personnel may administer oxygen. Get immediate medical attention. External cardiac massage may be instituted if the heart has stopped.

Skin contact

Wash skin with plenty of soap and water until all traces of material are removed. Remove and clean contaminated clothing and shoes. Get medical attention if skin irritation persists or skin contact has been prolonged.

Eye contact

Immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids apart while flushing to rinse entire surface of eye and lids with water. Get medical attention.

Ingestion

The ingestion of large amounts of product is unlikely. Should it occur, give two glasses of water (500 ml) if patient is conscious and can swallow. Do not induce vomiting. Get immediate medical attention. Never give anything by mouth to an unconscious or convulsing person.

Other recommendations

Remove and dry-clean or launder clothing soaked or soiled with this material before reuse. Dry cleaning of contaminated clothing may be more effective than normal laundering. Inform individuals responsible for cleaning of potential hazards associated with handling contaminated clothing.

The odour of hydrogen sulphide (H₂S) gas is offensive and similar to rotten eggs. H₂S gas deadens the sense of smell, even at low concentrations. DO NOT depend on odour to detect presence of gas.

32794 HEAVY FUEL OIL, > 420 MM²/S (AT 50C), D=0.991 max

Warning. Rescue of overexposed persons should be attempted only after notifying others of the emergency and only if appropriate personal protective equipment and positive pressure self-contained breathing apparatus (SCBA) is available.

5. FIRE-FIGHTING MEASURESSuitable extinguishing media

Use water fog, dry powder, foam or carbon dioxide. Use water to cool fire-exposed containers. If a leak or spill has not ignited, use water fog to disperse the vapours and to provide protection for personnel attempting to stop the leak.

Extinguishing media which must not be used for safety reasons

Water jet

Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases

Hydrogen sulphide (H₂S) may be released when heated.
In case of fire - Always call the fire brigade. Small fires, such as those capable of being fought with a hand-held extinguisher, can normally be fought by a person who has received instruction on the hazards of flammable liquid fires. Fires that are beyond that stage should only be tackled by people who have received hands-on training.
Ensure escape path is available.

Special protective equipment for firefighters

The nature of special protective equipment required will depend upon the size of the fire, the degree of confinement of the fire and the natural ventilation available. Fire-resistant clothing and self-contained breathing apparatus is recommended for fires in confined spaces and poorly-ventilated areas. Full fire-proof clothing is recommended for any large fires involving this product.

6. ACCIDENTAL RELEASE MEASURESProcedures in case of accidental release or leakage

Ventilate area. Avoid breathing vapour. Use self-contained breathing apparatus or supplied air mask for large spills or confined areas. Contain spill if possible. Wipe up or absorb on suitable material and shovel up. Prevent entry into sewers and waterways. Avoid contact with skin, eyes or clothing.

7. HANDLING AND STORAGEHandling

Local exhaust ventilation recommended if generating vapour, dust, or mist. If exhaust ventilation is not available or inadequate, use approved respirator as appropriate.

This product may contain volatile hydrocarbons which may accumulate in the container headspace, thereby creating a flammable or explosive atmosphere.

Hydrogen sulphide (H₂S) may be released when heated.

32794 HEAVY FUEL OIL, > 420 MM²/S (AT 50C), D=0.991 maxStorage

Transport, handle and store in accordance with applicable local regulations and only in labelled containers designed for this product. Ground and bond shipping container, transfer line and receiving container.

Keep away from heat, sparks, flame and other sources of ignition. Protect containers against static electricity, lightning and physical damage.

8. EXPOSURE CONTROLS/PERSONAL PROTECTIONRespiratory protection

Airborne concentrations should be kept to lowest levels possible. If vapour, mist or dust is generated, use approved respirator as appropriate. Supplied air respiratory protection should be used for cleaning large spills or upon entry into tanks, vessels, or other confined spaces.

Oxygen levels should be at least 19.5 % in confined spaces or other work areas.

Hand and skin protection

Protective clothing such as uniforms, coveralls or lab coats should be worn. Launder or dry-clean when soiled. Gloves and boots resistant to chemicals and petroleum distillates required.

Eye protection

Chemical type goggles or face shield recommended to prevent eye contact.

Exposure limit for the product

None established for product.

Hydrogen sulphide (H₂S) may be released on heating and may accumulate in confined spaces.

Hydrogen sulphide : ACGIH TLV-TWA 10 ppm STEL 15 ppm.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Dark brown liquid
Odour	Petroleum odour
Flash point, °C	60 min (PMCC)
Relative density	0.991 max @ 15 °C
Viscosity	> 420 mm ² /s @ 50 °C
Boiling point/range, °C	160 - 600

10. STABILITY AND REACTIVITYConditions to avoid

Sources of ignition such as naked flames, sparks, hot surfaces.

Materials to avoid

Avoid contact with strong oxidising agents.

Hazardous decomposition products

Carbon monoxide, carbon dioxide, aldehydes and ketones.

Hydrogen sulphide (H₂S) may be released on heating and may accumulate in confined spaces.

32794 HEAVY FUEL OIL,> 420 MM²/S (AT 50C),D=0.991 max**11. TOXICOLOGICAL INFORMATION****Acute**Inhalation

Likely to be irritating to the respiratory tract if high concentrations of mists or vapour are inhaled.

May cause nausea, dizziness, headaches and drowsiness if high concentrations of vapour are inhaled.

May be toxic when hydrogen sulphide is present in the vapour.

Skin contact

Slightly irritating to the skin.

Believed not to be a skin sensitiser.

Eye contact

Slightly irritating to the eyes.

Ingestion

Unlikely to cause harm if accidentally swallowed in small doses, though larger quantities may cause nausea and diarrhoea.

Chronic

This product, or a component of this product, has caused skin cancer when repeatedly applied to the skin of laboratory animals without any effort to remove the material between applications.

12. ECOLOGICAL INFORMATIONMobility

Spillages may penetrate the soil causing ground water contamination.

Persistence and degradability

Believed to biodegrade slowly.

Potential to bioaccumulate

This product is expected to bioaccumulate.

Aquatic toxicity

Some short-term toxicity to aquatic and marine organisms.

Limited data available indicates aquatic toxicity in the range 10-100 mg/l.

Remarks

This product, due to its density, can either float, sink or form emulsions if spilled on to water depending on the environmental conditions.

13. DISPOSAL CONSIDERATIONSDisposal

Dispose in a safe manner in accordance with local/national regulations.

Remarks

None

14. TRANSPORT INFORMATIONSea transport

UN No

1268

Proper shipping name

PETROLEUM DISTILLATES, N.O.S. (contains hydrocarbons)

32794 HEAVY FUEL OIL,> 420 MM²/S (AT 50C),D=0.991 max

IMO, IMDG Class/Packing group	3.3 / III
Marine pollutant	No
EmS No	3-07
MFAG Table No	311

Road/rail transport

UN No	1268
Proper shipping name	PETROLEUM DISTILLATES, N.O.S. (contains hydrocarbons)
ADR/RID Class/Packing group	3,31(c) / III
Hazard identification No	30
CEPIC Tremcard No	30G35
UK Emergency action code	3Z
Pollutant to the aquatic environment	No

Inland waterways

ADNR Class	3,31(c)
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Air transport

UN No	1268
Proper shipping name	PETROLEUM DISTILLATES, N.O.S. (contains hydrocarbons)
IATA/ICAO Class/Packing group	3 / III

15. REGULATORY INFORMATION**Labelling information**

Heavy fuel oil EC No. 270-675-6

Indication of danger

T TOXIC

Risk phrases

T R 45 May cause cancer.
 R 52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety phrases

S 53 Avoid exposure - obtain special instructions before use.
 S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
 S 61 Avoid release to the environment. Refer to special instructions/Safety data sheets.

32794 HEAVY FUEL OIL,> 420 MM²/S (AT 50C),D=0.991 max**Additional information**

Refer to any national measures that may be relevant.

16. OTHER INFORMATION

Hazardous concentrations of hydrogen sulphide (H₂S) gas can accumulate in storage and rundown tanks, marine vessel compartments, sump pits or other confined spaces. When opening valves, hatches and dome covers, stand upwind, keep face as far from the opening as possible and avoid breathing any gases or vapours. When exposure concentrations are unknown and respiratory protection is not used, personal H₂S warning devices should be worn. These devices should not be relied on to warn of lifethreatening concentrations. H₂S fatigues the sense of smell rapidly. The rotten egg odour of H₂S disappears quickly, even though high concentrations are still present. The company recommends that all exposures to this product be minimized by strictly adhering to recommended occupational control procedures to avoid any potential adverse health effects.

The ash from combustion products will contain nickel, vanadium and other potentially toxic heavy metal oxides. Take appropriate precautions to avoid contact with and inhalation of ash and ash dust from combustion and exhaust spaces.

All information contained in this Material Safety Data Sheet and, in particular, the health and safety and environmental information is accurate to the best of our knowledge and belief as at the date of issue specified. However, the Company makes no warranty or representation, express or implied, as to the accuracy or completeness of such information.

The provision of this Material Safety Data Sheet is not intended, of itself, to obviate the need for all users to satisfy themselves that the product described is suitable for their individual purposes and that the safety precautions and environmental advice are adequate for their individual purposes and situation. Further, it is the user's obligation to use this product safely and to comply with all applicable laws and regulations concerning the use of the product.

The company accepts no responsibility for any injury, loss or damage, consequent upon any failure to follow the safety and other recommendations contained in this Material Safety Data Sheet, nor from any hazards inherent in the nature of the material, nor from any abnormal use of the material.

Version nr : 0.05



SAFETY DATA SHEET

FUELSOLV PEP990

1 IDENTIFICATION OF PREPARATION AND OF COMPANY

1.1 Identification of the substance or preparation

Product : FUELSOLV PEP990

1.2 Use of substance/preparation

Combustion catalyst for improving carbon burn out in fireside applications

1.3 Company/undertaking identification

GE Betz S.r.l.
Strada Consortile, 7
03013 FERENTINO (FR)
Tel : +39 07753911
e-mail : emea.productstewardship@ge.com

1.4 Emergency telephone

Centro Antiveleni Ospedale Niguarda
0039 0266101029
Milano

2 HAZARDS IDENTIFICATION

Important hazards

- Health/physical hazard
 - Further to the 22nd Adaptation to Technical Progress to EU directive 67/548, this product needs not to be classified with Risk phrase 65 as its kinetic viscosity is greater than $7 \times 10^{-6} \text{ m}^2/\text{s}$
 - Limited evidence of a carcinogenic effect.
 - Irritating to skin.
 - Risk of serious damage to eyes.
- Symptoms of exposure
 - Prolonged exposure may cause drying and cracking of skin.
- Environmental hazards
 - Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

3 COMPOSITION / INFORMATION ON INGREDIENTS

Chemical description

Blend of dispersant and surfactants in light oil.

Hazardous component(s)	EINECS/ELINCS #	CAS #	Conc.
Sodium diisotridecyl sulphosuccinate Xi, N, R38-41-51/53	220-219-7	2673-22-5	< 10 %
Gas oil Xn,N, R40-65-66-51/53	-	N/A	30 - 60 %
Tall oil fatty acid, aminoethylethanolamine, imidazoline der. Xi, R36/38	272-902-4	68919-76-6	> 20 %
Nonyl phenol ethoxylate (>7-11 EO) Xn,N, R22-41-51/53	NLP No. 500-024-6	9016-45-9	20 - 25 %



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FUELSOLV PEP990

Hazardous component(s)	EINECS/ELINCS #	CAS #	Conc.
Isotridecan-1-ol Xi, N, R36/38-50	248-469-2	27458-92-0	0.1 - 1 %
2-Methylpentane-2,4-diol (Hexylene glycol) Xi, R36/38	203-489-0	107-41-5	0.1 - 1 %

Remarks

The classification of the above substance(s) is given, including the symbol letters and R phrases which are assigned in accordance with their physicochemical, health and environmental hazards. Please refer to section 16 (Relevant R phrases, used in sections 2 and 3 of this SDS), where the full text of each relevant R phrase is listed.

4 FIRST AID MEASURES

Skin contact	Remove contaminated clothing. Wash thoroughly with soap and water. If irritation persists, seek medical advice.
Eye contact	Flush immediately with plenty of running water. Continue rinsing for at least 10 minutes. Seek medical attention.
Inhalation	Remove victim to fresh air and allow to rest.
Ingestion	First rinse mouth with water. Immediately give 1-2 glasses of water, if victim is fully conscious. Do NOT induce vomiting! Seek medical attention.

5 FIRE-FIGHTING MEASURES

Extinguishing Media	
- Suitable	Carbon dioxide, dry chemicals, foam. Avoid water if possible.
Special protective equipment for fire fighters	Self contained breathing apparatus. (CEN : EN 137) Protective clothing (CEN : EN 469) Protective gloves (CEN : EN 659) Helmet (CEN : EN 443)
Special exposure hazards	Oxides of carbon, nitrogen, and sulphur evolved in fire.
Flash point (PMCC)	67 °C

6 ACCIDENTAL RELEASE MEASURES

Personal precautions	Wear protective clothing, gloves and safety goggles. Please refer also to section no. 8 'Exposure controls' for further information.
Environmental precautions	Prevent from entering sewers or the immediate environment. Do not empty into drains, dispose of this material and its container to hazardous or special waste collection point.



SAFETY DATA SHEET

FUELSOLV PEP990

Methods for Cleaning Up

- on soil

Remove sources of ignition.
Absorb onto inert material and dispose of according to Hazardous Waste Regulations.
Remove small spills with plenty of water.

7 HANDLING AND STORAGE

7.1 Handling

Combustible.
Do not use around sparks or flames.
Earth containers during filling or discharge when performed at temperatures at or above the product flash point.

7.2 Storage

Protect from freezing.
Do not store at elevated temperatures.
Store containers closed when not in use.

7.3 Specific use(s)

Only for professional and industrial users

Maximum storage stability (days) 270

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limit values

- MAC

2-Methylpentane-2,4-diol (Hexylene glycol): MAC-TGG 25ppm, 125 mg/m³ (8hr) C

Exposure controls

- Recommended engineering controls

Adequate ventilation to maintain air contaminants below exposure limits.

- Respiratory protection

In case of insufficient ventilation, use a breathing mask with filter type: A2-P2
CEN : EN 136; EN 141

- Hand protection

Neoprene gloves (Protection against unintentional short-term contact)
CEN : EN 374-1/2/3; EN 420

- Eye protection

Splash proof chemical goggles.
CEN : EN 166

- Skin protection

Protective clothing.
CEN : EN 340; EN 369; EN 465

- Environmental exposure controls

Prevent from entering in public sewers or the immediate environment.
Do not empty into drains, dispose of this material and its container to hazardous or special waste collection point.

9 PHYSICAL AND CHEMICAL PROPERTIES

9.1 General information

Appearance

Viscous liquid

Colour

Amber

Odour

Slight hydrocarbon

9.2 Important health, safety and environmental info

pH in aqueous solution

10,8 (5% Emulsion)

Flash point (Pensky/Martens)

(°C) 67

Density at 20°C (kg/m³)

918



SAFETY DATA SHEET

FUELSOLV PEP990

9.2 Important health, safety and environmental info

Solubility in water (% weight)	Insoluble in water
Viscosity at 20°C (mPas)	70
Relative vapour density (air=1)	> 1
Evaporation rate (ether=1)	< 1

9.3 Other information

Melting point, (°C)	10
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10 STABILITY AND REACTIVITY

10.1 Conditions to avoid	Protect from freezing.
10.2 Materials to avoid	Avoid contact with strong oxidisers.
10.3 Hazardous decomposition products	Oxides of carbon, nitrogen, and sulphur evolved in fire.

11 TOXICOLOGICAL INFORMATION

Mammalian Test Data

- Oral LD50, rat (mg/kg)	> 2000 (estimated value)
- Dermal LD50, rabbit (mg/kg)	> 2000 (estimated value)

Exposure hazard

- Inhalation	May cause irritation to respiratory organs. Prolonged exposure may cause dizziness and headache.
- Skin contact	Causes irritation. May cause dermatitis.
- Eye contact	Risk of serious damage to eyes.
- Ingestion	May cause slight gastrointestinal irritation.
- Chronic effects	Limited evidence of a carcinogenic effect.

12 ECOLOGICAL INFORMATION

Ecotoxicity	No data available
Persistence and degradability	No data available
Summary	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The evaluation of environmental hazards is based on the concentration limits as set out in directive 1999/45/EC.

13 DISPOSAL CONSIDERATIONS

Disposal of product	According to Hazardous Waste Regulations. EWC (European Waste Code) recommendation : 13 08 02 13 Oil wastes and wastes of liquid fuels. 13 08 Oil wastes not otherwise specified. 13 08 02 Other emulsions. Depending on the origin and state of the waste, other EWC numbers may be applicable too.
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SAFETY DATA SHEET

FUELSOLV PEP990

Disposal of packaging

According to Hazardous Waste Regulations.

EWC (European Waste Code) recommendation : 15 01 10
15 Waste packaging; absorbents, wiping cloths, filter materials and protective clothing not otherwise specified.
15 01 Packaging (including separately collected municipal packaging waste).
15 01 10 Packaging containing residues of or contaminated by dangerous substances.
Depending on the origin and state of the waste, other EWC numbers may be applicable too.

14 TRANSPORT INFORMATION

Substance id.no. (SIN) (UN No.) 3082

Correct shipping name Environmentally hazardous substance, liquid, n.o.s.

- Contains Gas oil mixture

Land transport

- Transport hazard label 9
Miscellaneous dangerous substances
Environmentally hazardous substance
- RID/ADR classification 9
- Packaging group III
- Tunnel restriction code (E)

Maritime transport

- Transport hazard label 9+N
Miscellaneous dangerous goods
Marine pollutant.
- IMO-IMDG class 9
- Packaging group III
- EmS no. F-A, S-F
- MFAG no. See Emergency action guide.
The treatment recommended in this Guide is specified in the appropriate tables and more comprehensive in the appropriate sections of the Appendices.

Air transport

- Transport hazard label 9
Miscellaneous dangerous goods
Environmentally hazardous substance
- ICAO/IATA classification 9



SAFETY DATA SHEET

FUELSOLV PEP990

15 REGULATORY INFORMATION

EEC labelling information

- Symbol(s)



Harmful:Xn

Dangerous for the
environment: N

- Contains

Gas oil

- R Phrase(s)

R 38 :Irritating to skin.

R 40 :Limited evidence of a carcinogenic effect.

R 41 :Risk of serious damage to eyes.

R 51/53 : Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

- S Phrase(s)

S 26 :In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S 28 :After contact with skin, wash immediately with plenty of soap and water.

S 36/37/39 :Wear suitable protective clothing, gloves and eye/face protection.

S 61 :Avoid release to the environment. Refer to special instructions/Safety data sheets.

- EINECS number

All ingredients of this product are listed in EINECS or ELINCS, unless specifically exempted under the EEC Directive 67/548/EEC.

16 OTHER INFORMATION

Nature of revision

Correction in Section: 14

Based on EC Directive /
Regulations

1999/45/EC

2001/118/EC

2001/58/EC

(EC) No 1907/2006 (REACH)

This information is based on our current knowledge and is intended to describe the product for the purpose of safety requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

Relevant R phrases, used in
sections 2 and 3 of this SDS

R 22 : Harmful if swallowed.

R 38 : Irritating to skin.

R 40 : Limited evidence of a carcinogenic effect.

R 41 : Risk of serious damage to eyes.

R 65 : Harmful: may cause lung damage if swallowed.

R 66 : Repeated exposure may cause skin dryness or cracking.

R 36/38 : Irritating to eyes and skin.

R 51/53 : Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

SAFETY DATA SHEET

According To Regulation (EC) NO 1907/2007
In Compliance with National GPP Criterion

Version No 1 (26th April 2012)

ADAMS PROFESSIONAL PINE FLOOR DETERGENT 5Litre**1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY / UNDERTAKING.**

PRODUCT DETAILS
PRODUCT CODE
APPLICATION
SUPPLIER

FLOOR CLEANER
AFC-2012/1
CLEANS PROTECTED FLOORS AND HARD SURFACES
SKAT LTD
BLB 24A
Bulebel Ind. Est
Zejtun
ZTN3000 Malta
info@skatmalta.com
00356 21896169

Information In Case Of Emergency

2.COMPOSITION

Name	CAS	Content	R
Isopropyl Alcohol	67-63-0	1- 10%	11,36,67
400ppm TWA			
Caprylth - 9	53563-70-5	5-10%	N/A
Carboxylic Acid			
Glycereth-6			
Cocoate	68201-46-7	1-10%	N/A

3.HAZARDS IDENTIFICATION

This product according to EU directive CEE 379/88 is classified as non irritant and non H hazardous
This is not classed as a flammable

Human Health

This product may cause minor irritation on eye contact.

4.FIRST AID MEASURES**After Inhalation**

General first aid, rest, warmth and fresh air.
If irritation or asthmallike symptoms persist kindly seek medical advice.

SAFETY DATA SHEET

After Skin Contact

Rinse affected area with clean water.
If symptoms persist kindly seek medical advice.

After Eye Contact

Rinse thoroughly with plenty of water for at least 15 minutes.
If any discomfort continues kindly seek medical advice.

After Ingestion

Immediately rinse mouth with water and provide fresh air.

5. FIRE FIGHTING MEASURES

Extinguishing Media

Use Fire Extinguishing Methods Suitable To Surrounding Conditions.

Special Hazards Caused By Substance ,Its Products Or Combustion Or Resulting Gases

This Product Is Not Flammable

6. ACCIDENTAL RELEASE MEASURES

Personal Safety Precautions

See Safety Measures in Section 7 and 8

Measures For Environmental Protection

Neutralise with Water ,do not use Solvents but sweep up or otherwise absorb.

Measures for Cleaning and Collecting
Dispose Of According to Section 13

7. HANDLING & STORAGE

Handling

.Do Not Mix With Other Chemicals
Avoid Contact With Eyes
Keep Out Of Childrens Reach
Do Not Take Internally

Storage

Store in closed original container, in a dry and cool area, away from heat sources and protected from light, at temperatures 0 - 30 Degrees C.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

General Protection

Keep Away From Food/Drinks, Beverages and Animal Feeds.

Hand Protection

Product is Mild Detergent but for repeated skin contact suitable protective gloves may be used.

Personal Protection

Wash hands after handling.

Respiratory Protection

Product in dilution is mild and should not cause any allergic reaction.

9. PHYSICAL & CHEMICAL PROPERTIES

<u>Appearance</u>	LIQUID
<u>Odour</u>	PINE PERFUME
<u>Colour</u>	GREEN
<u>Solubility in Water</u>	Soluble
<u>Boiling Point</u>	>100 Degrees C
<u>pH Value</u>	7.5-9.0
<u>Relative Density</u>	approx 1.000 @ 20C
<u>Viscosity</u>	Liquid
<u>Percent Volatile By Volume (%)</u>	99-100
<u>Vapour Density (Air=1):</u>	2
<u>Evaporation Rate</u>	N/A

10. STABILITY & REACTIVITY

Stability

Stable under normal temperature conditions and recommended use.

Conditions to avoid

Do not heat or mix with other products.

11. TOXICOLOGICAL INFORMATION

Eye Contact

May cause temporary eye irritation.

Skin Contact

Product diluted is mild and should not cause irritation.

Ingestion

May cause discomfort if swallowed.

SAFETY DATA SHEET

12. ECOLOGICAL

Ecotoxicity

This product is a biodegradable product therefore it is not expected to be toxic to aquatic organisms.

13. DISPOSAL CONDITIONS

General Info:- When handling waste, product and packaging are to be disposed in accordance with local authority requirements.

14. TRANSPORT INFORMATION

General Notes

Exempt From Transport Classification and Labelling

Transport Of Product in compliance with provisions of the ADR Road, RID for Rail, IMDG for Air Transport

REGULATORY INFORMATION

Risk Phrases

Not Classified.

Safety Phrases

Keep out of reach of children.

Detergent Labelling

Anionic 5 -15 %, 1-10% Non Ionic Surfactant, 1-10% IPA, Perfume.

EU DIRECTIVES

Dangerous Preparations Directive 1999/45/EC

NATIONAL REGULATIONS

Chemicals Regulations 2002.No.1689

The surfactants comply with the biodegradability criteria as laid down in Regulation (EC) No.648/2004 on detergents.

Risk Phrases

Xi	Irritant
22	Harmful If Swallowed
31	Contact With Acids Liberates Toxic Gas
36/37	Irritating To Eyes and Respiratory
20/21/22	Harmful by Inhalation In Contact With Skin
36/37/38	Irritating To eyes Respiratory System and Skin
41	Risk of Serious Damage To Eyes


Safety Phrases

2	Keep Out of Reach of Children
.7/8	Keep Container Tightly Closed
13	Keep Away from Food and Drink
22	Do Not Breathe Dust
25	Avoid Contact With Eyes
26	In Case of Contact With Eyes Rinse Immediately with Plenty of Water
36/37	Wear Suitable Protective Clothing
39	Wear Eye/Face Protection
45	In Case of Accident or if you feel unwell seek medical Advice

Special Warning of Certain Preparations; WARNING Do Not Use With Other Products

16. OTHER INFORMATION

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. This Company shall not be held liable for any damage from handling or from contact with the above product.

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		Supersedes : LT16590 EU

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Commercial Product Name : ES COMPLEAT PG CONCENTRATE
Product code : CC2830 (3.785 L); CC2831 (208 L Drum); CC2832 (Bulk); CC2849 (18.9 L Pail); CC2833 (1040 L Tote tanks); CC2751M; CC2753M; (208 L Drum); CC2853M; CC2832M (Bulk)

1.2. Relevant identified uses of the substance or mixture and uses advised against

Main use category : Professional use, Consumer use
Specific use(s) : Coolant

1.3. Details of the supplier of the safety data sheet

Company : Cummins Filtration
Unit 3 / Valley Drive / Valley Park / Rugby
CV21 1 TN Warwickshire, The United Kingdom
Tel. +44 (0) 1788 853600

Company : Cummins Filtration
Zone Industrielle du Grand Guelen
29556 -Quimper Cedex 9, France
Tel. : +33 (0) 2 98 76 49 49

Company : Cummins Filtration
Catenbergstraat 1
B-2840 -Rumst, Belgium

Tel. : +32 3 456 3000
E-mail address: productinfosds@cummins.com

1.4. Emergency telephone number

Emergency telephone : +44 (0) 1235 239670 (Carechem24) (This telephone number is available during office hours only.)

IRELAND (REPUBLIC OF)
National Poisons Information Centre
Beaumont Hospital
+353 1 8379964
UNITED KINGDOM
National Poisons Information Service
(Birmingham Centre)
+44 (0) 870 600 6266 (UK only)
City Hospital

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture


2.1.1. Classification according to Regulation (EU) 1272/2008

CLP-Classification : The product is non-dangerous in accordance with Directive 1272/2008/EEC

Not classified

2.1.2. Classification according to EU Directives 67/548/EC or 1999/45/EC

Classification : The product is non-dangerous in accordance with Directive 1999/45/EC.

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Not classified

2.2. Label elements

2.2.1. Labelling according to Regulation (EU) 1272/2008

Not applicable.

2.2.2. Labelling according to Directives (67/548 - 1999/45)

Not relevant

2.3. Other hazards

Other hazards which do not result in classification : Results of PBT and vPvB assessment :
This information is not available.

SECTION 3: Composition/information on ingredients


3.1. Substances

Not applicable

3.2. Mixtures

Substance name	Product identifier	%	Classification according to Directive 67/548/EEC
Propylene glycol	(CAS No.) 57-55-6 (EC No) 200-338-0 (EC Index) -	90 - 100	Not classified
Sodium nitrite	(CAS No.) 7632-00-0 (EC No) 231-555-9 (EC Index) 007-010-00-4	0,1 - 0,5	O; R8 T; R25 N; R50
disodium tetraborate, anhydrous substance listed as REACH Candidate	(CAS No.) 1330-43-4 (EC No) 215-540-4 (EC Index) 005-011-00-4	0,1 - 0,5	Repr.Cat.2; R60-61
Substance name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Propylene glycol	(CAS No.) 57-55-6 (EC No) 200-338-0 (EC Index) -	90 - 100	Not classified
Sodium nitrite	(CAS No.) 7632-00-0 (EC No) 231-555-9 (EC Index) 007-010-00-4	0,1 - 0,5	Ox. Sol. 3, H272 Acute Tox. 3 (Oral), H301 Aquatic Acute 1, H400
disodium tetraborate, anhydrous substance listed as REACH Candidate	(CAS No.) 1330-43-4 (EC No) 215-540-4 (EC Index) 005-011-00-4	0,1 - 0,5	Repr. 1B, H360FD

Full text of R-, H- and EUH-phrases: see section 16

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SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation	: Keep at rest. Move to fresh air. Consult a physician if necessary.
Skin contact	: Wash off immediately with soap and plenty of water. Take off contaminated clothing and shoes immediately. Wash contaminated clothing before re-use. Consult a physician if necessary.
Eye contact	: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses. Consult a physician if necessary.
Ingestion	: Rinse mouth with water. Drink 1 or 2 glasses of water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.
Additional advice	: First aider needs to protect himself. See also section 8 . Never give anything by mouth to an unconscious person. Show this safety data sheet to the doctor in attendance. Treat symptomatically. When symptoms persist or in all cases of doubt seek medical advice.

4.2. Most important symptoms and effects, both acute and delayed

Inhalation	: Inhalation of vapours in high concentration may cause irritation of respiratory system.
Skin contact	: May cause skin irritation in susceptible persons. Prolonged skin contact may defat the skin and produce dermatitis.
Eye contact	: May cause eye irritation with susceptible persons. Eye contact may provoke the following symptoms: Redness, Pain .
Ingestion	: May cause nausea, abdominal spasms and irritation of the mucous membranes. Ingestion of larger amounts may cause defects to the central nervous system (e.g. dizziness, headache).

4.3. Indication of any immediate medical attention and special treatment needed

No data available


SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	: Use dry chemical, CO ₂ , water spray or alcohol resistant foam.
Extinguishing media which shall not be used for safety reasons	: High volume water jet .

5.2. Special hazards arising from the substance or mixture

Fire hazard	: Combustible material .
Specific hazards	: Ensure adequate ventilation. Evacuate personnel to safe areas. The pressure in sealed containers can increase under the influence of heat. Vapours are heavier than air and may spread along floors. Possible decomposition products are: CO _x , NO _x , Phosphorus compounds. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

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5.3. Advice for firefighters

Advice for firefighters : Special protective equipment for firefighters .
Wear self-contained breathing apparatus and protective suit.
In the event of fire, cool tanks with water spray.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel : Keep people away from and upwind of spill/leak.
Ensure adequate ventilation.
Wear personal protective equipment.
See also section 8.
Do not breathe vapours or spray mist.
Avoid contact with skin, eyes and clothing.
Keep away from open flames, hot surfaces and sources of ignition.

Advice for emergency responders : Only qualified personnel equipped with suitable protective equipment may intervene.

6.2. Environmental precautions

Environmental precautions : The product should not be allowed to enter drains, water courses or the soil.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Ensure adequate ventilation.
Prevent further leakage or spillage if safe to do so.
Dilute with plenty of water.
Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).
Local authorities should be advised if significant spillages cannot be contained.

6.4. Reference to other sections


See also section 8 .
See also section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Handling : Keep out of the reach of children.
Use only in well-ventilated areas.
Wear personal protective equipment.
See also section 8 .
Do not breathe vapours or spray mist.
Avoid contact with skin, eyes and clothing.
Always replace cap after use.
Keep away from heat and sources of ignition.
Take any precaution to avoid mixing with incompatible materials.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.
Wash hands before breaks and immediately after handling the product.
Keep away from food, drink and animal feeding stuffs.
When using, do not eat, drink or smoke.
Keep working clothes separately.
Remove and wash contaminated clothing before re-use.

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7.2. Conditions for safe storage, including any incompatibilities

Storage : Keep tightly closed in a dry, cool and well-ventilated place.
Keep away from open flames, hot surfaces and sources of ignition.
Do not store near or with any of the incompatible materials listed in section 10.

7.3. Specific end use(s)

No data available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure limit(s) :
Component : **Propylene glycol (57-55-6)**
 TLV-TWA (ppm) : 150 vap & part (GB); 25 (NO)
 TLV-TWA (mg/m³) : 474 vap & part/10 part (GB); 79 (NO)

Recommended monitoring procedures : Concentration measurement in air
Personal monitoring

8.2. Exposure controls

Personal protective equipment : Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Respiratory protection : not required under normal use.
In case of insufficient ventilation wear suitable respiratory equipment.
Respirator with a full face mask (EN 136)
Respirator with a half face mask (EN 140)
Recommended Filter type: A (EN 141)
Self-contained breathing apparatus (EN 133) .

Hand protection : Protective gloves complying with EN 374. The selection of specific gloves for a specific application and time of use in a working area, should also take into account other factors on the working space, such as (but not limited to): other chemicals that are possibly used, physical requirements (protection against cutting/drilling, skill, thermal protection), and the instructions/specification of the supplier of gloves.

Eye protection : Tightly fitting safety goggles / Safety glasses (EN166)


Engineering measures : Ensure adequate ventilation.
Use only in area provided with appropriate exhaust ventilation.
Ensure that eyewash stations and safety showers are close to the workstation location.
Organisational measures to prevent /limit releases, dispersion and exposure
See also section 7 .

Environmental exposure controls : Do not flush into surface water or sanitary sewer system.
Comply with applicable Community environmental protection legislation.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance : liquid
 Colour : blue
 Odour : weakly
 pH : 11,0 - 11,6 @ 100%

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Melting point/range	: No data available
Boiling point/boiling range	: 188 °C
Flash point	: 102,8 °C COC
Evaporation rate	: No data available
Explosion limits	: No data available
Vapour pressure	: 0,07 mmHg @ 20°C
Vapour density	: 2,62
Relative density	: 1,04 - 1,07
Water solubility	: Completely soluble
Partition coefficient: n-octanol/water	: No data available
Autoignition temperature	: No data available
Viscosity	: No data available
Explosive properties	: not applicable
Oxidizing properties	: not applicable

9.2. Other information

Volatile organic compounds (VOC) content	: No data available
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SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	: See also section 10.5
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10.2. Chemical stability

Stability	: Stable under normal conditions.
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10.3. Possibility of hazardous reactions

Hazardous reactions	: Hazardous polymerisation does not occur.
---------------------	--

10.4. Conditions to avoid

Conditions to avoid	: Heat, flames and sparks. See also section 7 : Handling and storage .
---------------------	--

10.5. Incompatible materials

Incompatible materials	: Oxidizing agents, Acids and bases . See also section 7 : Handling and storage .
------------------------	---

10.6. Hazardous decomposition products

Hazardous decomposition products	: Burning produces noxious and toxic fumes. In case of fire hazardous decomposition products may be produced such as: Carbon oxides, nitrogen oxides (NOx), Phosphorus compounds.
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SECTION 11: Toxicological information


11.1. Information on toxicological effects

Acute toxicity	: Not classified (Based on available data, the classification criteria are not met.)
----------------	--

Sodium nitrite (7632-00-0)

LD50/oral/rat	80 mg/kg
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Propylene glycol (57-55-6)

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LD50/oral/rat	> 10400 mg/kg
---------------	---------------

Skin corrosion/irritation	: Not classified (Based on available data, the classification criteria are not met.) pH: 11,0 - 11,6 @ 100%
Serious eye damage/irritation	: Not classified (Based on available data, the classification criteria are not met.) pH: 11,0 - 11,6 @ 100%
Respiratory/skin sensitisation	: Not classified (Based on available data, the classification criteria are not met.)
Germ cell mutagenicity	: Not classified (Based on available data, the classification criteria are not met.)
Carcinogenicity	: Not classified (Based on available data, the classification criteria are not met.)
Reproductive toxicity	: Not classified (Based on available data, the classification criteria are not met.)
Specific target organ toxicity (single exposure)	: Not classified (Based on available data, the classification criteria are not met.)
Specific target organ toxicity (repeated exposure)	: Not classified (Based on available data, the classification criteria are not met.)
Aspiration hazard	: Not classified (Based on available data, the classification criteria are not met.)

SECTION 12: Ecological information

12.1. Toxicity

Ecotoxicity effects	: No data is available on the product itself. Should not be released into the environment.
---------------------	---

Sodium nitrite (7632-00-0)	
LC50/96h/fish	360 - 565 mg/l
EC50/48h/daphnia	87 mg/l

Propylene glycol (57-55-6)	
LC50/96h/fish	23800 mg/l (Cyprinodon variegatus)

12.2. Persistence and degradability

Persistence and degradability	: The product itself has not been tested.
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12.3. Bioaccumulative potential

Bioaccumulation	: The product itself has not been tested.
Partition coefficient: n-octanol/water	: No data available

12.4. Mobility in soil


Mobility	: The product itself has not been tested.
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12.5. Results of PBT and vPvB assessment

PBT/vPvB	: This information is not available.
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12.6. Other adverse effects

Further information	: No information available.
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SECTION 13: Disposal considerations

13.1. Waste treatment methods

- Waste from residues / unused products : Where possible recycling is preferred to disposal or incineration.
Collect and dispose of waste product at an authorised disposal facility.
Dispose of in accordance with local regulations.
- Contaminated packaging : Empty containers should be transported/delivered using a registered waste carrier to local recyclers for disposal.
In accordance with local and national regulations.
- Waste codes / waste designations according to EWC / AVV : The following Waste Codes are only suggestions:
07 02 04* - other organic solvents, washing liquids and mother liquors /
150110 - packaging containing residues of or contaminated by dangerous substances .
Waste codes should be assigned by the user, preferably in discussion with the waste disposal authorities.

SECTION 14: Transport information

Not classified as dangerous in the meaning of transport regulations.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU-Regulations

Restrictions on use : Not applicable

This product contains an ingredient according to the candidate list of Annex XIV of the REACH Regulation 1907/2006/EC.

: disodium tetraborate, anhydrous

Volatile organic compounds (VOC) content : No data available

15.1.2. National regulations

DE: WGK

: 1

NL : ABM

: 11 - Weinig schadelijk voor in het water levende organismen (B)

NL: NeR (Nederlandse emissie Richtlijn)

: Organic Substances


15.2. Chemical safety assessment

Chemical Safety Assessment : Not required

SECTION 16: Other information

Full text of R-, H- and EUH-phrases:

- Acute Tox. 3 (Oral) : Acute toxicity Category 3
- Aquatic Acute 1 : Hazardous to the aquatic environment - Aquatic Acute 1
- Ox. Sol. 3 : Oxidizing solid Category 3
- Repr. 1B : Reproductive toxicity Category 1B
- H272 : May intensify fire; oxidiser.
- H301 : Toxic if swallowed.
- H360FD : May damage fertility. May damage the unborn child.
- H400 : Very toxic to aquatic life.

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R25 : Toxic if swallowed.
 R50 : Very toxic to aquatic organisms.
 R60 : May impair fertility.
 R61 : May cause harm to the unborn child.
 R8 : Contact with combustible material may cause fire.
 N : Dangerous for the environment
 O : oxidizing
 T : Toxic

Sources of key data used to compile the datasheet : European Chemicals Bureau
 SDS Supplier No LT16590 EU reviewed 19/02/2010

Abbreviations and acronyms : ADN = Accord Européen relatif au Transport International des Marchandises
 Dangereuses par voie de Navigation du Rhin
 ADR = Accord européen relatif au transport international des marchandises
 Dangereuses par Route
 CLP = Classification, Labelling and Packaging Regulation according to 1272/2008/EC
 IATA = International Air Transport Association
 IMDG = International Maritime Dangerous Goods Code
 LEL = Lower Explosive Limit/Lower Explosion Limit
 UEL = Upper Explosion Limit/Upper Explosive Limit
 REACH = Registration, Evaluation, Authorisation and Restriction of Chemicals
 CSR = CSR = Chemical Safety Report
 EC50 = Median Effective Concentration
 LD50 = Median lethal dose
 LC50 = Median lethal concentration
 N.O.S. = Not Otherwise Specified
 DNEL = DNEL = Derived No Effect Level
 PNEC = Predicted No Effect Concentration
 TLV = Threshold limits
 TWA = time weighted average
 STEL = Short term exposure limit
 persistent, bioaccumulating and toxic (PBT).
 vPvB = very persistent and very bioaccumulating
 WGK = Wassergefährdungsklasse (Water Hazard Class under German Federal Water
 Management Act)

The contents and format of this SDS are in accordance with EEC Commission Directive 1999/45/EC, 67/548/EC, 1272/2008/EC and EEC Commission Regulation 1907/2006/EC (REACH) Annex II.

DISCLAIMER OF LIABILITY The information in this SDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use or disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. This SDS was prepared and is to be used only for this product. If the product is used as a component in another product, this SDS information may not be applicable.

Safety Data Sheet

EPOXYLITE 235 SG RESIN



Safety Data Sheet dated 12/11/2007, version 1, #3209

1. DESIGNATION OF PRODUCT AND COMPANY

Trade name	EPOXYLITE 235 SG RESIN
Chemical description:	Epoxy resin based compound.
Supplier:	Elantas UK Ltd- Keate House 1 Scholar Green Road Cobra Court Manchester M32 0TR England www.elantas.com; Phone: +44(0)1618488411 - Fax: +44(0)1618646090
Manufacturer:	Elantas Camattini spa - Via Antolini 1 - 43044 Collecchio (PR) ITALY www.elantas.com; info.ELANTAS.Camattini@altana.com
Emergency telephone number:	0039/521/304711 fax 0039/521/804679 - 804410
Competent person responsible for the safety data sheet:	MSDS.elantas.camattini@altana.com

2. HAZARDS IDENTIFICATION

When brought into contact with the eyes, the product causes irritation that may last for over 24 hours, and upon brought into contact with the skin it causes inflammation if it is not removed immediately.

If brought into contact with the skin, the product may cause sensitisation of the skin.

This product is a threat to the environment; it is toxic for aquatic organisms following acute exposure.

In the long term this product may have negative effects on the aquatic environment, because it is not easily biodegradable and/or bioaccumulable.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous components under the EEC directive 67/548 or components for which European Community exposure values exists:

75% - 100% epoxy resin (number average molecular weight <= 700)

N.67/548/EEC: 603-074-00-8 CAS: 25068-38-6 EC: 500-033-5

Xi,N; R36/38-43-51-53

20% - 30% Epoxy resin. Reaction product from Bisphenol F-Epichlorohydrin.

CAS: 28064-14-4

Xi,N; R51-53-36/38-43

4. FIRST-AID MEASURES

Contact with skin:

Immediately take off all contaminated clothing.

Remove the product with a cloth or absorbent paper. Do not use solvents.

Wash with plenty of water and soap.

Contact with eyes:

Wash immediately and thoroughly with running water, keeping eyelids raised, for at least 10 minutes. Following this, protect the eyes with sterile gauze or a clean, dry, handkerchief. Seek medical advice.

Swallowing:

The induction of vomiting and the administration of oral drugs must be carried out only upon medical council.

Inhalation:

Ventilate the premises. The patient is to be removed immediately from the premises contaminated and made to rest in a well ventilated area. Should the patient feel unwell, consult a physician.

5. FIRE FIGHTING MEASURES

Recommended extinguishers:

CO2, Foam, Chemical powders or sand. Use water based extinguishing media with caution.

Safety Data Sheet

EPOXYLITE 235 SG RESIN

Extinguishers not to be used:

None in particular.

Risks arising from combustion:

Avoid inhaling the fumes. Incomplete combustion releases toxic gases.

Protective equipment:

Use protection for the airways.

6. MEASURES IN CASE OF ACCIDENTAL RELEASE

Measures for personal safety:

Use a mask, gloves and protective clothing.

Environmental measures:

Limit leakages with earth or sand.

If the product has flown off into a water course, into the drainage system, or has contaminated the ground or vegetation, notify the responsible authorities.

Cleaning methods:

Rapidly collect the product. To do so, wear a mask and protective clothing.

If the product is in a liquid form, stop it from entering the drainage system.

Recover the product for re-use if possible, or for elimination in compliance with waste disposal regulations in force. The product might, where appropriate, be absorbed by inert material.

After the product has been removed, rinse the involved area and materials with water that must be disposed in compliance with regulations in force.

7. HANDLING AND STORAGE

Handling precautions:

Avoid contact with and inhalation of vapours and/or dusts. See also paragraph 8 below.

Do not eat or drink or smoke while working. Wash hands before breaks and at the end of work. Maintain a sufficient personal care.

Incompatible materials:

Keep away from amines, strong bases, acids and strong oxidants.

Storage conditions:

Keep in a dry place, in the original containers tightly closed and avoid heat sources.

Instructions regarding storage facilities:

Avoid exposition to low temperature ($T > 15^{\circ}\text{C}$).

8. EXPOSURE CONTROL/PERSONAL PROTECTION

Precautionary measures:

Provide adequate ventilation to the areas where the product is stored and/or handled.

Respiratory protection:

Required where ventilation/aspiration is insufficient or exposure is prolonged, or for applications in which the product is sprayed or heated.

Protection for hands:

Use protective gloves.

For an extended exposure of the product, wear nitrile/neoprene gloves.

Eye protection:

Safety goggles.

Protection for skin:

Use clothing that provides complete protection to the skin.

Available Exposure Limits (ACGIH) for substances of section 2:

None

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and colour:	Liquid giallo chiaro
Odour:	Light
pH:	n.d.
Melting point:	N.A.
Boiling point:	$> 200^{\circ}\text{C}$
Flash point:	$> 150^{\circ}\text{C}$ (DIN 51758)

Safety Data Sheet

EPOXYLITE 235 SG RESIN

Explosive properties:	n.a
Combustion-related properties:	n.a
Vapour pressure:	N.A.
Specific gravity ASTM D 1475:	1.145 gr/ml (25°C)
Solubility in water:	Insoluble
Lipid solubility:	N.A.
Partition coefficient (n-octanol/H ₂ O) :	n.d.
Dynamic viscosity EN13702-2:	2000 - 3000 mPa.s (25°C)
Vapour density:	N.A.

10. STABILITY AND REACTIVITY

Conditions to avoid:

Stable under normal conditions.

Substances to avoid:

The product reacts exothermically with amines, Lewis acids and mercaptanes.

Hazardous decomposition products:

It may catch fire on contact with powerful oxidising agents.

Upon incomplete combustion carbon monoxide is formed.

11. TOXICOLOGICAL INFORMATION

No toxicological data related to the preparation are available.

When available, the toxicological information relating to the main components are listed below.

epoxy resin (number average molecular weight ≤ 700)

LD50 (oral): > 2.000 mg/kg (rat)

LD50 (dermal): > 2.000 mg/kg (rabbit)

Epoxy resin. Reaction product from Bisphenol F-Epichlorohydrin.

LD50 (oral): > 2.000 mg/kg (rat)

LD50 (dermal): > 2.000 mg/kg (rabbit)

12. ECOLOGICAL INFORMATION

Adopt sound working practices, so that the product is not released into the environment.

When available, the toxicological information relating to the main components are listed below.

epoxy resin (number average molecular weight ≤ 700)

Sinks in water. Expected to be not readily biodegradable. Has the potential to bioaccumulate.

If product enters soil, it will be mobile and may contaminate groundwater.

Acute toxicity LC/EC/IC 50 = 1-10 mg/l

Epoxy resin. Reaction product from Bisphenol F-Epichlorohydrin.

Sinks in water. Expected to be not readily biodegradable. Has the potential to bioaccumulate.

If product enters soil, it will be mobile and may contaminate groundwater.

Acute toxicity LC/EC/IC 50 = 1-10 mg/l

13. DISPOSAL CONSIDERATIONS

Recover if possible. In doing so, comply with the local and national regulations currently in force.

14. TRANSPORT INFORMATION

UN number:	3082
Proper shipping name:	SOSTANZA PERICOLOSA PER L'AMBIENTE, LIQUIDA, NAS (Resina epossidica)/ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, NOS (Epoxy resin)
Road/Rail (ADR/RID):	9 III
Sea (IMDG):	9 III
Sea (EmS):	F-A , S-F
Air (ICAO/IATA):	9-III

15. REGULATORY INFORMATION

Council Directive 67/548/EEC (Classification, packaging and labelling of dangerous substances) and subsequent amendments. Commission Directive 1999/45/EC (Classification, packaging and labelling of dangerous preparation) and subsequent amendments. Commission Directive 98/24/EC

Safety Data Sheet

EPOXYLITE 235 SG RESIN

(Protection of the health and safety of workers from the risk related to chemical agent). Commission Directive 2000/39/EC (Occupational exposure limit values). Regulation (EC) No 1907/2006 (REACH).

Symbols:

Xi Irritant
N Dangerous for the environment

R Phrases:

R36/38 Irritating to eyes and skin.
R43 May cause sensitization by skin contact.
R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S Phrases:

S24/25 Avoid contact with skin and eyes.
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S37 Wear suitable gloves.
S60 This material and its container must be disposed of as hazardous waste.
S61 Avoid release to the environment. Refer to special instructions/Safety data sheets.

Contents:

oxirane, mono[(C12-14-alkyloxy)methyl] derivs.
epoxy resin (number average molecular weight <= 700)
Epoxy resin. Reaction product from Bisphenol F-Epichlorohydrin.

Special Provisions:

Contains epoxy constituents. See information supplied by the manufacturer.

Where applicable, refer to the following regulatory provisions :

Directive 98/24/CE
Directive 91/156/EC; 91/689/EC; 94/62/EC (waste disposal).
Activities linked to risks of serious accidents

16. OTHER INFORMATION

R36/38 Irritating to eyes and skin.
R43 May cause sensitization by skin contact.
R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Main bibliographic sources:

NIOSH - Registry of toxic effects of chemical substances
I.N.R.S. - Fiche Toxicologique
ACGIH - Threshold Limit Values

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality.

It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific intended use.

This MSDS cancels and replaces any previous releases.

The information contained herein is based on what we believe to be reliable data, but it is presented without guarantee or warranty by our part and Elantas Camattini spa disclaims any liability incurred from the use thereof.

Nothing contained herein is to be construed as recommendations for use in violation of any existing patent, foreign or domestic, or of applicable laws and regulations.

Please contact Elantas Camattini spa for further information about the product and its use.

It is recommended to give this MSDS to customers and handlers.

Safety Data Sheet**EPOXYLITE 235 SG HARDENER**

Safety Data Sheet dated 12/11/2007, version 1, #3210

**1. DESIGNATION OF PRODUCT AND COMPANY**

Trade name	EPOXYLITE 235 SG HARDENER
Chemical description:	Aliphatic amine based compound.
Supplier:	Elantas UK Ltd- Keate House 1 Scholar Green Road Cobra Court Manchester M32 0TR England www.elantas.com; Phone: +44(0)1618488411 - Fax: +44(0)1618646090
Manufacturer:	Elantas Camattini spa - Via Antolini 1 - 43044 Collecchio (PR) ITALY www.elantas.com; info.ELANTAS.Camattini@altana.com
Emergency telephone number:	0039/521/304711 fax 0039/521/804679 - 804410
Competent person responsible for the safety data sheet:	MSDS.elantas.camattini@altana.com

2. HAZARDS IDENTIFICATION

The product is harmful following acute exposure to it and poses a serious health threat if inhaled, ingested, or brought into contact with the skin.

The product is highly corrosive and, if brought into contact with the skin, causes serious burning, with the rapid destruction of the entire thickness of skin tissue.

If inhaled, the product causes irritation in the airways.

If brought into contact with the skin, the product may cause sensitisation of the skin.

This product is harmful: serious harm (functional disorders or significant morphological changes that are toxicology-related) may be caused by repeated or prolonged exposure to the product.

This product is harmful: serious harm (functional disorders or significant morphological changes that are toxicology-related) may be caused by repeated or prolonged exposure to the product by ingestion.

This product is a threat to the environment; it is toxic for aquatic organisms following acute exposure.

In the long term this product may have negative effects on the aquatic environment, because it is not easily biodegradable and/or bioaccumulable.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous components under the EEC directive 67/548 or components for which European Community exposure values exists:

50% - 75% 3,6-diazaoctanethylenediamin
N.67/548/EEC: 612-059-00-5 CAS: 112-24-3 EC: 203-950-6
Xn,Xi,C; R21-34-43-52-53

20% - 30% Polyoxypropylendiamin
CAS: 9046-10-0
C; R34

< 5% 2,4,6-tris(dimethylaminomethyl)phenol
N.67/548/EEC: 603-069-00-0 CAS: 90-72-2 EC: 202-013-9
Xn,Xi; R22-36/38

4. FIRST-AID MEASURES

Contact with skin:

- Immediately take off all contaminated clothing.
- Remove the product with a cloth or absorbent paper. Do not use solvents.
- Wash with plenty of water and soap.
- Seek medical advice.

Safety Data Sheet

EPOXYLITE 235 SG HARDENER

Contact with eyes:

Wash immediately and thoroughly with running water, keeping eyelids raised, for at least 10 minutes. Following this, protect the eyes with sterile gauze or a clean, dry, handkerchief. Seek medical advice.

Do not use eyewash or ointment of any kind before obtaining an examination or advice from an ophthalmologist.

Swallowing:

Do not under any circumstance induce vomiting. Seek medical advice immediately.

Inhalation:

Ventilate the premises. The patient is to be removed immediately from the contaminated premises to rest in a well ventilated area. Call a physician.

5. FIRE FIGHTING MEASURES

Recommended extinguishers:

CO₂, Foam, Chemical powders or sand. Use water based extinguishing media with caution.

Extinguishers not to be used:

None in particular.

Risks arising from combustion:

Avoid inhaling the fumes. Incomplete combustion releases toxic gases.

Protective equipment:

Use protection for the airways.

6. MEASURES IN CASE OF ACCIDENTAL RELEASE

Measures for personal safety:

Use a mask, gloves and protective clothing.

Environmental measures:

Limit leakages with earth or sand.

If the product has flown off into a water course, into the drainage system, or has contaminated the ground or vegetation, notify the responsible authorities.

Cleaning methods:

Rapidly collect the product. To do so, wear a mask and protective clothing.

If the product is in a liquid form, stop it from entering the drainage system.

Recover the product for re-use if possible, or for elimination in compliance with waste disposal regulations in force. The product might, where appropriate, be absorbed by inert material.

After the product has been removed, rinse the involved area and materials with water that must be disposed in compliance with regulations in force.

7. HANDLING AND STORAGE

Handling precautions:

Avoid contact with and inhalation of vapours and/or dusts. See also paragraph 8 below.

Do not eat or drink or smoke while working. Wash hands before breaks and at the end of work. Maintain a sufficient personal care.

Incompatible materials:

The product reacts with acids, isocyanates, oxidants and epoxy, chlorinated and carbonylic compounds

Storage conditions:

The product is moisture sensitive. Keep in a dry place in the original containers tightly closed.

Instructions regarding storage facilities:

Avoid exposition to low temperature ($T > 15^{\circ}\text{C}$).

8. EXPOSURE CONTROL/PERSONAL PROTECTION

Precautionary measures:

Provide adequate ventilation to the areas where the product is stored and/or handled.

Respiratory protection:

Required where ventilation/aspiration is insufficient or exposure is prolonged, or for applications in which the product is sprayed or heated.

Protection for hands:

Use protective gloves.

Safety Data Sheet

EPOXYLITE 235 SG HARDENER

For an extended exposure of the product, wear nitrile/neoprene gloves.

Eye protection:

Safety goggles.

Protection for skin:

Use clothing that provides complete protection to the skin.

Available Exposure Limits (ACGIH) for substances of section 2:

None

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and colour:	Liquid Colorless
Odour:	Amoniacal
pH:	n.d.
Melting point:	N.A.
Boiling point:	n.d. °C
Flash point:	N.A. (DIN 51758)
Explosive properties:	N.A.
Combustion-related properties:	N.A.
Vapour pressure:	n.d.
Specific gravity ASTM D 1475:	1.025 gr/ml (25 °C)
Solubility in water:	Partially Soluble
Lipid solubility:	N.A.
Partition coefficient (n-octanol/H ₂ O) :	n.d.
Dynamic viscosity EN13702-2:	200 - 400 mPa.s (25 °C)
Vapour density:	N.A.

10. STABILITY AND REACTIVITY

Conditions to avoid:

Stable under normal conditions.

Substances to avoid:

None in particular.

Hazardous decomposition products:

It may generate toxic gases on contact with oxidising mineral acids, halogenated organic substances, organic peroxides and hydroperoxides, and powerful oxidising agents.

Upon combustion CO, CO₂, NH₃, NO_x and other nitrogen containing compounds are formed.

11. TOXICOLOGICAL INFORMATION

No toxicological data related to the preparation are available.

When available, the toxicological information relating to the main components are listed below.

3,6-diazaoctanethylenediamin

LD₅₀ (oral): > 2.500 mg/kg (rat)

LD₅₀ (dermal): > 500 mg/kg (rabbit)

Studies carried out by manufactures have observed that a particular ethyleneamine, DETA (diethylenetriamine), has a very high acute toxicity by inhalation of aerosols. The NOEL (no effect level) has been established at concentrations <0,07 mg/l (4 h). It can be assumed that same effects are applicable to other ethyleneamines.

Even if the formation of aerosols is rare in industrial applications of ethyleneamines, it is necessary to avoid inhalation by good ventilation and using masks to protect respiratory system.

Polyoxypropylendiamin

Acute toxicity:

LD₅₀ (oral): 2.880 mg/kg (rat)

LC₅₀ (dermal): 2.980 mg/kg (rabbit)

Cronic toxicity:

Can cause dermatites. Lung damage may be caused by repeated and prolonged exposure to the product.

Sensitization: not sensitizing.

Safety Data Sheet

EPOXYLITE 235 SG HARDENER

Irritating to skin (corrosive): Draize Method 6,40-8.00/8.0 (rabbit)

Irritating to eyes (irritant): Draize Method 80.00-110.00/110 (rabbit)

2,4,6-tris(dimethylaminomethyl)phenol

oral LD50, rat 1670 mg/kg

dermal LD50, rabbit 1242 mg/kg

12. ECOLOGICAL INFORMATION

Adopt sound working practices, so that the product is not released into the environment.

When available, the toxicological information relating to the main components are listed below.

3,6-diazaoctanethylenediamin

Not readily biodegradable.

Acute toxicity LC/EC/IC 50 = 20-600 mg/l.

Polyoxypropylendiamin

Leuciscus idus/CL50 (96h) > 220 mg/l

Not readily biodegradable.

13. DISPOSAL CONSIDERATIONS

Recover, if possible. Send to authorised disposal plants or for incineration under controlled conditions. In so doing, comply with the local and national regulations currently in force.

14. TRANSPORT INFORMATION

UN number: 1760

Proper shipping name: POLIAMMINE CORROSIVE, LIQUIDE, NAS
(Triethylenetetramine)/POLYAMINES CORROSIVE, LIQUID, NOS
(Triethylenetetramine)

Road/Rail (ADR/RID): 8 II

Sea (IMDG): 8 II

Sea (EmS): F-A, S-B

Air (ICAO/IATA): 8 II

15. REGULATORY INFORMATION

Council Directive 67/548/EEC (Classification, packaging and labelling of dangerous substances) and subsequent amendments. Commission Directive 1999/45/EC (Classification, packaging and labelling of dangerous preparation) and subsequent amendments. Commission Directive 98/24/EC (Protection of the health and safety of workers from the risk related to chemical agent). Commission Directive 2000/39/EC (Occupational exposure limit values). Regulation (EC) No 1907/2006 (REACH).

Symbols:

Xn Harmful

N Dangerous for the environment

C Corrosive

R Phrases:

R20/21/22 Harmful by inhalation, in contact with skin and if swallowed.

R35 Causes severe burns.

R37 Irritating to respiratory system.

R43 May cause sensitization by skin contact.

R48/22 Harmful: danger of serious damage to health by prolonged exposure if swallowed.

R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

R68 Possible risk of irreversible effects.

S Phrases:

S25 Avoid contact with eyes.

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Safety Data Sheet

EPOXYLITE 235 SG HARDENER

S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S51 Use only in well-ventilated areas.

S57 Use appropriate container to avoid environmental contamination.

Contents:

2,4,6-tris(dimethylaminomethyl)phenol

3,6-diazaoctanethylenediamin

Polyoxypropylendiamin

Prodotto di reazione: Bisfenolo F/Epicloridrina. Resine epossidiche PM ≤700.

Where applicable, refer to the following regulatory provisions :

Directive 98/24/CE

Directive 91/156/EC; 91/689/EC; 94/62/EC (waste disposal).

Activities linked to risks of serious accidents

16. OTHER INFORMATION

R21 Harmful in contact with skin.

R22 Harmful if swallowed.

R34 Causes burns.

R36/38 Irritating to eyes and skin.

R43 May cause sensitization by skin contact.

R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

R52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Main bibliographic sources:

NIOSH - Registry of toxic effects of chemical substances

I.N.R.S. - Fiche Toxicologique

ACGIH - Threshold Limit Values

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality.

It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific intended use.

This MSDS cancels and replaces any previous releases.

The information contained herein is based on what we believe to be reliable data, but it is presented without guarantee or warranty by our part and Elantas Camattini spa disclaims any liability incurred from the use thereof.

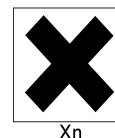
Nothing contained herein is to be construed as recommendations for use in violation of any existing patent, foreign or domestic, or of applicable laws and regulations.

Please contact Elantas Camattini spa for further information about the product and its use.

It is recommended to give this MSDS to customers and handlers.

Safety Data Sheet

ELMOTHERM VA42



Xn

Safety Data Sheet dated 17/2/2010, version 8

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Trade name: ELMOTHERM VA42
 Trade code: IVA42*
 Product type and use: INSULATING VARNISH
 Company:
 ELANTAS Deatech Srl - Zona Industriale Campolungo, 35 - 63100 Ascoli Piceno - ITALY
 Tel. +39 0736 3081 - Fax +39 0736 402746
 Emergency telephone number of the company and/or of an authorised advisory centre:
 ELANTAS Deatech Srl - tel. +39 0736 3081 - fax +39 0736 402746

Competent person responsible for the safety data sheet:
 MSDS.ELANTAS.Deatech@altana.com

2. HAZARDS IDENTIFICATION

The product is a liquid that can catch fire at temperatures in excess of 21 °C if exposed to an ignition source.
 The product is harmful following acute exposure to it and poses a serious health threat if inhaled or brought into contact with the skin.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous components within the meaning of EEC directive 67/548 and corresponding classification:

40% - 50% xylene

N.67/548/CEE: 601-022-00-9 CAS: 1330-20-7 EC: 215-535-7
 Xn,Xi; R10-20/21-38

0.5% - 1% ethylbenzene

N.67/548/CEE: 601-023-00-4 CAS: 100-41-4 EC: 202-849-4
 F,Xn; R11-20

0.25% - 0.5% 2-butanone oxime

N.67/548/CEE: 616-014-00-0 CAS: 96-29-7 EC: 202-496-6
 Carc. Cat. 3,Xn,Xi; R21-40-41-43

4. FIRST AID MEASURES

Contact with skin:

Immediately take off all contaminated clothing.

Areas of the body that have - or are only even suspected of having - come into contact with the product must be rinsed immediately with plenty of running water and possibly with soap.

Contact with eyes:

Do not use eyewash or ointment of any kind (before obtaining an examination or advice from an eye specialist).

Safety Data Sheet

ELMOTHERM VA42

Wash immediately with water for at least 10 minutes.

Swallowing:

Do not under any circumstances induce vomiting. OBTAIN A MEDICAL EXAMINATION IMMEDIATELY.

Give liquid paraffin to drink; do not give milk or animal or vegetable fats of any kind.

Inhalation:

Ventilate the premises. The patient is to be removed immediately from the contaminated premises to rest in a well ventilated area. OBTAIN MEDICAL ATTENTION.

5. FIRE-FIGHTING MEASURES

Recommended extinguishing agents:

In case of fire, use fire-extinguisher by foam (fluoroproteinic or alcohol resistant foam), dust and CO₂.

Extinguishing agents not to be used:

Water jet - risk of propagation of the flame

Risks arising from combustion:

During combustion the preparation may release carbon dioxide, carbon monoxide, nitrogen oxides and black, dense smoke.

Avoid inhaling the fumes.

Product is flammable. Cool down the containers exposed to the fire with water to prevent bursting.

Protective equipment for fire-fighting personnel:

Personal protection typical in case of fire. Wear suitable respiratory protection.

6. ACCIDENTAL RELEASE MEASURES

Measures for personal safety:

Use a mask, gloves and protective clothing.

Keep other people out. Avoid contact with skin and eyes. Do not breathe vapours. Keep the proper ventilation. See section 8.

Environmental measures:

Do not allow the product to contaminate surface, water/ground water. Limit leakages with earth or sand.

Eliminate all unguarded flames and possible sources of ignition. Do not smoke.

If the product has escaped into a water course, into the drainage system, or has contaminated the ground or vegetation, notify the competent authorities.

Cleaning methods:

Rapidly recover the product. To do so, wear a mask and protective clothing.

If the product is in a liquid form, stop it from entering the drainage system.

Recover the product for re-use if possible, or for elimination. The product might, where appropriate, be absorbed by inert material.

After the product has been recovered, rinse the area and materials involved with water.

7. HANDLING AND STORAGE

Handling precautions:

Avoid contact and inhalation of the vapours. See, too, paragraph 8 below.

Takes precautionary measures against static discharges - ground connect all equipment.

Safety Data Sheet

ELMOTHERM VA42

Wear antistatic protective clothes.
 Do not eat or drink while working.
 Do not smoke while working.

Incompatible materials:
 None in particular.

Storage conditions:
 Keep away from unguarded flame, sparks, and heat sources. Avoid direct exposure to sunlight.

Instructions as regards storage premises:
 Cool and adequately ventilated.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Precautionary measures:

Use the product in accordance with good occupational hygiene and safety practices.
 Before break and after work carefully wash hands. Take off dirty cloth immediately. Avoid contact with skin and eyes. When handling do not eat, drink or smoke, take a medicine.
 Give adequate ventilation to the premises where the product is stored and/or handled.

Respiratory protection:

If - in consequence of the evaluation made by the final user - there is a risk of exposure, use adequate protective respiratory equipment, e.g. mask with an organic vapour type A2 filter.

Protection for hands:

Use protective gloves that provides comprehensive protection, e.g. P.V.C., viton or nitrile rubber.

Eye protection:

Use close fitting safety goggles and/or visor conforming to BS 2092 GRADE 1).

Protection for skin:

Use clothing that provides comprehensive protection to the skin, e.g. cotton, rubber, PVC or viton.

Components with Occupational Exposure Limit(s), that require monitoring at the workplace (ACGIH):

xylene

VLE 8h: 221 mg/m³ - 50 ppm VLE short: 442 mg/m³ - 100 ppm TLV TWA: 100 ppm, A4 - 434,19 mg/m³, A4 TLV STEL: 150 ppm, A4 - 651,29 mg/m³, A4

ethylbenzene

VLE 8h: 442 mg/m³ - 100 ppm VLE short: 884 mg/m³ - 200 ppm TLV TWA: 100 ppm, A3 - 434,19 mg/m³, A3 Skin TLV STEL: 125 ppm, A3 - 542,74 mg/m³, A3 Skin

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and colour:	Red liquid
Odour:	Typical
pH:	N.A.
Melting point:	N.A.
Boiling point:	139 °C
Flash point:	27 °C
Solid/gas flammability:	N.A.
Autoignition temperature:	450 °C

Safety Data Sheet

ELMOTHERM VA42

Explosive properties:	LEL 1% - UEL 7%
Oxidizing properties:	NO
Vapour pressure:	N.A.
Relative density:	1000 g/l @ 20°C
Solubility in water:	NO
Lipid solubility:	N.A.
Partition c. (n-octanol/H ₂ O):	N.A.
Vapour density (air= 1):	>1

10. STABILITY AND REACTIVITY

Conditions to avoid:

Stable under normal conditions. Avoid high temperature.

Substances to avoid:

Keep away from oxidizing agents, sources of ignition and heat. The product could catch fire.

Hazardous decomposition products:

None.

See also Section 5

It may catch fire on contact with oxidising mineral acids, and powerful oxidising agents.

11. TOXICOLOGICAL INFORMATION

The concentration of each substance should be borne in mind in assessing the toxicological effects deriving from the preparation.

Set out below is the toxicological information relating to the main substances in the preparation. xylene

LD50 (RAT) ORAL: 5000 MG/KG

12. ECOLOGICAL INFORMATION

Adopt good working practices, so that the product is not released into the environment.

13. DISPOSAL CONSIDERATIONS

Recover, if possible. Send to authorised disposal plants or for incineration under controlled conditions. In so doing, comply with the local and national regulations currently in force.

Where applicable, refer to the following regulatory provisions : 91/156/EEC, 91/689/EEC, 94/62/EC and subsequent amendments.

14. TRANSPORT INFORMATION

ADR-UN Number:	1263
ADR-Class:	3
ADR-HI number:	30
ADR-Shipping Name:	PAINT
ADR-Packing Group:	III
ADR-S.P.:	640E

Safety Data Sheet

ELMOTHERM VA42

ADR-Tunnel Restriction Code:	(D/E)
IATA-UN Number:	1263
IATA-Class:	3
IATA-Shipping Name:	PAINT
IATA-Passenger Aircraft:	309
IATA-Cargo Aircraft:	310
IATA-Label:	Flamm. Liquid
IATA-Packing group:	III
IATA-ERG:	3L
IMDG-Marine pollutant:	No
IMDG-UN Number:	1263
IMDG-Class:	3
IMDG-Shipping Name:	PAINT
IMDG-Packing group:	III
IMDG-EmS:	F-E , <u>S-E</u>
IMDG-Storage category:	A

15. REGULATORY INFORMATION

Council Directive 67/548/EEC (Classification, packaging and labelling of dangerous substances) and subsequent amendments. Council Directive 1999/45/EC (Classification, packaging and labelling of dangerous preparations) and subsequent amendments. Commission Directive 98/24/EC (Protection of the health and safety of workers from the risk related to chemical agent). Commission Directive 2000/39/EC (Occupational exposure limit values). Regulation (EC) No 1907/2006 (REACH).

Symbols:

Xn Harmful

R Phrases:

R10 Flammable.

R20/21 Harmful by inhalation and in contact with skin.

S Phrases:

S25 Avoid contact with eyes.

S36/37 Wear suitable protective clothing and gloves.

S43 In case of fire, use fire-extinguisher by foam (fluoroproteinic or alcohol resistant foam), dust and CO₂.

Contents:

xylene

2-butanone oxime: May produce an allergic reaction.

Where applicable, refer to the following regulatory provisions :

Directive 96/82/CE ('Activities linked to risks of serious accidents') and subsequent amendments.

Regulation (EC) nr 648/2004 (detergents).

The product fulfils the Directive 2002/95/EC (RoHS)

The product does not contain by recipe polycyclic aromatic hydrocarbons (PAH)

Raw materials of the product are pre-registered according to the Regulation (EC) No

Safety Data Sheet

ELMOTHERM VA42

1907/2006 (REACH)

The product does not contain by recipe substances listed in Art. 57 / Annex XIV of the Regulation (EC) No 1907/2006, from 9th of Oct. 2008 (SVHC)

16. OTHER INFORMATION

R10 Flammable.
R11 Highly flammable.
R20 Harmful by inhalation.
R20/21 Harmful by inhalation and in contact with skin.
R21 Harmful in contact with skin.
R38 Irritating to skin.
R40 Limited evidence of a carcinogenic effect.
R41 Risk of serious damage to eyes.
R43 May cause sensitization by skin contact.

Paragraphs modified from the previous revision:

9. PHYSICAL AND CHEMICAL PROPERTIES

Main bibliographic sources:

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre,
Commission of the European Communities
SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van
Nostrand Reinold
ACGIH - Threshold Limit Values - 2004 edition
ADR 2009

The information contained herein is based on our state of knowledge at the above-specified date.
It refers solely to the product indicated and constitutes no guarantee of particular quality.
It is the duty of the user to ensure that this information is appropriate and complete with respect
to the specific use intended.

This MSDS cancels and replaces any preceding release.



B & V WATER TREATMENT LTD

MATERIAL SAFETY DATA SHEET



DIZSOLVE INHIBITOR

1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND THE COMPANY UNDERTAKING

Chemical Name: : DIZSOLVE INHIBITOR

Application: : A mixture of neutralised amines.

Supplier: : B & V WATER TREATMENT LTD, DAIMLER CLOSE ROYAL OAK IND. ESTATE,
DAVENTRY, NORTHANTS, NN11 5QJ

Emergency telephone number: : (01327) 871967 : (International +44 1327 871967)

Emergency fax: : Fax (01327) 704322 : (International +44 1327 704322)

E-Mail: : enquiries@bwater.co.uk

2. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS-No	%	EINECS-NR	Symbol(s)	R-pharse(s)
A mixture of polyamines and fatty amines	-	30	-	-	-

3. HAZARDS / IDENTIFICATION

Inhalation: : -

Skin Contact: : Mild Irritant

Eye Contact: : Irritant

Ingestion: : May cause nausea and vomiting if ingested in quantity

4. FIRST AID MEASURES

Effects and symptoms

Ingestion: : May cause nausea and vomiting if ingested in quantity

Inhalation: : Prolonged exposure may cause nausea

Skin contact: : Prolonged contact may cause skin irritation

Eye Contact: : May cause eye irritation

First Aid measures

Ingestion: : Wash out mouth with water. If the material has been swallowed give plenty of water to drink and obtain medical attention.

Inhalation: : Remove from exposure, and move to fresh air

Skin Contact: : Remove contaminated clothing. Wash affected area well with soap and water.

Eye Contact: : Irrigate eyes well with water for at least 15 minutes with eyelids held open. Seek

DIZSOLVE INHIBITOR

medical advice if irritation persists.

5. FIRE FIGHTING MEASURES

- Flammability : Non-flammable. Burning produces obnoxious and toxic fumes.
- Suitable extinguishing media
- Suitable : Water, dry powder, foam, carbon dioxide (CO₂)
- Hazardous decomposition products : Oxides of Nitrogen (NO_x) and oxides of carbon (CO_x)
- Special protective equipment for firefighters : In the event of fire, wear self contained breathing apparatus. Wear suitable gloves and eye/face protection.

6. ACCIDENTAL RELEASE MEASURES

- Personal precautions : Wear face mask, PVC gloves and overalls.
- Environmental precautions : Prevent the material from entering the waterways and sewers.
- Methods for cleaning up : Absorb the material in sand, sawdust or earth. Sweep into a suitable labelled container for future disposal. Wash the area well with water.

7. HANDLING AND STORAGE

- Storage/Handling : No special storage conditions required.
- Packaging material
- Suitable : polyethylene containers.
- Not suitable : mild steel.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

For the purpose of Regulation 7(1) of the COSHH Regulations the limits are not advised in EH40 Occupational Exposure Limits 1994.

National Occupational Exposure Limits n/a

Personal protection equipment

- Respiratory protection : No special precautions required but in case of insufficient ventilation wear respiratory equipment with a filter for organic vapours.
- Skin and body protection : Wear overalls.
- Hand protection : Wear rubber or plastic gloves.
- Eye protection : Wear face mask or chemical goggles.

9. PHYSICAL AND CHEMICAL PROPERTIES

- Form : Solution
- Colour : Brown
- Odour : Slight

DIZSOLVE INHIBITOR

pH (10% Aqueous) : 6 @ 20 degrees C
Freezing Point : - 4 degrees C
Boiling Point : 101 degrees C
Solubility : Completely miscible in water

10. STABILITY AND REACTIVITY

Stability : Stable at normal conditions.
Conditions to avoid : Heating can release hazardous gases .
Materials to avoid : oxidising agents, concentrated sulphuric acid, alkalis
Hazardous decomposition products : Oxides of nitrogen (NO_x), and oxides of carbon (CO₂ and CO)

11. TOXICOLOGICAL INFORMATION

Chemical Name : DIZSOLVE INHIBITOR
Acute toxicity :
Oral : LD₅₀ (oral/rat) is expected to exceed 2000 mg/kg. No data available.
Inhalation : Irritating to respiratory system in closed spaces for long periods of time.
Skin irritation : Moderate skin irritation on prolonged contact.
Eye irritation : Mildly irritating to eye tissue.

13. DISPOSAL CONSIDERATIONS

Methods of disposal : In accordance with local and national regulations. Small spillages can be flushed with water down foul drain.
Packaging : Plastic drum will be collected by supplier for re-cycling. Damaged containers should be destroyed by cutting up or by incineration. Empty containers must not be used for potable water or food.

14. TRANSPORT INFORMATION

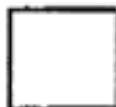
Road (ADR/RID)	: UN No. -	Class-	Packing Group-
Sea (IMO/IMDG)	: UN No. -	Class-	Packing Group-
Air (ICAO/IATA)	: UN No. -	Class-	Packing Group-
Proper Shipping name	: -		

15. REGULATORY INFORMATION

EC Regulations :
EC Classification : NIL HAZARD
(67/548/EEC-88/379/EEC)

DIZSOLVE INHIBITOR

Label name : DIZSOLVE INHIBITOR



NIL HAZARD

R-phrase(s) :

S-phrase(s)

- S26 : In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- S37/39 : Wear suitable gloves and eye/face protection.
- S45 : In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible.)

16. OTHER INFORMATION

The above information is based on current knowledge at the time of publication and is given in good faith. B & V Water Treatment Ltd implies no warranty as to the suitability of the product for any purpose other than outlined on the Product Data Sheet.

The information contained in this MSDS does not constitute an assessment of workplace risks. The customer should undertake a formal C.O.S.H.H. assessment which should ensure that employees are aware of the hazards/precautions detailed in this MSDS. The C.O.S.H.H. assessment should also ensure that recommended safety equipment is available and, where applicable, that the exposure limits detailed in Section 8 are not being exceeded.

B & V Water Treatment Ltd operate a quality management system which complies with the requirements of BS EN ISO 9001:1994. (Certificate Number FH 20535).

- References :
- : The Carriage of Dangerous Goods by Road & Rail Regulations.
 - : The Control of Substances Hazardous to Health Regulations.
 - : C.H.I.P. The Chemicals Hazard Information and Packaging Regulations 1993.



UniKing International
80, Habaq Street,
Marsascula ZBR 09.
MALTA.

Tel.: (+356) 2163 9790
Fax.: (+356) 2163 7256
E-mail: mail@unikingintl.com

MATERIAL SAFETY DATA SHEET

1. Identification of the substance / preparation and the Company / Undertaking

Product Name	:	TRANSFORMER OIL "TRANSOL"
Product Type	:	Mineral Oil
Malta & N.Africa Agent	:	UniKing International 80, Habaq Street, Marsaskala ZBR 09. MALTA
Telephone No.	:	2163 9790
Fax.	:	2163 7256

2. Composition / Information of Ingredients

Chemical Name	:	CAS – No. : Weight - %
Hydrocarbon / Lube	:	8012 / 95/1 332 – 384 – 2 100

3. Hazards identification

Human Health	:	Inhalation of vapours and / or mists might irritate respiratory tract. Prolonged skin contact will cause defatting and possible irritation. Eye contact might cause irritation.
Physical and Chemical Hazard	:	At elevated temperatures flammable vapours and decomposition products will be released.

4. First Aid Measures

General Advice	:	Handle in accordance with good industrial hygiene and safety practice.
Inhalation	:	If inhalation of mists, fumes or vapours occur causing irritation, move to fresh air. If the symptoms persist, seek medical advice.
Skin contact	:	Remove immediately adhering matter and wash off with soap and plenty of water.
Eye contact	:	Rinse with plenty of water.
Ingestion	:	Clean mouth with water and drink approximately 2 glasses of water afterwards. Seek medical advice if a large amount has been swallowed. Do not induce vomiting.

5. Fire fighting Measures

Suitable extinguishing Media:	Extinguish preferably with dry chemical, carbon dioxide (CO ₂). Or foam.
Extinguishing media which must NOT be used for safety reasons:	Water (stain risk caused by combustion)

6. Accidental Release Measures

Personal precautions :	Wear suitable protection equipment and remove contaminated clothes as soon as possible.
Environment precautions :	Prevent spills to enter and spread to drains, sewers, water courses and soil. Contact local safety authorities.
Methods for cleaning up :	Contain leaking product with sand, earth or other suitable inert material and collect. Disposal according to Clause 13.

7. Handling and Storage

Handling :	Handle in accordance with good industrial hygiene and safety practices. If handled at elevated temperatures or with high speed mechanical equipment, vapours or mists might be released and require a well ventilated work place.
Storage :	Store at ambient temperature or with lowest necessary heating as handling requires.

8. Exposure controls / Personal Protection

Control parameters :	Exposure via the air and normal handling
Chemical name :	Mineral oil.
Engineering measures to :	Mechanical ventilation and local exhaust will reduce exposure via the air. Use oil resistant material in construction of handling equipment. Store under recommended conditions and if heated, temperature control equipment should be used to avoid overheating.

Personal protective equipment

Respiratory protection :	If necessary, use suitable mask with filter
Hand protection :	Wear oil-resistant protective gloves if there is a risk of repeated skin contact.
Eye protection :	Wear safety goggles if splashes may occur.
Skin and body protection :	Wear protective clothing if there is a risk of skin contact and change them frequently.
Hygiene measures :	Act in accordance with good industrial hygiene and safety practice.

(400)
Ls

Physical and Chemical Properties

Form	:	Viscous liquid
Colour	:	White to Pale yellow
Pour point	:	< - 30
Initial boiling point	:	> 350 °C
Density 15 °C	:	0.820
Flash point, PMCC	:	154 °C
Auto ignition temp.	:	> 400 °C
Solubility in water	:	Non soluble
Solubility in organic solvents	:	soluble
Decomposition temp.	:	> 350 °C
PH	:	Neutral
Odour	:	Almost odourless

10. Stability and Reactivity

Stability	:	Stable at normal conditions. Start to decompose at 350 °C or higher.
Avoid	:	Excessive heating and highly oxidizing agents.
Hazardous decomposition : Products	:	Flammable gases which might also be noxious, from approx. 154 °C, before decomposition temperature, with air present, there is a risk for auto-ignition.

11. Toxicological information

Acute toxicity	:	Studies available indicate oral and dermal LD 50 S of > 2000 mg/kg (LD 50 / oral / rat – 5000 mg/kg)
Local effects: - Inhalation	:	Prolonged and repeated inhalation of mist of vapour generated at elevated temperatures may irritate respiratory tract.
- Oral	:	May cause nausea and eventually vomiting and diarrhoea.
- Skin contact	:	Prolonged or repeated exposure may lead to defatting of the skin and subsequent irritation. May cause oil acne.
- Eye contact	:	May cause redness and transient pain.
- Sensitisation	:	Studies indicate no evidence of sensitisation.

UniKing International
80, Habaq Street,
Marsaskala - Malta
Tel: (+356) 2163 9790
Fax: (+356) 2163 7256
Email: mail@unikingintl.com

12. Ecological Information

Mobility	:	Low, due to low water solubility.
Persistence / degradability	:	Not readily bio-degradable
Ecotoxicity	:	Aquatic toxicity data on mineral oils indicate LC ₅₀ values of >1000 mg / l. Substances may not meet criteria for ready degradability and components have log P _{ow} values > 3.9. However, chronic toxicity studies show no long term hazard to the aquatic environment.

13. Disposal considerations

Residues / contaminated packaging should be regarded as hazardous waste and be taken care of in accordance with local regulations. Flush small spillages with plenty of water, absorb large spillage in sand and incinerate in safe area.

14. Transport Information

The products are not classified as hazardous goods for land, sea and air transport according to the respective regulations.

15. Regulatory information

Classified according to European directives on classification of hazardous substances and preparations. Not classified as hazardous. No statutory label required.

16. Other information

Non hazardous Material

1. Hazardous chemical Data book, G. Weiss, Noyes Data Corp. USA.
2. Dangerous properties of industrial material, N.I. say USA.



SODIUM CHLORITE (SOLUTION)

Safety Data Sheet According to REACH Regulation (1907/2006/EC) and Regulation (EU) 453/2010

Date of issue: 01-12-2010

Revision: 04

SECTION 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Name: Sodium chlorite, 35% max. w/w aqueous solution
 Index number under Regulation (EC) No 1272/2008 on classification, labelling and packaging: Not available.
 CAS number: 7758-19-2.
 REACH Registration number (sodium chlorite): 01-2119529240-51-0000

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses:

- Textile.
- Cellulose.
- Treatment for potable water, industrial water and residual water.
- Deodorization and purification.
- Production of chlorine dioxide.
- Feeding Industry.

Uses advised against:

There are no uses advised against providing that the instructions described in this Safety Data Sheet are observed.

1.3. Details of the supplier of the safety data sheet

Manufacturer, importer o distributor: Manufacturer.
 Name: ERCROS S.A.
 Group: ERCROS S.A.
 Full address: Avda. Diagonal 595
 08014 Barcelona - Spain
 Telephone number: +34 934 393 009 Fax: +34 934 308 073

e-mail address for the competent person responsible for the safety data sheet: dcunill@ercros.es

1.4. Emergency telephone number

Manufacturing plant: Sabiñánigo: Tel: +34 974 480 600 Fax: +34 974 498 006
 UK National Poisons Emergency number: 0870 600 6266

SODIUM CHLORITE (SOLUTION)

SECTION 2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 on classification, labeling and packaging:

Oxidising Liquid: Category 1, H271

Acute toxicity - oral: Category 4, H302.

Irreversible effects on the eye: Category 1, H318

Specific target organ toxicity – repeated exposure: Category 2, H373.

Hazardous to the aquatic environment: Aquatic acute, Category 1, H400 and Aquatic chronic, Category 3, H412

H271: May cause fire or explosion; strong oxidiser.

H302: Harmful if swallowed.

H318: Causes serious eye damage.

H373: May cause damage to organs through prolonged or repeated exposure.

H400: Very toxic to aquatic life.

H412: Harmful to aquatic life with long lasting effects.

Classification according to Directive 67/548/EEC or Directive 1999/45/EC:

O; R8: Contact with combustible material may cause fire

Xn; R22: Harmful if swallowed

R32: Contact with acids liberates very toxic gas.

Xn; R48/22: Harmful: danger of serious damage to health by prolonged exposure if swallowed.

Xi; R41: Risk of serious damage to eyes

N; R50: Very toxic to aquatic organisms

2.2. Label elements



DANGER

H271: May cause fire or explosion; strong oxidiser.

H302: Harmful if swallowed.

H318: Causes serious eye damage.

H373: May cause damage to organs through prolonged or repeated exposure.

H410: Very toxic to aquatic life with long lasting effects.

EUH032: Contact with acids liberates very toxic gas.

P221: Take any precaution to avoid mixing with combustibles.

P280: Wear protective gloves, protective clothing, eye protection and face protection.

P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P303+P361+P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P371+P380+P375: In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.



SODIUM CHLORITE (SOLUTION)

2.3. Other hazards

The substance does not meet the criteria for PBT or vPvB (see section 12).

Physicochemical hazards:

In contact with acids or acid substances, it generates chlorine dioxide (ClO₂), a toxic and explosive gas.
Contamination with reducing and combustible materials may give rise to reactions which generate chlorine dioxide.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Mixture

Name: Sodium chlorite (20 – 35%).

Index number R. 1272/2008	EC number	CAS number	Name	Concentration	Classification Directive 67/548/EEC	Classification Regulation (EC) 1272/2008	Specific concentration limits and M-factor
Not available	231-836-6	7758-19-2	Sodium chlorite	20-35%	O; R8 Xn; R22 T; R24 R32 Xn; R48/22 C; R34 Xi; R41 N; R50	Ox. sol. 1, H271. Acute Tox. - oral: 3, H301. Acute Tox. - dermal: 2, H310. Skin Corr. 1B, H314. STOT RE 2, H373. Aquatic acute, 1, H400. M-factor = 1 Aquatic chronic, 3, H412	Acute M-factor = 1
--	231-791-2	7732-18-5	Water	Rest	--	--	--

SECTION 4. FIRST AID MEASURES

4.1. Description of first aid measures

4.1.1 General information:

Remove clothing immediately. Submerge in water to prevent the possibility of a fire. Wash shoes with water.

4.1.2. In case of inhalation:

In the event of formation of chlorine dioxide, move the patient to a well ventilated place, lying flat and at rest. If the affected person stops breathing, give artificial respiration. If breathing with difficulty, give oxygen. Always seek medical help.

4.1.3. After skin contact:

Wash the area affected with plenty of water for at least 15 minutes, removing soiled clothing and shoes. Seek immediate medical attention.

4.1.4. After eye contact:

Wash eyes with plenty of water for at least 30 minutes. Seek immediate medical attention.

4.1.5. In case of ingestion:

Do not induce vomit.

If conscious, give water on demand and seek immediate medical attention.

If unconscious, maintain the patient at rest and warm, and seek immediate medical attention.

4.1.6. Recommended personal protective equipment for first aid responders:

Self-contained breathing equipment. Individual protective equipment (gloves and suitable clothing).



SODIUM CHLORITE (SOLUTION)

4.2 Most important symptoms and effects, both acute and delayed

Inhalation: It can cause irritation of the respiratory tract and airways.

Skin contact: May cause skin irritation. With the impregnated clothes it may cause burns.

Eye contact: May cause burns in the eyes. It may cause ulceration of the conjunctiva and of the cornea.

Ingestion: It may cause burns in the mouth and oesophagus. It may cause intestinal perforation.

4.3. Indication of any immediate medical attention and special treatment needed

Need of urgent medical attention.

SECTION 5. FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media:

A lot of water. Form curtains of water to absorb the gases that are generated in the combustion.

Keep containers and deposits cool, spraying them with water if exposed to the fire.

If feasible, remove the combustible agent.

Remove the containers from the area of fire, if this does not entail risk.

Unsuitable extinguishing media:

CO2 powder (powdered dry ice), foam (organic products).

5.2. Special hazards arising from the substance or mixture

The product is not flammable or explosive. If it reaches 175 °C it decomposes to chlorine and chlorate.

Subsequent decomposition of the chlorate produces oxygen which may give rise to the explosion or bursting of closed containers.

5.3. Advice for firefighters

Self-contained breathing equipment. Individual protective equipment (gloves and suitable clothing).

Seek emplacement with your back against the wind.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Avoid contact with the eyes, skin and clothing. Do not act without appropriate protective equipment (see section 8).

6.2. Environmental precautions

If the spill is small, absorb the product using non-combustible materials such as sand or clay.

If the spill is large, keep the product away from drains and surface waters and use contention methods, do not use combustible materials (wood, paper, clothing etc.). Recover the whole product that is possible in a clean dry plastic or metallic container.

Following product recovery, flush area with water.

If the product reaches a natural water course, advise the Civil Protection authorities.

6.3. Methods and material for containment and cleaning up

Absorb any spillage using sand, earth or clay. Wash the area with plenty of water.

Take the absorbent products to a safe storage for treatment by expert personnel in handling the product or an authorised waste manager.

6.4. Reference to other sections

See protection measures in section 8.



SODIUM CHLORITE (SOLUTION)

SECTION 7. HANDLING AND STORAGE

7.1. Precautions for safe handling

Do not smoke, eat or drink when handling the product. Avoid the formation of sparks.
 Maintain storage and work areas totally clean, devoid of any trace of foreign or incompatible products.
 Before handling the product, make sure that the containers, vessels and tanks to be used are clean, dry and appropriate for the intended use. Do not return the product (nor samples) to containers or tanks (risk of decomposition).
 Avoid mixing with incompatible products (acids, acid materials, reducers, combustible materials, oils, greases, rags, etc).
 Containers shall be properly closed and appropriately labelled.
 Avoid spills and if they occur rinse them thoroughly before they dry. Avoid contact with the skin, eyes and clothing.
 Always use the recommended protective clothing.

7.2. Conditions for safe storage, including any incompatibilities

Recommended materials: For containers: Plastic (PP, PVC, PE), stainless steel tanks.
 For tanks and silos: Stainless steel, Polyester coated carbon steel, FRP
Incompatible materials :
 Wood, Rubber, Aluminium, Copper and Alloys.
Storage conditions: Keep in a dry place away from heat sources.
Temperature and humidity range/limits: Avoid temperatures below -10 °C (crystallizes)
Special conditions: Keep the product separated from flammables, combustibles, acids and organics. Avoid direct sunlight.

7.3. Specific end use(s)

In the generation of chlorine dioxide, its concentration shall be controlled, as it is explosive at concentrations greater than 8% by volume in air.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

VLA-ED: 0,1 ppm 0,28 mg/m³ VLA-EC 0,3 ppm 0.84 mg/m³ (INSHT, Spain) (as ClO₂)
 TLV-TWA: 0,1 ppm 0,28 mg/m³ STEL-C 0,3 ppm (ACGIH) (as ClO₂)
 WEL- Limit value - Eight hours: 0,1 ppm 0,28 mg/m³ WEL- Limit value – short-term: 0,3 ppm 0.84 mg/m³ (UK) (as ClO₂)

Dust:
 Particulates, nor otherwise regulated:
 TLV-TWA- Total dust 10 mg/m³
 Respirable dust 3 mg/m³ (ACGIH 2005)

Human exposure:
 Workers:
 DNEL (systemic effects: acute and chronic): 0.58 mg/kg body weight/day (dermal; developmental toxicity / teratogenicity)
 DNEL (systemic effects: acute and chronic): 0.41 mg/m³ (inhalation; developmental toxicity / teratogenicity)



SODIUM CHLORITE (SOLUTION)

General population:

DNEL (systemic effects: acute and chronic): 0.29 mg/kg body weight/day (dermal; developmental toxicity / teratogenicity)

DNEL (systemic effects: acute and chronic): 0.1 mg/m³ (inhalation; developmental toxicity / teratogenicity)

DNEL (systemic effects: acute and chronic): 0.029 mg/kg body weight/day (oral; developmental toxicity / teratogenicity)

PNEC (freshwater): 0.65 µg/L (based on the lowest short-term aquatic toxicity value LC50 = 0.65 mg/L and assessment factor 1000).

PNEC (saltwater): 0.065 µg/L (based on the lowest short-term aquatic toxicity value LC50 = 0.65 mg/L and assessment factor 10000).

PNEC (intermittent releases): 0.0065 mg/L (based on the lowest short-term aquatic toxicity value LC50 = 0.65 mg/L and assessment factor 100).

PNEC (sewage treatment plant): 1 mg/L (based on the lowest effect concentration on microorganisms EC50 (3 h) > 100 mg/L and assessment factor 100).

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Use adequate ventilation to keep a low concentration in air.

8.2.2. Individual protection measures, such as personal protective equipment

Respiratory protection:

For aerosols use respiratory protection mask (FPP2).

In the event of formation of chlorine dioxide use breathing protection mask with filter for inorganic gases (Chlorine) for low concentrations (EN 136), for higher concentrations use self-contained breathing equipment. (EN.137).

Hand protection:

Gloves for chemical hazards, PVC type (do not use leather or natural rubber) (EN 374)

Eye protection:

Use safety goggles or face shield if there is a risk of projection of liquids (EN 166).

Protección cutánea:

Anti-acid suit. Do not use cotton, leather or natural rubber.

8.2.3. Environmental exposure controls

Avoid the product from reaching drains and/or surface waters.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance (physical state and colour):	Liquid, yellowish.
Odour:	Odourless



SODIUM CHLORITE (SOLUTION)

Odour threshold:	No data available.
pH:	11/12 (Solution of 100 g/L H ₂ O)
Melting point/freezing point:	Crystallisation temperature: +10°C (34,5% solution) -10°C (25% solution) -2°C (7.5% solution)
Initial boiling point and boiling range:	112°C (300 g/l solution)
Flash point:	Non flammable
Flammability (solid, gas):	Not applicable
Upper/lower flammability or explosive limits:	No data available
Explosive properties:	Non explosive.
Oxidising properties:	Oxidising liquid: Category 1: May cause fire or explosion; strong oxidiser.
Vapour pressure:	No data available.
Relative density:	25% solution aprox. 1210 Kg/m ³ 31% solution aprox. 1280 Kg/m ³ 34,5% solution aprox. 1310 Kg/m ³
Water solubility:	Miscible.
Partition coefficient: n-octanol/water:	-2.7 at 25 °C (method EU A8 and OECD 107).
Viscosity:	2.33 mPa.s (15-25%) 3.26 mPa.s (31%)
Vapour density:	No data available.
Evaporation rate:	No data available.



SODIUM CHLORITE (SOLUTION)

Auto-ignition temperature:	No data available.
Decomposition temperature:	180 - 200° C (in solid state)
<u>9.2. Other information</u>	
<p>Organic peroxide: Based on the available data, the classification criteria are not met.</p> <p>Self-heating: Based on the available data, the classification criteria are not met.</p> <p>Pyrophoric liquid/solid: Based on the available data, the classification criteria are not met (based on the structure).</p> <p>Corrosive to metals: No data available.</p> <p>Substance which in contact with water emits flammable gases: Based on the available data, the classification criteria are not met.</p>	
SECTION 10. STABILITY AND REACTIVITY	
<u>10.1. Reactivity</u>	
The reaction with acids produces the formation of chlorine and chlorine dioxide.	
<u>10.2. Chemical stability</u>	
The substance is stable under normal environmental conditions and foreseeable conditions of temperature and pressure during the storage and handling.	
<u>10.3. Possibility of hazardous reactions</u>	
<p>Violent exothermic reaction, development of heat with reducing materials (sodium sulphite).</p> <p>Potentially explosive reaction and fire with combustible materials (wood, cellulose, grease, cotton...)</p>	
<u>10.4. Conditions to avoid</u>	
Heating, sun light.	
<u>10.5. Incompatible materials</u>	
Acids, acid substances (aluminum sulphate, aluminum chloride, ferric chloride..), wood, cellulose, grease, cotton.	
<u>10.6. Hazardous decomposition products</u>	



SODIUM CHLORITE (SOLUTION)

The product decomposes into chloride and sodium chlorate under heating and direct sun-light. The subsequent decomposition of chlorate releases oxygen with risk of bursting of containers.

In contact with acid materials (Acids, aluminium polychloride, aluminum sulphate, ferric chloride, etc.) chlorine dioxide is formed, with risk of explosion.

SECTION 11. TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects:

11.2. acute effects (acute toxicity, irritation and corrosivity):

11.2.1. LD50 oral (lethal dose, 50%)	390 mg/kg body weight (rat; 31% aqueous solution) (EPA 1978 40 CFR, Part 163) Acute toxicity - Category 4: Harmful if swallowed.
11.2.2. LD50 dermal (lethal dose, 50%)	>2000 mg/kg body weight (rabbit; 31% aqueous solution) (EPA 8/22/78 40 CFR Part 163) Based on available data, the classification criteria are not met.
11.2.3. LC50 inhalation (lethal dose, 50%)	An acute inhalation toxicity study is not required since exposure of humans via inhalation is unlikely taking into account the vapour pressure of the substance and/or the possibility of exposure to aerosols, particles or droplets of an inhalable size.
11.2.4. Skin corrosion /irritation	Non- irritant (rabbit; 34.5% aqueous solution) (OECD 404). Based on available data, the classification criteria are not met.
11.2.5. Serious eye damage/irritation	Irreversible effects in the eye: Category 1: H318: Causes serious eye damage. Irreversible effects in the eye (rabbit; 31% aqueous solution). (Guidelines for Hazardous Evaluation for Humans and Domestic Animals, Federal Register, Vol. 43, No. 163, 1978; section 163.81-5)
11.2.6 Specific target organ toxicity – single exposure	No data available.



SODIUM CHLORITE (SOLUTION)

11.3. Sensitisation:

Respiratory sensitisation: No data available.

Skin sensitisation: Based on available data, the classification criteria are not met.

Non sensitising (guinea pig; male and female)

(OECD 406 and method EU B.6).

11.4. Repeated dose toxicity:

Specific target organ toxicity – repeated exposure: Category 2: May cause damage to organs through prolonged or repeated exposure.

Minor clinical signs and histopathological abnormalities in the stomach mucosa were observed at 25 mg/kg/day. At the lowest dose level there were no changes considered to be treatment-related and it was therefore, concluded that the no observed effect level was 10 mg/kg/day.

Oral route: NOAEL: 10 mg/kg body weight/day (rat; male and female; subchronic; 90 days)
(EPA OPP 82-1)

11.5 CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction):

Carcinogenicity: Based on available data, the classification criteria are not met.

Oral route: NOEL: ≥ 32.1 mg/kg body weight/day (85 weeks)

Dermal route: NOEL: ≥ 57.14 mg/kg body weight/day (51 weeks)

Germ cell mutagenicity: Based on available data, the classification criteria are not met.

Positive results in *in vitro* gene mutation studies in bacteria (method equivalent to OECD 471) and positive results in *in vitro* gene mutation studies in mammalian cells (method equivalent to OECD 476).

Negative results in *in vivo* chromosome aberration studies (method equivalent to OECD 474 and OECD 475)

Reproductive toxicity: Based on available data, the classification criteria are not met.

Oral route: A two-generation reproduction and development neurotoxicity study with sodium chlorite in the rat was conducted and no evidence of reproductive toxicity was observed.

NOAEL (F1 and F2)= 2.9 mg/kg body weight/day

(EPA OPPTS 870.3800).

Reproductive toxicity, effects on or via lactation: No data available.

11.6. Aspiration hazard:

No data available.

SECTION 12. ECOLOGICAL INFORMATION

12.1. Toxicity



SODIUM CHLORITE (SOLUTION)

Acute toxicity to fish	
LC50 (lethal concentration, 50%):	<p>Sodium chlorite: Species: <i>Oncorhynchus mykiss</i>. 106 mg/L (96 h; freshwater; semi-static system)</p> <p>Species: <i>Cyprinodon variegates</i>. 105 mg/L (96 h; saltwater; flow-through system) (EPA OPP 72-1)</p>
Chronic toxicity to fish	
NOEC (no observed effect concentration):	The study does not need to be conducted since the chemical safety assessment indicates that there is no need to investigate further the effects on aquatic organisms.
Acute toxicity to crustaceans	
EC50 (effect concentration, 50%):	<p>Sodium chlorite: Species: <i>Daphnia magna</i>. <1 mg/L (48 h; freshwater; static system) (OECD 202 and method EU C.2)</p> <p>Species: <i>Mysidopsis bahia</i> (<i>Americamysis bahia</i>). 0.65 mg/L (96 h; saltwater; flow-through system; based on mobility) (EPA OPP 72-3)</p>
Chronic toxicity to crustaceans	
NOEC (no observed effect concentration):	The study does not need to be conducted since the chemical safety assessment indicates that there is no need to investigate further the effects on aquatic organisms.
Acute toxicity to algae and other aquatic plants	
EC50 (effect concentration, 50%):	<p>Sodium chlorite: Species: <i>Selenastrum capricornutum</i> (<i>Pseudokirchnerella subcapitata</i>) 1 mg/L (96 h; freshwater; static system) (EPA OPP 122-2)</p>
Toxicity data on soil micro- and macro-organisms and other environmentally relevant organisms, such as birds, bees and plants	



SODIUM CHLORITE (SOLUTION)

Direct and indirect exposure of the soil compartment is unlikely. Two routes of entry to the soil compartment are possible: via deposition of chlorite present in aerosols from cooling towers or via deposition of sewage sludge. The substance chlorine dioxide is highly reactive and it will readily react with organic matter and microorganisms present in sewage sludge or in soil and will be reduced to chloride via the transient intermediate chlorite. Hence there will be no exposure to soil. Chlorite in aerosols deposited in soil would also be expected to degrade to chloride on contact with soil.

12.2. Persistence and degradability

Readily biodegradable	Not applicable (inorganic substance). Sodium chlorite is expected to be rapidly reduced to sodium chloride in the environment, especially in anaerobic conditions.
Other relevant information	<p>Irradiation of sodium chlorite solutions indicated a photodegradation half-life of about 30 minutes with a steady increase in pH (pH 8 to 12.6) and major products identified as hydroxide, chlorine dioxide and chloride with chlorate and hypochlorite as minor products and trace amounts of chlorine.</p> <p>The results obtained show that the pH and the initial concentration of sodium chlorite have no significant effect on the rate of photodecomposition of chlorite. These results also indicate that the radiation dose (9000 j/m²) needed to produce a 50% reduction in chlorite concentration suggests that the doses (200-250 j/m²) used for drinking water disinfection would not result in a significant reduction in chlorite concentrations.</p>

12.3. Bioaccumulative potential

Bioconcentration factor (BCF): experimental data:	Sodium chlorite is highly water soluble with an extremely low Log Pow. Therefore, the substance has a low potential for bioaccumulation. Due to its extremely low lipophilicity and high instability in water, sodium chlorite and hence chlorine dioxide are not expected to bioaccumulate.
Partition coefficient: n-octanol/water (log Pow):	-2.7 at 25 °C (method EU A8 and OECD 107).

12.4. Mobility in soil

No data available.

12.5. Results of PBT (persistent, bioaccumulative and toxic) and vPvB (very persistent and very bioaccumulative) assessment

Persistence assessment (P):



SODIUM CHLORITE (SOLUTION)

Sodium chlorite is a strong oxidizing agent and under proper reducing conditions is readily reduced to chloride, and to a lesser extent, chlorate.

Irradiation of sodium chlorite solutions indicated a photodegradation half-life of about 30 minutes with a steady increase in pH (pH 8 to 12.6) and major products identified as hydroxide, chlorine dioxide and chloride with chlorate and hypochlorite as minor products and trace amounts of chlorine.

The available half-life data indicate that the assessed substance is not a P.

Bioaccumulation assessment (B):

Sodium chlorite is highly water soluble with an extremely low Log Pow. There is therefore no concern for potential bioaccumulation from either chlorine dioxide or chlorite.

Toxicity assessment (T):

Sodium Chlorite is classify as acute oral tox 3, acute dermal tox 2, skin corrosive 1B, eye damage 1, STOT Rep Exp 2, acute aquatic 1 and chronic aquatic 3.

The substance is not considered as PBT / vPvB.

12.6. Other adverse effects

No data available.

SECTION 13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Spent containers shall be rinsed to remove all remaining product.

Dilute the product with abundant water avoiding the presence of solids which it may ignite (clothing, paper, wood, etc).

Take into account considerations stated in previous sections regarding incompatibilities.

The product will be disposed of in accordance with the regulation currently in force and specifically with:

- Directive 2008/98/EC, of 19 November 2008 on waste and the corresponding national regulations which transpose this Directive.
- Directive 94/62/EC, of 20 December 1994 on packaging and packaging waste and its modifications and corresponding national regulations which transpose this Directive.
- Commission Decision 2001/118/EC of 16 January 2001 amending Decision 2000/532/EC as regards the list of wastes and any other regulation currently in force in the European Community, National and Local with regard to the correct disposal of this material and its empty containers.

SECTION 14. TRANSPORT INFORMATION

14.1 ADR (road)/RID (rail)

14.1.1 UN number:




UN 1908

14.1.2 UN proper shipping name:

CHLORITE SOLUTION



SODIUM CHLORITE (SOLUTION)

14.1.3 Transport hazard class:	8	Label: 8
14.1.4 Packing group:	II	
14.1.5. Environmental hazards:	Environmentally hazardous substance.	Label: 
<u>14.2 IMDG (sea)</u>		
14.2.1 UN number:	UN 1908	
14.2.2 UN proper shipping name:	CHLORITE SOLUTION	
14.2.3 Transport hazard class:	8	Label:8
14.2.4 Packing group:	II	
14.2.5. Environmental hazards:	Environmentally hazardous substance.	Label: 
<u>14.3 ICAO / IATA (air)</u>		
14.3.1 UN number:	UN 1908	
14.3.2 UN proper shipping name:	CHLORITE SOLUTION	
14.3.3 Transport hazard class(es):	8	Label:8
14.3.4 Packing group:	II	
14.3.5. Environmental hazards:	Environmentally hazardous substance.	Label: 
<u>14.4. Special precautions for user</u>		



SODIUM CHLORITE (SOLUTION)

It is necessary to attend to the same information described in the previous epigraphs: ADR, RID, IMDG, ICAO / IATA.

14.5. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not applicable.

SECTION 15. REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Council Directive 96/82/EC on the control of major-accident hazards involving dangerous substances.

Council Directive 98/24/EC of 7 April 1998 on the protection of the health and safety of workers from the risks related to chemical agents at work.

15.2. Chemical safety assessment

The supplier has carried out a chemical safety assessment for the substance.

SECTION 16. OTHER INFORMATION

Revision 02: Classification and labelling update (Second adaptation to technical and scientific progress of Regulation 1272/2008).

Revision 03: New exposure scenario included in the Annex.

Revision 04: Section 16: Classification and labelling for sodium chlorite aqueous solutions.

Information sources used in the elaboration of this Safety Data Sheet:

- HANDBOOK OF REACTIVE CHEMICALS HAZARDS. BREThERIC 4ª Ed. 1990
- DANGEROUS PROPERTIES INDUSTRIAL MATERIALS (TENTH EDITION) SAX
- HAZARDOUS CHEMICALS DATA BOOK (2nd EDITION) G.WEIS.
- IARC (International Agency for Research on Cancer).
- NIOSH (National Institute for Occupational Safety and Health).
- NTP (National Toxicology Program).
- ACGIH (American Conference of Governmental Industrial Hygienist).
- OSHA (Occupational Health and Safety Assessment)
- INSHT (Instituto Nacional de Seguridad e Higiene en el Trabajo).
- IUCLID DATA SET

Abbreviations:

N/A = not applicable



SODIUM CHLORITE (SOLUTION)

< SMALLER THAN > GREATER THAN

VLA-EC: Valor Límite Ambiental-Exposición de Corta Duración (Spain)

ED: Exposición diaria

TLV-STEL: Threshold Limit Value - Short term exposure limit

TWA: Time Weighted Average (Media ponderada en el tiempo)

WEL: workplace exposure limit (UK)

DNEL: derived no effect level

PNEC: predicted no effect concentration

Classification and labelling for sodium chlorite (pure substance):

Classification	Labelling
Ox. sol. 1, H271.	Danger
Acute Tox. - oral: 3, H301.	GHS03
Acute Tox. - dermal: 2, H310.	GHS05
Skin Corr. 1B, H314.	GHS06
STOT RE 2, H373.	GHS08
Aquatic acute 1, H400	GHS09
M-factor acute: 1	H271
Aquatic chronic 3, H412	H301
	H310
	H314
	H373
	H410
	EUH032
	EUH071

Classification and labelling for sodium chlorite aqueous solutions:

Concentration	Classification	Labelling
≥1% - <3%	Eye irrit. 2, H319	Warning GHS07 H319 EUH032
≥3% - <6.045%	Eye Dam. 1, H318	Danger GHS05 H318 EUH032
≥6.045% - <10%	Acute Tox. - oral: 4, H302 Eye Dam. 1, H318	Danger GHS05 GHS07 H302 H318 EUH032
≥10% - <20%	Acute Tox. - oral: 4, H302 Eye Dam. 1, H318 STOT RE 2, H373	Danger GHS05 GHS07 GHS08 H302 H318 H373 EUH032
≥20% - <25%	Ox. liq. 1, H271 Acute Tox. - oral: 4, H302 Eye Dam. 1, H318 STOT RE 2, H373	Danger GHS03 GHS05 GHS07



SODIUM CHLORITE (SOLUTION)

		GHS08 H271 H302 H318 H373 EUH032
≥25%-35%	Ox. liq. 1, H271 Acute Tox. - oral: 4, H302 Eye Dam. 1, H318 STOT RE 2, H373 Aquatic acute 1, H400 M-factor acute: 1 Aquatic chronic 3, H412	Danger GHS03 GHS05 GHS07 GHS08 GHS09 H271 H302 H318 H373 H410 EUH032

Any chemical product can be handled safely if its physical and chemical properties are known, and appropriate safety measures and clothing are employed.

The information contained in this brochure is a guide for the user and based on both reference texts and on our own experience. It is intended to reflect the current state of the art, but shall under no circumstances compromise our liability. This information cannot be used as a substitute for patented processes.

Users shall comply with the legal dispositions and regulations in force, particularly those relating to Health and Safety and the Storage and Transport of Dangerous Goods.

We recommend that our clients perform the corresponding tests before using the product in new, insufficiently tested fields.

ERCROS S.A

Head office:

Avda Diagonal 595

08014 Barcelona

Tel: +34 934 393 009 – Fax: +34 934 874 058

Factory:

Sabiñánigo (HUESCA)

Serrablo 102

22600 Sabiñánigo (Huesca)

Tel: +34 974 48 06 00 Fax: +34 974 49 80 06



SODIUM CHLORITE (SOLUTION)

ANNEX I

Exposure scenarios: Sodium Chlorite

1.- Title		
Manufacture stage		
Environment:	ERC 1	
Worker		
Charging/discharging non-dedicated facilities	PROC 8a	
Closed process	PROC 2	
Transfer to small containers	PROC 9	
Laboratory reagent	PROC 15	
Transfer at dedicated facilities	PROC 8b	
2. Operational conditions and risk management measures		
Containment as defined by Seveso Directive.		
2.1.- Control of environmental exposure: 1		
Product characteristics		
Amounts used		
Daily use at a site	<= 23.53 tonnes/day	
Annual use at a site	<= 6.087E3 tonnes/year	
Percentage of tonnage used at regional scale	= 100 %	
Frequency and duration of use		
Environment factors not influenced by risk management		
Receiving surface water flow rate	>= 1.8E4 m3/d	
Other given operational conditions affecting environmental exposure		
Technical conditions and measures at process level (source) to prevent release		
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil		
No releases	no releases [Water: 100%; Air: 100%; Soil: 100%]	
Organizational measures to prevent/limit release from site		
Conditions and measures related to municipal sewage treatment plant		
Municipal STP	Yes [Water: 100%]	
Discharge rate of STP	>= 2E3 m3/d	
Application of the STP sludge on agricultural soil	No	
Conditions and measures related to external treatment of waste for disposal		
Conditions and measures related to external recovery of waste		
Additional good practice advice beyond the REACH CSA		
The substance is corrosive, therefore the following Personal Protective Equipment is recommended as good industrial practice advice: <ul style="list-style-type: none"> • Avoid contact with contaminated tools and objects • Train staff on good standard of personal hygiene. • Wash skin after contact with substance/product containing the substance. Immediate removal/dry cleaning and disposal of spills.		
2.2.- Control of workers exposure		
Control of workers exposure for "Charging/discharging non-dedicated facilities" [PROC 8a]		
	Inhal*)	Derm*)



SODIUM CHLORITE (SOLUTION)

		Loc	Sys	Loc	Sys
Product characteristics					
Substance in preparation	Yes		L		
Concentration of substance in product	> 25%		L		
Amounts used					
Frequency and duration of use/exposure					
Duration of activity	15 mins - 1 hour		L		
Human factors not influenced by risk management					
Other given operational conditions affecting workers exposure					
Place of use	Indoors		L		
Surface of skin exposed	Two hands (960 cm2)				L
Technical conditions and measures at process level (source) to prevent release					
Technical conditions and measures to control dispersion from source towards the worker					
Local Exhaust Ventilation	No		L		L
Organisational measures to prevent /limit releases, dispersion and exposure					
Conditions and measures related to personal protection, hygiene and health evaluation					
Respiratory protection	Respiratory protection capable offering a 90% reduction in inhaled concentrations of the substance		L		
respirator masks	half mask respirator [Inhalation: 90%]		L		
wear a respirator conforming to EN140 with type A filter or better					
gloves	chemically resistant gloves with specific activity training and intensive management supervision controls [Dermal: 98%]				L
Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls (PPE18)					
Additional good practice advice beyond the REACH CSA					
The substance is corrosive, therefore the following Personal Protective Equipment is recommended as good industrial practice advice: <ul style="list-style-type: none"> • Avoid contact with contaminated tools and objects • Train staff on good standard of personal hygiene. • Wash skin after contact with substance/product containing the substance. Immediate removal/dry cleaning and disposal of spills.					
Control of workers exposure for "Closed process" [PROC 2]					
		Inhal*)		Derm*)	
		Lo c	Sys	Loc	Sys
Product characteristics					
Substance in preparation	Yes		L		
Concentration of substance in product	> 25%		L		
Amounts used					
Frequency and duration of use/exposure					
Duration of activity	>4 hours		L		
Human factors not influenced by risk management					
Other given operational conditions affecting workers exposure					
Place of use	Indoors		L		



SODIUM CHLORITE (SOLUTION)

Surface of skin exposed	Two hands face (480 cm ²)				L
Technical conditions and measures at process level (source) to prevent release					
Level of containment	Use in closed, continuous process with occasional controlled exposure	L			
Technical conditions and measures to control dispersion from source towards the worker					
Local Exhaust Ventilation	Yes [Inhalation: 90%; Dermal: 90%]	L			L
Organisational measures to prevent /limit releases, dispersion and exposure					
Conditions and measures related to personal protection, hygiene and health evaluation					
Respiratory protection	Respiratory protection capable offering a 90% reduction in inhaled concentrations of the substance	L			
gloves	chemically resistant gloves with specific activity training [Dermal: 95%]				L
wear chemically resistant gloves (tested to EN374) in combination with specific activity training (PPE17)					
Additional good practice advice beyond the REACH CSA					
The substance is corrosive, therefore the following Personal Protective Equipment is recommended as good industrial practice advice:					
<ul style="list-style-type: none"> • Avoid contact with contaminated tools and objects • Train staff on good standard of personal hygiene. • Wash skin after contact with substance/product containing the substance. • Immediate removal/dry cleaning and disposal of spills. 					
Control of workers exposure for "Transfer to small containers" [PROC 9]					
		Inhal*)		Derm*)	
		Loc	Sys	Loc	Sys
Product characteristics					
Substance in preparation	Yes	L			
Concentration of substance in product	> 25%	L			
Amounts used					
Frequency and duration of use/exposure					
Duration of activity	>4 hours	L			
Human factors not influenced by risk management					
Other given operational conditions affecting workers exposure					
Place of use	Indoors	L			
Surface of skin exposed	Two hands face (480 cm ²)				L
Technical conditions and measures at process level (source) to prevent release					
Technical conditions and measures to control dispersion from source towards the worker					
Local Exhaust Ventilation	Yes [Inhalation: 90%; Dermal: 90%]	L			L
Organisational measures to prevent /limit releases, dispersion and exposure					
Conditions and measures related to personal protection, hygiene and health evaluation					
Respiratory protection	Respiratory protection capable offering a 90% reduction in inhaled concentrations of the substance	L			
gloves	chemically resistant gloves with specific activity training [Dermal: 95%]				L
wear chemically resistant gloves (tested to EN374) in combination with specific activity training (PPE17)					



SODIUM CHLORITE (SOLUTION)

Additional good practice advice beyond the REACH CSA					
The substance is corrosive, therefore the following Personal Protective Equipment is recommended as good industrial practice advice: <ul style="list-style-type: none"> • Avoid contact with contaminated tools and objects • Train staff on good standard of personal hygiene. • Wash skin after contact with substance/product containing the substance. • Immediate removal/dry cleaning and disposal of spills. 					
Control of workers exposure for "Laboratory reagent" [PROC 15]					
		Inhal*)		Derm*)	
		Loc	Sys	Loc	Sys
Product characteristics					
Substance in preparation	Yes		L		
Concentration of substance in product	> 25%		L		
Amounts used					
Frequency and duration of use/exposure					
Duration of activity	1 - 4 hours		L		
Human factors not influenced by risk management					
Other given operational conditions affecting workers exposure					
Place of use	Indoors		L		
Surface of skin exposed	One hand face only (240 cm ²)				L
Technical conditions and measures at process level (source) to prevent release					
Technical conditions and measures to control dispersion from source towards the worker					
Local Exhaust Ventilation	Yes [Inhalation: 90%; Dermal: 90%]		L		L
Organisational measures to prevent /limit releases, dispersion and exposure					
Conditions and measures related to personal protection, hygiene and health evaluation					
Respiratory protection	Respiratory protection is not used		L		
gloves	chemically resistant gloves with basic training [Dermal: 90%]				L
wear chemically resistant gloves (tested to EN374) in combination with basic employee training					
Additional good practice advice beyond the REACH CSA					
The substance is corrosive, therefore the following Personal Protective Equipment is recommended as good industrial practice advice: <ul style="list-style-type: none"> • Avoid contact with contaminated tools and objects • Train staff on good standard of personal hygiene. • Wash skin after contact with substance/product containing the substance. • Immediate removal/dry cleaning and disposal of spills. 					
Control of workers exposure for "Transfer at dedicated facilities" [PROC 8b]					
		Inhal*)		Derm*)	
		Loc	Sys	Loc	Sys
Product characteristics					
Substance in preparation	Yes		L		
Concentration of substance in product	> 25%		L		
Amounts used					
Frequency and duration of use/exposure					
Duration of activity	15 mins - 1 hour		L		



SODIUM CHLORITE (SOLUTION)

Human factors not influenced by risk management					
Other given operational conditions affecting workers exposure					
Place of use	Indoors		L		
Surface of skin exposed	Two hands face (480 cm ²)				L
Technical conditions and measures at process level (source) to prevent release					
Technical conditions and measures to control dispersion from source towards the worker					
Local Exhaust Ventilation	Yes [Inhalation: 97%; Dermal: 90%]		L		L
Organisational measures to prevent /limit releases, dispersion and exposure					
Conditions and measures related to personal protection, hygiene and health evaluation					
Respiratory protection	Respiratory protection capable offering a 90% reduction in inhaled concentrations of the substance		L		
gloves	chemically resistant gloves with specific activity training [Dermal: 95%]				L
wear chemically resistant gloves (tested to EN374) in combination with specific activity training (PPE17)					
Additional good practice advice beyond the REACH CSA					
The substance is corrosive, therefore the following Personal Protective Equipment is recommended as good industrial practice advice: <ul style="list-style-type: none"> • Avoid contact with contaminated tools and objects • Train staff on good standard of personal hygiene. • Wash skin after contact with substance/product containing the substance. • Immediate removal/dry cleaning and disposal of spills. 					
3.- Exposure estimation					
See: http://www.ercros.es/esp/internas.asp?arxiu=sl_1					
4.- Guidance to DU to evaluate whether he works inside the boundaries set by the ES					
The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions and implemented risk management measures are adequate. This has to be done by showing that they limit the inhalation and dermal exposure to a level below the respective DNEL (given that the processes and activities in question are covered by the PROCs listed above) as given below. If measured data are not available, the DU may make use of an appropriate scaling tool such as Dermal exposure: ECETOC TRA v2 (with modifications) <u>Important note:</u> By demonstrating a safe use when comparing exposure estimates with the long-term DNEL, the acute DNEL is therefore also covered (according to R.14 guidance, acute exposure levels can be derived by multiplying long-term exposure estimates by a factor of 2).					

1.- Title	
Water treatment. Sodium chlorite/chlorine dioxide	
Market sector:	
PC 37 - Water treatment chemicals	
Sector of use:	
SU 23 - Electricity, steam, gas water supply and sewage treatment	
Environment:	ERC 7/6b. (No releases)
Worker	
Use in closed system	PROC 2
2.- Operational conditions and risk management measures	
Closed system. PPE when sampling	



SODIUM CHLORITE (SOLUTION)

2.1.- Control of environmental exposure: Water treatment

Product characteristics	
Amounts used	
Daily use at a site	<= 27.16 tonnes/day
Annual use at a site	<= 8.148E3 tonnes/year
Percentage of tonnage used at regional scale	= 100 %
Frequency and duration of use	
	300 days
Environment factors not influenced by risk management	
Receiving surface water flow rate	>= 1.8E4 m3/d
Other given operational conditions affecting environmental exposure	
Technical conditions and measures at process level (source) to prevent release	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
No releases	no releases [Water: 100%; Air: 100%; Soil: 100%]
Organizational measures to prevent/limit release from site	
Conditions and measures related to municipal sewage treatment plant	
Municipal STP	Yes [Water: 100%]
Discharge rate of STP	>= 2E3 m3/d
Application of the STP sludge on agricultural soil	Yes
Conditions and measures related to external treatment of waste for disposal	
Conditions and measures related to external recovery of waste	
Additional good practice advice beyond the REACH CSA	

2.2.- Control of workers exposure

Control of workers exposure for "Use in closed system" [PROC 2]

		Inhal*)		Derm*)	
		Loc	Sys	Loc	Sys
Product characteristics					
Substance in preparation	Yes		L		
Concentration of substance in product	> 25%		L		
Amounts used					
Frequency and duration of use/exposure					
Duration of activity	>4 hours		L		
Human factors not influenced by risk management					
Other given operational conditions affecting workers exposure					
Place of use	Indoors		L		
Surface of skin exposed	Two hands face (480 cm2)				L
Technical conditions and measures at process level (source) to prevent release					
Level of containment	Use in closed, continuous process with occasional controlled exposure		L		
Technical conditions and measures to control dispersion from source towards the worker					
Local Exhaust Ventilation	Yes [Inhalation: 90%; Dermal: 90%]		L		L
Organisational measures to prevent /limit releases, dispersion and exposure					



SODIUM CHLORITE (SOLUTION)

Conditions and measures related to personal protection, hygiene and health evaluation					
Respiratory protection	Respiratory protection capable offering a 90% reduction in inhaled concentrations of the substance		L		
gloves	chemically resistant gloves with specific activity training [Dermal: 95%]				L
wear chemically resistant gloves (tested to EN374) in combination with specific activity training (PPE17)					
Additional good practice advice beyond the REACH CSA					
<p>The substance is corrosive, therefore the following Personal Protective Equipment is recommended as good industrial practice advice:</p> <ul style="list-style-type: none"> • Avoid contact with contaminated tools and objects • Train staff on good standard of personal hygiene. • Wash skin after contact with substance/product containing the substance. • Immediate removal/dry cleaning and disposal of spills. 					
3.- Exposure estimation					
See: http://www.ercros.es/esp/internas.asp?arxiu=sl_1					
4.- Guidance to DU to evaluate whether he works inside the boundaries set by the ES					
<p>The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions and implemented risk management measures are adequate. This has to be done by showing that they limit the inhalation and dermal exposure to a level below the respective DNEL (given that the processes and activities in question are covered by the PROCs listed above) as given below. If measured data are not available, the DU may make use of an appropriate scaling tool such as</p> <p>Dermal exposure: ECETOC TRA v2 (with modifications)</p> <p><u>Important note:</u> By demonstrating a safe use when comparing exposure estimates with the long-term DNEL, the acute DNEL is therefore also covered (according to R.14 guidance, acute exposure levels can be derived by multiplying long-term exposure estimates by a factor of 2).</p>					

1.- Title	
Paper pulp bleaching	
Market sector:	
PC 26 - Paper and board dye, finishing and impregnation products: including bleaches and other processing aids;	
Paper pulp bleaching	
Sector of use:	
SU 6b - Manufacture of pulp, paper and paper products	
Environment:	ERC 6b
Worker	
Closed system	PROC 1
Closed continuous with occasional contact	PROC 2
Formulation or synthesis	PROC 3
Use in batch with possible exposure	PROC 4
Mixing in batch	PROC 5
Transfer at non-dedicated facilities	PROC 8a
Transfer at dedicated facilities	PROC 8b
Transfer in small containers	PROC 9
Laboratory reagent	PROC 15
2.- Operational conditions and risk management measures	



SODIUM CHLORITE (SOLUTION)

2.1.- Control of environmental exposure: Paper pulp bleaching

Product characteristics	
Amounts used	
Daily use at a site	<= 2.85 tonnes/day
Annual use at a site	<= 628.6 tonnes/year
Percentage of tonnage used at regional scale	= 100 %
Frequency and duration of use	
	= 220 days
Environment factors not influenced by risk management	
Receiving surface water flow rate	>= 1.8E4 m3/d
Other given operational conditions affecting environmental exposure	
Technical conditions and measures at process level (source) to prevent release	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
No releases	no releases [Water: 100%; Air: 100%; Soil: 100%]
Organizational measures to prevent/limit release from site	
Conditions and measures related to municipal sewage treatment plant	
Municipal STP	Yes [Water: 100%]
Discharge rate of STP	>= 2E3 m3/d
Application of the STP sludge on agricultural soil	Yes
Conditions and measures related to external treatment of waste for disposal	
Conditions and measures related to external recovery of waste	
Additional good practice advice beyond the REACH CSA	

2.2.- Control of workers exposure

Control of workers exposure for "Closed system " [PROC 1]

		Inhal*)		Derm*)	
		Loc	Sys	Loc	Sys
Product characteristics					
Substance in preparation	Yes		L		
Concentration of substance in product	> 25%		L		
Amounts used					
Frequency and duration of use/exposure					
Duration of activity	>4 hours		L		
Human factors not influenced by risk management					
Other given operational conditions affecting workers exposure					
Place of use	Indoors		L		
Surface of skin exposed	One hand face only (240 cm2)				L
Technical conditions and measures at process level (source) to prevent release					
Level of containment	Use in batch and other process (synthesis) where opportunity for exposure arises		L		
Technical conditions and measures to control dispersion from source towards the worker					
Local Exhaust Ventilation	No		L		L
Organisational measures to prevent /limit releases, dispersion and exposure					



SODIUM CHLORITE (SOLUTION)

Conditions and measures related to personal protection, hygiene and health evaluation					
Respiratory protection	Respiratory protection capable offering a 90% reduction in inhaled concentrations of the substance		L		
gloves	chemically resistant gloves with specific activity training [Dermal: 95%]				L
wear chemically resistant gloves (tested to EN374) in combination with specific activity training (PPE17)					
Additional good practice advice beyond the REACH CSA					
The substance is corrosive, therefore the following Personal Protective Equipment is recommended as good industrial practice advice: <ul style="list-style-type: none"> Avoid contact with contaminated tools and objects Train staff on good standard of personal hygiene. Wash skin after contact with substance/product containing the substance. Immediate removal/dry cleaning and disposal of spills. 					
Control of workers exposure for "Closed continuous with occasional contact" [PROC 2]					
		Inhal*)		Derm*)	
		Loc	Sys	Loc	Sys
Product characteristics					
Substance in preparation	Yes		L		
Concentration of substance in product	> 25%		L		
Amounts used					
Frequency and duration of use/exposure					
Duration of activity	>4 hours		L		
Human factors not influenced by risk management					
Other given operational conditions affecting workers exposure					
Place of use	Indoors		L		
Surface of skin exposed	Two hands face (480 cm ²)				L
Technical conditions and measures at process level (source) to prevent release					
Level of containment	Use in closed, continuous process with occasional controlled exposure		L		
Technical conditions and measures to control dispersion from source towards the worker					
Local Exhaust Ventilation	Yes [Inhalation: 90%; Dermal: 90%]		L		L
Organisational measures to prevent /limit releases, dispersion and exposure					
Conditions and measures related to personal protection, hygiene and health evaluation					
Respiratory protection	Respiratory protection capable offering a 90% reduction in inhaled concentrations of the substance		L		
gloves	chemically resistant gloves with specific activity training [Dermal: 95%]				L
wear chemically resistant gloves (tested to EN374) in combination with specific activity training (PPE17)					
Additional good practice advice beyond the REACH CSA					
The substance is corrosive, therefore the following Personal Protective Equipment is recommended as good industrial practice advice: <ul style="list-style-type: none"> Avoid contact with contaminated tools and objects Train staff on good standard of personal hygiene. Wash skin after contact with substance/product containing the substance. Immediate removal/dry cleaning and disposal of spills. 					
Control of workers exposure for "Formulation or synthesis" [PROC 3]					



SODIUM CHLORITE (SOLUTION)

		Inhal*)		Derm*)	
		Loc	Sys	Loc	Sys
Product characteristics					
Substance in preparation	Yes		L		
Concentration of substance in product	> 25%		L		
Amounts used					
Frequency and duration of use/exposure					
Duration of activity	>4 hours		L		
Human factors not influenced by risk management					
Other given operational conditions affecting workers exposure					
Place of use	Indoors		L		
Surface of skin exposed	One hand face only (240 cm2)				L
Technical conditions and measures at process level (source) to prevent release					
Level of containment	Use in closed batch process (synthesis or formulation)		L		
Technical conditions and measures to control dispersion from source towards the worker					
Local Exhaust Ventilation	Yes [Inhalation: 90%; Dermal: 90%]		L		L
Organisational measures to prevent /limit releases, dispersion and exposure					
Conditions and measures related to personal protection, hygiene and health evaluation					
Respiratory protection	Respiratory protection capable offering a 90% reduction in inhaled concentrations of the substance		L		
gloves	chemically resistant gloves with specific activity training [Dermal: 95%]				L
wear chemically resistant gloves (tested to EN374) in combination with specific activity training (PPE17)					
Additional good practice advice beyond the REACH CSA					
The substance is corrosive, therefore the following Personal Protective Equipment is recommended as good industrial practice advice:					
<ul style="list-style-type: none"> • Avoid contact with contaminated tools and objects • Train staff on good standard of personal hygiene. • Wash skin after contact with substance/product containing the substance. • Immediate removal/dry cleaning and disposal of spills. 					
Control of workers exposure for "Use in batch with possible exposure" [PROC 4]					
		Inhal*)		Derm*)	
		Loc	Sys	Loc	Sys
Product characteristics					
Substance in preparation	Yes		L		
Concentration of substance in product	> 25%		L		
Amounts used					
Frequency and duration of use/exposure					
Duration of activity	>4 hours		L		
Human factors not influenced by risk management					
Other given operational conditions affecting workers exposure					
Place of use	Indoors		L		
Surface of skin exposed	Two hands face (480 cm2)				L
Technical conditions and measures at process level (source) to prevent release					



SODIUM CHLORITE (SOLUTION)

Level of containment	Use in batch and other process (synthesis) where opportunity for exposure arises		L		
Technical conditions and measures to control dispersion from source towards the worker					
Local Exhaust Ventilation	Yes [Inhalation: 90%; Dermal: 90%]		L		L
Organisational measures to prevent /limit releases, dispersion and exposure					
Conditions and measures related to personal protection, hygiene and health evaluation					
Respiratory protection	Respiratory protection capable offering a 90% reduction in inhaled concentrations of the substance		L		
gloves	chemically resistant gloves with specific activity training [Dermal: 95%]				L
wear chemically resistant gloves (tested to EN374) in combination with specific activity training (PPE17)					
Additional good practice advice beyond the REACH CSA					
The substance is corrosive, therefore the following Personal Protective Equipment is recommended as good industrial practice advice:					
<ul style="list-style-type: none"> • Avoid contact with contaminated tools and objects • Train staff on good standard of personal hygiene. • Wash skin after contact with substance/product containing the substance. • Immediate removal/dry cleaning and disposal of spills. 					
Control of workers exposure for "Mixing in batch" [PROC 5]					
		Inhal*)		Derm*)	
		Loc	Sys	Loc	Sys
Product characteristics					
Substance in preparation	Yes		L		
Concentration of substance in product	> 25%		L		
Amounts used					
Frequency and duration of use/exposure					
Duration of activity	>4 hours		L		
Human factors not influenced by risk management					
Other given operational conditions affecting workers exposure					
Place of use	Indoors		L		
Surface of skin exposed	Two hands face (480 cm ²)				L
Technical conditions and measures at process level (source) to prevent release					
Technical conditions and measures to control dispersion from source towards the worker					
Local Exhaust Ventilation	Yes [Inhalation: 90%; Dermal: 99.5%]		L		L
Organisational measures to prevent /limit releases, dispersion and exposure					
Conditions and measures related to personal protection, hygiene and health evaluation					
Respiratory protection	Respiratory protection capable offering a 90% reduction in inhaled concentrations of the substance		L		
gloves	chemically resistant gloves with specific activity training [Dermal: 95%]				L
wear chemically resistant gloves (tested to EN374) in combination with specific activity training (PPE17)					
Additional good practice advice beyond the REACH CSA					
The substance is corrosive, therefore the following Personal Protective Equipment is recommended as good industrial practice advice:					
<ul style="list-style-type: none"> • Avoid contact with contaminated tools and objects 					



SODIUM CHLORITE (SOLUTION)

<ul style="list-style-type: none"> • Train staff on good standard of personal hygiene. • Wash skin after contact with substance/product containing the substance. • Immediate removal/dry cleaning and disposal of spills. 					
Control of workers exposure for "Transfer at non-dedicated facilities" [PROC 8a]					
		Inhal*)		Derm*)	
		Loc	Sys	Loc	Sys
Product characteristics					
Substance in preparation	Yes		L		
Concentration of substance in product	> 25%		L		
Amounts used					
Frequency and duration of use/exposure					
Duration of activity	15 mins - 1 hour		L		
Human factors not influenced by risk management					
Other given operational conditions affecting workers exposure					
Place of use	Indoors		L		
Surface of skin exposed	Two hands (960 cm ²)				L
Technical conditions and measures at process level (source) to prevent release					
Technical conditions and measures to control dispersion from source towards the worker					
Local Exhaust Ventilation	No		L		L
Organisational measures to prevent /limit releases, dispersion and exposure					
Conditions and measures related to personal protection, hygiene and health evaluation					
Respiratory protection	Respiratory protection capable offering a 90% reduction in inhaled concentrations of the substance		L		
respirator masks	half mask respirator [Inhalation: 90%]		L		
wear a respirator conforming to EN140 with type A filter or better					
gloves	chemically resistant gloves with specific activity training and intensive management supervision controls [Dermal: 98%]				L
Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls (PPE18)					
Additional good practice advice beyond the REACH CSA					
The substance is corrosive, therefore the following Personal Protective Equipment is recommended as good industrial practice advice: <ul style="list-style-type: none"> • Avoid contact with contaminated tools and objects • Train staff on good standard of personal hygiene. • Wash skin after contact with substance/product containing the substance. • Immediate removal/dry cleaning and disposal of spills. 					
Control of workers exposure for "Transfer at dedicated facilities" [PROC 8b]					
		Inhal*)		Derm*)	
		Loc	Sys	Loc	Sys
Product characteristics					
Substance in preparation	Yes		L		
Concentration of substance in product	> 25%		L		
Amounts used					
Frequency and duration of use/exposure					



SODIUM CHLORITE (SOLUTION)

Duration of activity	15 mins - 1 hour		L		
Human factors not influenced by risk management					
Other given operational conditions affecting workers exposure					
Place of use	Indoors		L		
Surface of skin exposed	Two hands face (480 cm ²)				L
Technical conditions and measures at process level (source) to prevent release					
Technical conditions and measures to control dispersion from source towards the worker					
Local Exhaust Ventilation	Yes [Inhalation: 97%; Dermal: 90%]		L		L
Organisational measures to prevent /limit releases, dispersion and exposure					
Conditions and measures related to personal protection, hygiene and health evaluation					
Respiratory protection	Respiratory protection capable offering a 90% reduction in inhaled concentrations of the substance		L		
gloves	chemically resistant gloves with specific activity training [Dermal: 95%]				L
wear chemically resistant gloves (tested to EN374) in combination with specific activity training (PPE17)					
Additional good practice advice beyond the REACH CSA					
The substance is corrosive, therefore the following Personal Protective Equipment is recommended as good industrial practice advice:					
<ul style="list-style-type: none"> • Avoid contact with contaminated tools and objects • Train staff on good standard of personal hygiene. • Wash skin after contact with substance/product containing the substance. • Immediate removal/dry cleaning and disposal of spills. 					
Control of workers exposure for "Transfer in small containers" [PROC 9]					
		Inhal*)		Derm*)	
		Loc	Sys	Loc	Sys
Product characteristics					
Substance in preparation	Yes		L		
Concentration of substance in product	> 25%		L		
Amounts used					
Frequency and duration of use/exposure					
Duration of activity	>4 hours		L		
Human factors not influenced by risk management					
Other given operational conditions affecting workers exposure					
Place of use	Indoors		L		
Surface of skin exposed	Two hands face (480 cm ²)				L
Technical conditions and measures at process level (source) to prevent release					
Technical conditions and measures to control dispersion from source towards the worker					
Local Exhaust Ventilation	Yes [Inhalation: 90%; Dermal: 90%]		L		L
Organisational measures to prevent /limit releases, dispersion and exposure					
Conditions and measures related to personal protection, hygiene and health evaluation					
Respiratory protection	Respiratory protection capable offering a 90% reduction in inhaled concentrations of the substance		L		
gloves	chemically resistant gloves with specific activity training [Dermal: 95%]				L



SODIUM CHLORITE (SOLUTION)

wear chemically resistant gloves (tested to EN374) in combination with specific activity training (PPE17)					
Additional good practice advice beyond the REACH CSA					
The substance is corrosive, therefore the following Personal Protective Equipment is recommended as good industrial practice advice: <ul style="list-style-type: none"> • Avoid contact with contaminated tools and objects • Train staff on good standard of personal hygiene. • Wash skin after contact with substance/product containing the substance. • Immediate removal/dry cleaning and disposal of spills. 					
Control of workers exposure for "Laboratory reagent" [PROC 15]					
		Inhal*)		Derm*)	
		Loc	Sys	Loc	Sys
Product characteristics					
Substance in preparation	Yes		L		
Concentration of substance in product	> 25%		L		
Amounts used					
Frequency and duration of use/exposure					
Duration of activity	1 - 4 hours		L		
Human factors not influenced by risk management					
Other given operational conditions affecting workers exposure					
Place of use	Indoors		L		
Surface of skin exposed	One hand face only (240 cm ²)				L
Technical conditions and measures at process level (source) to prevent release					
Technical conditions and measures to control dispersion from source towards the worker					
Local Exhaust Ventilation	Yes [Inhalation: 90%; Dermal: 90%]		L		L
Organisational measures to prevent /limit releases, dispersion and exposure					
Conditions and measures related to personal protection, hygiene and health evaluation					
Respiratory protection	Respiratory protection is not used		L		
gloves	chemically resistant gloves with basic training [Dermal: 90%]				L
wear chemically resistant gloves (tested to EN374) in combination with basic employee training					
Additional good practice advice beyond the REACH CSA					
The substance is corrosive, therefore the following Personal Protective Equipment is recommended as good industrial practice advice: <ul style="list-style-type: none"> • Avoid contact with contaminated tools and objects • Train staff on good standard of personal hygiene. • Wash skin after contact with substance/product containing the substance. • Immediate removal/dry cleaning and disposal of spills. 					
3.- Exposure estimation					
See: http://www.ercros.es/esp/internas.asp?arxiu=sl_1					
4.- Guidance to DU to evaluate whether he works inside the boundaries set by the ES					
The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions and implemented risk management measures are adequate. This has to be done by showing that they limit the inhalation and dermal exposure to a level below the respective DNEL (given that the processes and activities in question are covered by the PROCs listed above) as given below. If measured data are not available, the DU may make use of an appropriate scaling tool such as					



SODIUM CHLORITE (SOLUTION)

Dermal exposure: ECETOC TRA v2 (with modifications)

Important note: By demonstrating a safe use when comparing exposure estimates with the long-term DNEL, the acute DNEL is therefore also covered (according to R.14 guidance, acute exposure levels can be derived by multiplying long-term exposure estimates by a factor of 2).

1.- Title. Laboratory reagent

Market sector:

PC 21 - Laboratory Chemicals

Sector of use:

SU 24 - Scientific research and development

Laboratory reagent

Environment:

ERC 6b

Worker

Laboratory reagent

PROC 15

2- Operational conditions and risk management measures

2. 1.- Control of environmental exposure: Laboratory reagent

Product characteristics

Amounts used

Daily use at a site <= 1.4E-6 tonnes/day

Annual use at a site <= 5E-4 tonnes/year

Percentage of tonnage used at regional scale = 10 %

Frequency and duration of use

ESVOC 39 duration = 365 days

Environment factors not influenced by risk management

Receiving surface water flow rate >= 1.8E4 m3/d

Other given operational conditions affecting environmental exposure

Technical conditions and measures at process level (source) to prevent release

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

ESVOC39 Lab reagent [Water: 50%; Air: 50%; Soil: 100%]

laboratory reagent

Organizational measures to prevent/limit release from site

Conditions and measures related to municipal sewage treatment plant

Municipal STP Yes [Water: 87.3%]

Discharge rate of STP >= 2E3 m3/d

Application of the STP sludge on agricultural soil Yes

Conditions and measures related to external treatment of waste for disposal

Conditions and measures related to external recovery of waste

Additional good practice advice beyond the REACH CSA

Control of workers exposure for "Laboratory reagent" [PROC 15]

		Inhal*)		Derm*)	
		Loc	Sys	Loc	Sys
Product characteristics					
Substance in preparation	Yes		L		



SODIUM CHLORITE (SOLUTION)

Concentration of substance in product	> 25%		L		
Amounts used					
Frequency and duration of use/exposure					
Duration of activity	1 - 4 hours		L		
Human factors not influenced by risk management					
Other given operational conditions affecting workers exposure					
Place of use	Indoors		L		
Surface of skin exposed	One hand face only (240 cm ²)				L
Technical conditions and measures at process level (source) to prevent release					
Technical conditions and measures to control dispersion from source towards the worker					
Local Exhaust Ventilation	Yes [Inhalation: 90%; Dermal: 90%]		L		L
Organisational measures to prevent /limit releases, dispersion and exposure					
Conditions and measures related to personal protection, hygiene and health evaluation					
Respiratory protection	Respiratory protection is not used		L		
gloves	chemically resistant gloves with basic training [Dermal: 90%]				L
wear chemically resistant gloves (tested to EN374) in combination with basic employee training					
Additional good practice advice beyond the REACH CSA					

3.- Exposure estimation

See: http://www.ercros.es/esp/internas.asp?arxiu=sl_1

4.- Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions and implemented risk management measures are adequate. This has to be done by showing that they limit the inhalation and dermal exposure to a level below the respective DNEL (given that the processes and activities in question are covered by the PROCs listed above) as given below. If measured data are not available, the DU may make use of an appropriate scaling tool such as

Dermal exposure: ECETOC TRA v2 (with modifications)

Important note: By demonstrating a safe use when comparing exposure estimates with the long-term DNEL, the acute DNEL is therefore also covered (according to R.14 guidance, acute exposure levels can be derived by multiplying long-term exposure estimates by a factor of 2).

1.- Title. Bleaching for textile

Market sector:

PC 34 - Textile dyes, finishing and impregnating products; including bleaches and other processing aids;

Sector of use:

SU 5 - Manufacture of textiles, leather, fur

Textile treatment

Environment:

ERC 6b

Worker

Closed use. No exposure

PROC 1

Closed continuous, occasional exposure

PROC 2

Closed batch process

PROC 3

Mixing for formulations

PROC 5

Transfer at non-dedicated facilities

PROC 8a

Transfer at dedicated facilities

PROC 8b



SODIUM CHLORITE (SOLUTION)

2.- Operational conditions and risk management measures					
2.1.- Control of environmental exposure: Bleaching for textile					
Product characteristics					
Amounts used					
Daily use at a site	<= 3.16 tonnes/day				
Annual use at a site	<= 695.6 tonnes/year				
Percentage of tonnage used at regional scale	= 100 %				
Frequency and duration of use					
Frequency and duration of use. AISE formulation	= 220 days				
Environment factors not influenced by risk management					
Receiving surface water flow rate	>= 1.8E4 m3/d				
Other given operational conditions affecting environmental exposure					
Technical conditions and measures at process level (source) to prevent release					
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil					
No releases	no releases [Water: 100%; Air: 100%; Soil: 100%]				
Organizational measures to prevent/limit release from site					
Conditions and measures related to municipal sewage treatment plant					
Municipal STP	Yes [Water: 100%]				
Discharge rate of STP	>= 2E3 m3/d				
Application of the STP sludge on agricultural soil	Yes				
Conditions and measures related to external treatment of waste for disposal					
Conditions and measures related to external recovery of waste					
Additional good practice advice beyond the REACH CSA					
2.2.- Control of workers exposure for "Closed use. No exposure" [PROC 1]					
				Inhal*)	
				Derm*)	
				Loc	Sys
				Loc	Sys
Product characteristics					
Substance in preparation	Yes				
Concentration of substance in product	> 25%				
Amounts used					
Frequency and duration of use/exposure					
Duration of activity	>4 hours				
Human factors not influenced by risk management					
Other given operational conditions affecting workers exposure					
Place of use	Indoors				
Surface of skin exposed	One hand face only (240 cm2)				
Technical conditions and measures at process level (source) to prevent release					
Level of containment	Use in batch and other process (synthesis) where opportunity for exposure arises				
Technical conditions and measures to control dispersion from source towards the worker					
Local Exhaust Ventilation	No				
Organisational measures to prevent /limit releases, dispersion and exposure					



SODIUM CHLORITE (SOLUTION)

Conditions and measures related to personal protection, hygiene and health evaluation					
Respiratory protection	Respiratory protection capable offering a 90% reduction in inhaled concentrations of the substance		L		
gloves	chemically resistant gloves with specific activity training [Dermal: 95%]				L
wear chemically resistant gloves (tested to EN374) in combination with specific activity training (PPE17)					
Additional good practice advice beyond the REACH CSA					
Control of workers exposure for "Closed continuous, occasional exposure" [PROC 2]					
		Inhal*)		Derm*)	
		Loc	Sys	Loc	Sys
Product characteristics					
Substance in preparation	Yes		L		
Concentration of substance in product	> 25%		L		
Amounts used					
Frequency and duration of use/exposure					
Duration of activity	>4 hours		L		
Human factors not influenced by risk management					
Other given operational conditions affecting workers exposure					
Place of use	Indoors		L		
Surface of skin exposed	Two hands face (480 cm2)				L
Technical conditions and measures at process level (source) to prevent release					
Level of containment	Use in closed, continuous process with occasional controlled exposure		L		
Technical conditions and measures to control dispersion from source towards the worker					
Local Exhaust Ventilation	Yes [Inhalation: 90%; Dermal: 90%]		L		L
Organisational measures to prevent /limit releases, dispersion and exposure					
Conditions and measures related to personal protection, hygiene and health evaluation					
Respiratory protection	Respiratory protection capable offering a 90% reduction in inhaled concentrations of the substance		L		
gloves	chemically resistant gloves with specific activity training [Dermal: 95%]				L
wear chemically resistant gloves (tested to EN374) in combination with specific activity training (PPE17)					
Additional good practice advice beyond the REACH CSA					
Control of workers exposure for "Closed batch process" [PROC 3]					
		Inhal*)		Derm*)	
		Loc	Sys	Loc	Sys
Product characteristics					
Substance in preparation	Yes		L		
Concentration of substance in product	> 25%		L		
Amounts used					
Frequency and duration of use/exposure					
Duration of activity	>4 hours		L		
Human factors not influenced by risk management					



SODIUM CHLORITE (SOLUTION)

Other given operational conditions affecting workers exposure					
Place of use	Indoors		L		
Surface of skin exposed	One hand face only (240 cm ²)				L
Technical conditions and measures at process level (source) to prevent release					
Level of containment	Use in closed batch process (synthesis or formulation)		L		
Technical conditions and measures to control dispersion from source towards the worker					
Local Exhaust Ventilation	Yes [Inhalation: 90%; Dermal: 90%]		L		L
Organisational measures to prevent /limit releases, dispersion and exposure					
Conditions and measures related to personal protection, hygiene and health evaluation					
Respiratory protection	Respiratory protection capable offering a 90% reduction in inhaled concentrations of the substance		L		
gloves	chemically resistant gloves with specific activity training [Dermal: 95%]				L
wear chemically resistant gloves (tested to EN374) in combination with specific activity training (PPE17)					
Additional good practice advice beyond the REACH CSA					
Control of workers exposure for "Mixing for formulations" [PROC 5]					
		Inhal*)		Derm*)	
		Loc	Sys	Loc	Sys
Product characteristics					
Substance in preparation	Yes		L		
Concentration of substance in product	> 25%		L		
Amounts used					
Frequency and duration of use/exposure					
Duration of activity	>4 hours		L		
Human factors not influenced by risk management					
Other given operational conditions affecting workers exposure					
Place of use	Indoors		L		
Surface of skin exposed	Two hands face (480 cm ²)				L
Technical conditions and measures at process level (source) to prevent release					
Technical conditions and measures to control dispersion from source towards the worker					
Local Exhaust Ventilation	Yes [Inhalation: 90%; Dermal: 99.5%]		L		L
Organisational measures to prevent /limit releases, dispersion and exposure					
Conditions and measures related to personal protection, hygiene and health evaluation					
Respiratory protection	Respiratory protection capable offering a 90% reduction in inhaled concentrations of the substance		L		
gloves	chemically resistant gloves with specific activity training [Dermal: 95%]				L
wear chemically resistant gloves (tested to EN374) in combination with specific activity training (PPE17)					
Additional good practice advice beyond the REACH CSA					
Control of workers exposure for "Transfer at non-dedicated facilities" [PROC 8a]					
		Inhal*)		Derm*)	
		Loc	Sys	Loc	Sys
Product characteristics					



SODIUM CHLORITE (SOLUTION)

Substance in preparation	Yes		L		
Concentration of substance in product	> 25%		L		
Amounts used					
Frequency and duration of use/exposure					
Duration of activity	15 mins - 1 hour		L		
Human factors not influenced by risk management					
Other given operational conditions affecting workers exposure					
Place of use	Indoors		L		
Surface of skin exposed	Two hands (960 cm2)				L
Technical conditions and measures at process level (source) to prevent release					
Technical conditions and measures to control dispersion from source towards the worker					
Local Exhaust Ventilation	No		L		L
Organisational measures to prevent /limit releases, dispersion and exposure					
Conditions and measures related to personal protection, hygiene and health evaluation					
Respiratory protection	Respiratory protection capable offering a 90% reduction in inhaled concentrations of the substance		L		
respirator masks	half mask respirator [Inhalation: 90%]		L		
wear a respirator conforming to EN140 with type A filter or better					
gloves	chemically resistant gloves with specific activity training and intensive management supervision controls [Dermal: 98%]				L
Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls (PPE18)					
Additional good practice advice beyond the REACH CSA					
Control of workers exposure for "Transfer at dedicated facilities" [PROC 8b]					
		Inhal*)		Derm*)	
		Loc	Sys	Loc	Sys
Product characteristics					
Substance in preparation	Yes		L		
Concentration of substance in product	> 25%		L		
Amounts used					
Frequency and duration of use/exposure					
Duration of activity	15 mins - 1 hour		L		
Human factors not influenced by risk management					
Other given operational conditions affecting workers exposure					
Place of use	Indoors		L		
Surface of skin exposed	Two hands face (480 cm2)				L
Technical conditions and measures at process level (source) to prevent release					
Technical conditions and measures to control dispersion from source towards the worker					
Local Exhaust Ventilation	Yes [Inhalation: 97%; Dermal: 90%]		L		L
Organisational measures to prevent /limit releases, dispersion and exposure					
Conditions and measures related to personal protection, hygiene and health evaluation					
Respiratory protection	Respiratory protection capable offering a 90% reduction in inhaled concentrations of the substance		L		



SODIUM CHLORITE (SOLUTION)

gloves	chemically resistant gloves with specific activity training [Dermal: 95%]				L
wear chemically resistant gloves (tested to EN374) in combination with specific activity training (PPE17)					
Additional good practice advice beyond the REACH CSA					

3.- Exposure estimation

See: http://www.ercros.es/esp/internas.asp?arxiu=sl_1

4.- Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions and implemented risk management measures are adequate. This has to be done by showing that they limit the inhalation and dermal exposure to a level below the respective DNEL (given that the processes and activities in question are covered by the PROCs listed above) as given below. If measured data are not available, the DU may make use of an appropriate scaling tool such as

Dermal exposure: ECETOC TRA v2 (with modifications)

Important note: By demonstrating a safe use when comparing exposure estimates with the long-term DNEL, the acute DNEL is therefore also covered (according to R.14 guidance, acute exposure levels can be derived by multiplying long-term exposure estimates by a factor of 2).

1.- Title. Professional bleaching

Market sector:

PC 34 - Textile dyes, finishing and impregnating products; including bleaches and other processing aids;

Sector of use:

SU 5 - Manufacture of textiles, leather, fur

Environment:

ERC 8b

Worker

2.- Operational conditions and risk management measures

2.2.- Control of environmental exposure: Professional bleaching

Product characteristics

Amounts used

Daily wide dispersive use = 5.5E-5 tonnes/day

Frequency and duration of use

Environment factors not influenced by risk management

Receiving surface water flow rate $\geq 1.8E4$ m³/d

Other given operational conditions affecting environmental exposure

Technical conditions and measures at process level (source) to prevent release

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Organizational measures to prevent/limit release from site

Conditions and measures related to municipal sewage treatment plant

Municipal STP Yes [Water: 87.3%]

Discharge rate of STP $\geq 2E3$ m³/d

Application of the STP sludge on agricultural soil Yes

Conditions and measures related to external treatment of waste for disposal

Conditions and measures related to external recovery of waste

Additional good practice advice beyond the REACH CSA

2.2.- Control of workers exposure for "Dipping articles" [PROC 13]



SODIUM CHLORITE (SOLUTION)

		Inhal*)		Derm*)	
		Loc	Sys	Loc	Sys
Product characteristics					
Substance in preparation	yes				
Amounts used					
Frequency and duration of use/exposure					
Duration of activity	>4 hours				
Human factors not influenced by risk management					
Other given operational conditions affecting workers exposure					
Place of use	Indoors				
Surface of skin exposed	Two hands on face (2082.5 cm ²)			L	L
Technical conditions and measures at process level (source) to prevent release					
Technical conditions and measures to control dispersion from source towards the worker					
Local Exhaust Ventilation	No			L	L
Organisational measures to prevent /limit releases, dispersion and exposure					
Conditions and measures related to personal protection, hygiene and health evaluation					
Respiratory protection	Respiratory protection is not used				
Additional good practice advice beyond the REACH CSA					

3.- Exposure estimation

See: http://www.ercros.es/esp/internas.asp?arxiu=sl_1

4.- Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions and implemented risk management measures are adequate. This has to be done by showing that they limit the inhalation and dermal exposure to a level below the respective DNEL (given that the processes and activities in question are covered by the PROCs listed above) as given below. If measured data are not available, the DU may make use of an appropriate scaling tool such as

Dermal exposure: ECETOC TRA v2 (with modifications)

Important note: By demonstrating a safe use when comparing exposure estimates with the long-term DNEL, the acute DNEL is therefore also covered (according to R.14 guidance, acute exposure levels can be derived by multiplying long-term exposure estimates by a factor of 2).

1.- Title. Professional end-use stage. Cleaners

Market sector:	
PC 35 - Washing and Cleaning Products (including solvent based products)	
Sector of use:	
SU 22- Professional uses: Public domain	
Environment:	ERC 8b
Worker	
Brushing application	PROC 10
Hand-mixing	PROC 19
2.- Operational conditions and risk management measures	
Use of gloves	
2.1.- Control of environmental exposure: Professional end-use stage. Cleaners with bleaching	
Product characteristics	



SODIUM CHLORITE (SOLUTION)

Amounts used				
Daily wide dispersive use		= 8.2E-6 tonnes/day		
Frequency and duration of use				
Environment factors not influenced by risk management				
Receiving surface water flow rate		>= 1.8E4 m3/d		
Other given operational conditions affecting environmental exposure				
Technical conditions and measures at process level (source) to prevent release				
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil				
Organizational measures to prevent/limit release from site				
Conditions and measures related to municipal sewage treatment plant				
Municipal STP		Yes [Water: 87.3%]		
Discharge rate of STP		>= 2E3 m3/d		
Application of the STP sludge on agricultural soil		Yes		
Conditions and measures related to external treatment of waste for disposal				
Conditions and measures related to external recovery of waste				
Additional good practice advice beyond the REACH CSA				
2.2.- Control of workers exposure				
Control of workers exposure for "Brushing application" [PROC 10]				
		Inhal*)		Derm*)
		Loc	Sys	Loc Sys
Product characteristics				
Substance in preparation	Yes		L	
Concentration of substance in product	> 25%		L	
Amounts used				
Frequency and duration of use/exposure				
Duration of activity	>4 hours		L	
Human factors not influenced by risk management				
Other given operational conditions affecting workers exposure				
Place of use	Indoors		L	
Surface of skin exposed	Two hands (960 cm2)			L
Technical conditions and measures at process level (source) to prevent release				
Technical conditions and measures to control dispersion from source towards the worker				
Local Exhaust Ventilation	No		L	L
Organisational measures to prevent /limit releases, dispersion and exposure				
Conditions and measures related to personal protection, hygiene and health evaluation				
Respiratory protection	Respiratory protection is not used		L	
gloves	wear suitable gloves [Dermal: 90%]			L
wear suitable gloves tested to EN374 (PPE15)				
Additional good practice advice beyond the REACH CSA				
3.- Exposure estimation				
See: http://www.ercros.es/esp/internas.asp?arxiu=sl_1				
4.- Guidance to DU to evaluate whether he works inside the boundaries set by the ES				



SODIUM CHLORITE (SOLUTION)

The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions and implemented risk management measures are adequate. This has to be done by showing that they limit the inhalation and dermal exposure to a level below the respective DNEL (given that the processes and activities in question are covered by the PROCs listed above) as given below. If measured data are not available, the DU may make use of an appropriate scaling tool such as

Dermal exposure: ECETOC TRA v2 (with modifications)

Important note: By demonstrating a safe use when comparing exposure estimates with the long-term DNEL, the acute DNEL is therefore also covered (according to R.14 guidance, acute exposure levels can be derived by multiplying long-term exposure estimates by a factor of 2).

1.- Title. Professional end-use stage. Cleaning outdoors					
Market sector:					
PC 35 - Washing and Cleaning Products (including solvent based products)					
Sector of use:					
SU 22- Professional uses: Public domain			ERC 8e		
Worker					
Cleaning Outdoors			PROC 10		
Hand-mixing			PROC 19		
2.- Operational conditions and risk management measures					
2.1.- Control of environmental exposure: Professional end-use stage. Cleaning outdoors					
Product characteristics					
Amounts used					
Daily wide dispersive use			= 1.64E-5 tonnes/day		
Frequency and duration of use					
Environment factors not influenced by risk management					
Receiving surface water flow rate			>= 1.8E4 m3/d		
Other given operational conditions affecting environmental exposure					
Technical conditions and measures at process level (source) to prevent release					
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil					
Organizational measures to prevent/limit release from site					
Conditions and measures related to municipal sewage treatment plant					
Municipal STP			Yes [Water: 87.3%]		
Discharge rate of STP			>= 2E3 m3/d		
Application of the STP sludge on agricultural soil			Yes		
Conditions and measures related to external treatment of waste for disposal					
Conditions and measures related to external recovery of waste					
Additional good practice advice beyond the REACH CSA					
2.2.- Control of workers exposure					
Control of workers exposure for "Cleaning Outdoors" [PROC 10]					
			Inhal*)		Derm*)
			Loc	Sys	Sys
Product characteristics					
Substance in preparation			Yes	L	
Concentration of substance in product			> 25%	L	



SODIUM CHLORITE (SOLUTION)

Amounts used				
Frequency and duration of use/exposure				
Duration of activity	>4 hours		L	
Human factors not influenced by risk management				
Other given operational conditions affecting workers exposure				
Place of use	Indoors		L	
Surface of skin exposed	Two hands (960 cm ²)			L
Technical conditions and measures at process level (source) to prevent release				
Technical conditions and measures to control dispersion from source towards the worker				
Local Exhaust Ventilation	No		L	L
Organisational measures to prevent /limit releases, dispersion and exposure				
Conditions and measures related to personal protection, hygiene and health evaluation				
Respiratory protection	Respiratory protection is not used		L	
gloves	wear suitable gloves [Dermal: 90%]			L
wear suitable gloves tested to EN374 (PPE15)				
Additional good practice advice beyond the REACH CSA				

3.- Exposure estimation

See: http://www.ercros.es/esp/internas.asp?arxiu=sl_1

4.- Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions and implemented risk management measures are adequate. This has to be done by showing that they limit the inhalation and dermal exposure to a level below the respective DNEL (given that the processes and activities in question are covered by the PROCs listed above) as given below. If measured data are not available, the DU may make use of an appropriate scaling tool such as

Dermal exposure: ECETOC TRA v2 (with modifications)

Important note: By demonstrating a safe use when comparing exposure estimates with the long-term DNEL, the acute DNEL is therefore also covered (according to R.14 guidance, acute exposure levels can be derived by multiplying long-term exposure estimates by a factor of 2).

1.- Title. Consumer end-use stage. Cleaners with bleaching

Market sector:

PC 35 - Washing and Cleaning Products (including solvent based products)

Environment:

ERC 8b

Consumer

Consumer. Cleaning Indoors

PC 35

Cleaning Outdoors

PROC 10

Hand-mixing

PROC 19

2.- Operational conditions and risk management measures

2.1.- Control of environmental exposure: Consumer end-use stage. Cleaners with bleaching

Product characteristics

Amounts used*

Daily wide dispersive use

= 8.2E-6 tonnes/day

Frequency and duration of use

Environment factors not influenced by risk management



SODIUM CHLORITE (SOLUTION)

Receiving surface water flow rate	$\geq 1.8E4 \text{ m}^3/\text{d}$
Other given operational conditions affecting environmental exposure	
Conditions and measures related to municipal sewage treatment plant	
Municipal STP	Yes [Water: 87.3%]
Discharge rate of STP	$\geq 2E3 \text{ m}^3/\text{d}$
Application of the STP sludge on agricultural soil	Yes
Conditions and measures related to external treatment of waste for disposal	
Conditions and measures related to external recovery of waste	
Additional good practice advice beyond the REACH CSA	
2.2.- Control of consumers exposure	
Control of consumer's exposure for "Consumer. Cleaning Indoors" [PC 35]	
Product characteristics	
Preparation	
Amounts used	
Frequency and duration of use/exposure	
Daily	
3.- Exposure estimation: Cleaning Indoors	
See: http://www.ercros.es/esp/internas.asp?arxiu=sl_1	
4.- Guidance to DU to evaluate whether he works inside the boundaries set by the ES	
<p>The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions and implemented risk management measures are adequate. This has to be done by showing that they limit the inhalation and dermal exposure to a level below the respective DNEL (given that the processes and activities in question are covered by the PROCs listed above) as given below. If measured data are not available, the DU may make use of an appropriate scaling tool such as</p> <p>Dermal exposure: ECETOC TRA v2 (with modifications)</p> <p><u>Important note:</u> By demonstrating a safe use when comparing exposure estimates with the long-term DNEL, the acute DNEL is therefore also covered (according to R.14 guidance, acute exposure levels can be derived by multiplying long-term exposure estimates by a factor of 2).</p>	

1.- Title. Consumer end-use stage. Cleaning outdoors.	
Market sector:	
PC 35 - Washing and Cleaning Products (including solvent based products)	
Environment:	ERC 8e
Consumer	
Consumer cleaning Outdoors	PC 35
Cleaning Outdoors	PROC 10
Hand-mixing	PROC 19
2.- Operational conditions and risk management measures	
2.1.- Control of environmental exposure: Consumer end-use stage. Cleaning outdoors.	
Product characteristics	
Amounts used*	
Daily wide dispersive use	$= 8.2E-6 \text{ tonnes/day}$
Frequency and duration of use	
Environment factors not influenced by risk management	



SODIUM CHLORITE (SOLUTION)

Receiving surface water flow rate	>= 1.8E4 m3/d
Other given operational conditions affecting environmental exposure	
Conditions and measures related to municipal sewage treatment plant	
Municipal STP	Yes [Water: 87.3%]
Discharge rate of STP	>= 2E3 m3/d
Application of the STP sludge on agricultural soil	Yes
Conditions and measures related to external treatment of waste for disposal	
Conditions and measures related to external recovery of waste	
Additional good practice advice beyond the REACH CSA	
2.2.- Control of consumers exposure	
Control of consumers exposure for "Consumer cleaning Outdoors" [PC 35]	
Product characteristics	
preparation	
Amounts used	
Frequency and duration of use/exposure	
daily	
3.- Exposure estimation	
See: http://www.ercros.es/esp/internas.asp?arxiu=sl_1	
4.- Guidance to DU to evaluate whether he works inside the boundaries set by the ES	
<p>The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions and implemented risk management measures are adequate. This has to be done by showing that they limit the inhalation and dermal exposure to a level below the respective DNEL (given that the processes and activities in question are covered by the PROCs listed above) as given below. If measured data are not available, the DU may make use of an appropriate scaling tool such as</p> <p>Dermal exposure: ECETOC TRA v2 (with modifications)</p> <p><u>Important note:</u> By demonstrating a safe use when comparing exposure estimates with the long-term DNEL, the acute DNEL is therefore also covered (according to R.14 guidance, acute exposure levels can be derived by multiplying long-term exposure estimates by a factor of 2).</p>	

1.- Title. Starch Industry. Oxidant	
Market sector:	
PC 19 - Intermediate	
Sector of use:	
SU 4 – Manufacture of food products	
Environment:	ERC 6a
Worker	
used in closed system. No exposure	PROC 1
Used in closed system. Occasional exposure	PROC 2
Used in closed system. Formulation	PROC 3
Used in batch	PROC 4
2.- Operational conditions and risk management measures	
2.1.- Control of environmental exposure: Oxidant	
Product characteristics	
Amounts used	

SODIUM CHLORITE (SOLUTION)

Daily use at a site	<= 0.45 tonnes/day					
Annual use at a site	<= 100 tonnes/year					
Percentage of tonnage used at regional scale	= 100 %					
Frequency and duration of use						
Frequency and duration of use. AISE formulation	= 220 days					
Environment factors not influenced by risk management						
Receiving surface water flow rate	>= 1.8E4 m3/d					
Other given operational conditions affecting environmental exposure						
Technical conditions and measures at process level (source) to prevent release						
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil						
No releases	no releases [Water: 100%; Air: 100%; Soil: 100%]					
no releases. Wastes are incinerate.						
Organizational measures to prevent/limit release from site						
Conditions and measures related to municipal sewage treatment plant						
Municipal STP	Yes [Water: 100%]					
Discharge rate of STP	>= 2E3 m3/d					
Application of the STP sludge on agricultural soil	Yes					
Conditions and measures related to external treatment of waste for disposal						
Conditions and measures related to external recovery of waste						
Additional good practice advice beyond the REACH CSA						
2.2.- Control of workers exposure						
Control of workers exposure for "used in closed system. No exposure" [PROC 1]						
			Inhal*)		Derm*)	
			Loc	Sys	Loc	Sys
Product characteristics						
Substance in preparation	Yes		L			
Concentration of substance in product	> 25%		L			
Amounts used						
Frequency and duration of use/exposure						
Duration of activity	>4 hours		L			
Human factors not influenced by risk management						
Other given operational conditions affecting workers exposure						
Place of use	Indoors		L			
Surface of skin exposed	One hand face only (240 cm2)					L
Technical conditions and measures at process level (source) to prevent release						
Level of containment	Use in batch and other process (synthesis) where opportunity for exposure arises		L			
Technical conditions and measures to control dispersion from source towards the worker						
Local Exhaust Ventilation	No		L			L
Organisational measures to prevent /limit releases, dispersion and exposure						
Conditions and measures related to personal protection, hygiene and health evaluation						
Respiratory protection	Respiratory protection capable offering a 90% reduction in		L			



SODIUM CHLORITE (SOLUTION)

	inhaled concentrations of the substance				
gloves	chemically resistant gloves with specific activity training [Dermal: 95%]				L
wear chemically resistant gloves (tested to EN374) in combination with specific activity training (PPE17)					
Additional good practice advice beyond the REACH CSA					
Control of workers exposure for "Used in closed system. Occasional exposure" [PROC 2]					
		Inhal*)		Derm*)	
		Loc	Sys	Loc	Sys
Product characteristics					
Substance in preparation	Yes		L		
Concentration of substance in product	> 25%		L		
Amounts used					
Frequency and duration of use/exposure					
Duration of activity	>4 hours		L		
Human factors not influenced by risk management					
Other given operational conditions affecting workers exposure					
Place of use	Indoors		L		
Surface of skin exposed	Two hands face (480 cm ²)				L
Technical conditions and measures at process level (source) to prevent release					
Level of containment	Use in closed, continuous process with occasional controlled exposure		L		
Technical conditions and measures to control dispersion from source towards the worker					
Local Exhaust Ventilation	Yes [Inhalation: 90%; Dermal: 90%]		L		L
Organisational measures to prevent /limit releases, dispersion and exposure					
Conditions and measures related to personal protection, hygiene and health evaluation					
Respiratory protection	Respiratory protection capable offering a 90% reduction in inhaled concentrations of the substance		L		
gloves	chemically resistant gloves with specific activity training [Dermal: 95%]				L
wear chemically resistant gloves (tested to EN374) in combination with specific activity training (PPE17)					
Additional good practice advice beyond the REACH CSA					
Control of workers exposure for "Used in closed system. Formulation" [PROC 3]					
		Inhal*)		Derm*)	
		Loc	Sys	Loc	Sys
Product characteristics					
Substance in preparation	Yes		L		
Concentration of substance in product	> 25%		L		
Amounts used					
Frequency and duration of use/exposure					
Duration of activity	>4 hours		L		
Human factors not influenced by risk management					
Other given operational conditions affecting workers exposure					
Place of use	Indoors		L		



SODIUM CHLORITE (SOLUTION)

Surface of skin exposed	One hand face only (240 cm2)				L
Technical conditions and measures at process level (source) to prevent release					
Level of containment	Use in closed batch process (synthesis or formulation)		L		
Technical conditions and measures to control dispersion from source towards the worker					
Local Exhaust Ventilation	Yes [Inhalation: 90%; Dermal: 90%]		L		L
Organisational measures to prevent /limit releases, dispersion and exposure					
Conditions and measures related to personal protection, hygiene and health evaluation					
Respiratory protection	Respiratory protection capable offering a 90% reduction in inhaled concentrations of the substance		L		
gloves	chemically resistant gloves with specific activity training [Dermal: 95%]				L
wear chemically resistant gloves (tested to EN374) in combination with specific activity training (PPE17)					
Additional good practice advice beyond the REACH CSA					
Control of workers exposure for "Used in batch" [PROC 4]					
		Inhal*)		Derm*)	
		Loc	Sys	Loc	Sys
Product characteristics					
Substance in preparation	Yes		L		
Concentration of substance in product	> 25%		L		
Amounts used					
Frequency and duration of use/exposure					
Duration of activity	>4 hours		L		
Human factors not influenced by risk management					
Other given operational conditions affecting workers exposure					
Place of use	Indoors		L		
Surface of skin exposed	Two hands face (480 cm2)				L
Technical conditions and measures at process level (source) to prevent release					
Level of containment	Use in batch and other process (synthesis) where opportunity for exposure arises		L		
Technical conditions and measures to control dispersion from source towards the worker					
Local Exhaust Ventilation	Yes [Inhalation: 90%; Dermal: 90%]		L		L
Organisational measures to prevent /limit releases, dispersion and exposure					
Conditions and measures related to personal protection, hygiene and health evaluation					
Respiratory protection	Respiratory protection capable offering a 90% reduction in inhaled concentrations of the substance		L		
gloves	chemically resistant gloves with specific activity training [Dermal: 95%]				L
wear chemically resistant gloves (tested to EN374) in combination with specific activity training (PPE17)					
Additional good practice advice beyond the REACH CSA					
3.- Exposure estimation					
See: http://www.ercros.es/esp/internas.asp?arxiu=sl_1					
4.- Guidance to DU to evaluate whether he works inside the boundaries set by the ES					
The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions and implemented risk management measures are					



SODIUM CHLORITE (SOLUTION)

adequate. This has to be done by showing that they limit the inhalation and dermal exposure to a level below the respective DNEL (given that the processes and activities in question are covered by the PROCs listed above) as given below. If measured data are not available, the DU may make use of an appropriate scaling tool such as

Dermal exposure: ECETOC TRA v2 (with modifications)

Important note: By demonstrating a safe use when comparing exposure estimates with the long-term DNEL, the acute DNEL is therefore also covered (according to R.14 guidance, acute exposure levels can be derived by multiplying long-term exposure estimates by a factor of 2).

Section 1.- Title. Formulation stage	
Market sector:	
PC 19 - Intermediate	
PC 8 - Biocidal products (e.g. Disinfectants, pest control)	
PC 21 - Laboratory chemicals	
PC 26 - Paper and board dye, finishing and impregnation products: including bleaches and other processing aids	
PC 34 - Textile dyes, finishing and impregnating products; including bleaches and other processing aids	
PC 37 - Water treatment chemicals	
Environment:	ERC 2
Worker	
Use in closed process	PROC 1
Used in closed batch	PROC 3
Mixing in batch	PROC 5
Transfer at non dedicated facilities	PROC 8a
Transfer at dedicated facilities	PROC 8b
Transfer in to small containers	PROC 9
Use as laboratory reagent	PROC 15
Section 2.- Operational conditions and risk management measures	
2.1.- Control of environmental exposure: Formulation stage	
Product characteristics	
Amounts used	
Daily use at a site	<= 0.45 tonnes/day
Annual use at a site	<= 1000 tonnes/year
Percentage of tonnage used at regional scale	= 100 %
Frequency and duration of use	
Frequency and duration of use. AISE formulation	= 220 days
Environment factors not influenced by risk management	



SODIUM CHLORITE (SOLUTION)

Receiving surface water flow rate	>= 1.8E4 m ³ /d
Other given operational conditions affecting environmental exposure	
Technical conditions and measures at process level (source) to prevent release	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Formulation releases	[Water: 99.9%; Air: 100%; Soil: 100%]
Organizational measures to prevent/limit release from site	
Conditions and measures related to municipal sewage treatment plant	
Municipal STP	Yes [Water: 87.3%]
Discharge rate of STP	>= 2E3 m ³ /d
Application of the STP sludge on agricultural soil	Yes
Conditions and measures related to external treatment of waste for disposal	
Conditions and measures related to external recovery of waste	
Additional good practice advice beyond the REACH CSA	
2.2.- Control of workers exposure	
Control of workers exposure for "Use in closed process" [PROC 1]	
	Inhal*) Derm*)
	Loc Sys Loc Sys
Product characteristics	
Substance in preparation	No
Amounts used	
Frequency and duration of use/exposure	
Duration of activity	>4 hours
Human factors not influenced by risk management	
Other given operational conditions affecting workers exposure	
Place of use	Indoors
Surface of skin exposed	One hand face only (240 cm ²)
Technical conditions and measures at process level (source) to prevent release	
Level of containment	Use in closed process, no likelihood of exposure
Technical conditions and measures to control dispersion from source towards the worker	
Local Exhaust Ventilation	No
Organisational measures to prevent /limit releases, dispersion and exposure	
Conditions and measures related to personal protection, hygiene and health evaluation	
gloves	chemically resistant gloves with specific



SODIUM CHLORITE (SOLUTION)

	activity training [Dermal: 95%]				
wear chemically resistant gloves (tested to EN374) in combination with specific activity training (PPE17)					
Respiratory protection	Respiratory protection is not used		L		
Additional good practice advice beyond the REACH CSA					
Control of workers exposure for "Use in closed batch" [PROC 3]					
		Inhal*)		Derm*)	
		Loc	Sys	Loc	Sys
Product characteristics					
Substance in preparation	No		L		
Amounts used					
Frequency and duration of use/exposure					
Duration of activity	>4 hours		L		
Human factors not influenced by risk management					
Other given operational conditions affecting workers exposure					
Place of use	Indoors		L		
Surface of skin exposed	One hand face only (240 cm ²)				L
Technical conditions and measures at process level (source) to prevent release					
Level of containment	Use in closed batch process (synthesis or formulation)		L		
Technical conditions and measures to control dispersion from source towards the worker					
Local Exhaust Ventilation	Yes		L		L
Organisational measures to prevent /limit releases, dispersion and exposure					
Conditions and measures related to personal protection, hygiene and health evaluation					
Respiratory protection	Respiratory protection is not used		L		
gloves	no gloves, [Dermal: 0%]				A
Additional good practice advice beyond the REACH CSA					
Control of workers exposure for " Mixing in batch " [PROC 5]					
		Inhal*)		Derm*)	
		Loc	Sys	Loc	Sys
Product characteristics					
Substance in preparation	No		L		
Amounts used					
Frequency and duration of use/exposure					
Duration of activity	>4 hours		L		



SODIUM CHLORITE (SOLUTION)

Human factors not influenced by risk management					
Other given operational conditions affecting workers exposure					
Place of use	Indoors		L		
Surface of skin exposed	Two hands face (480 cm ²)				L
Technical conditions and measures at process level (source) to prevent release					
Technical conditions and measures to control dispersion from source towards the worker					
LEV	LEV [Inhalation: 90%]		A		
Local Exhaust Ventilation	Yes		L		L
Organisational measures to prevent /limit releases, dispersion and exposure					
Conditions and measures related to personal protection, hygiene and health evaluation					
Respiratory protection	Respiratory protection is not used		L		
gloves	no gloves, [Dermal: 0%]				A
Additional good practice advice beyond the REACH CSA					
Control of workers exposure for "Transfer at non dedicated facilities" [PROC 8a]					
			Inhal*)	Derm*)	
			Loc	Sys	Loc Sys
Product characteristics					
Substance in preparation	No		L		
Amounts used					
Frequency and duration of use/exposure					
Duration of activity	>4 hours		L		
Human factors not influenced by risk management					
Other given operational conditions affecting workers exposure					
Place of use	Indoors		L		
Surface of skin exposed	Two hands (960 cm ²)				L
Technical conditions and measures at process level (source) to prevent release					
Technical conditions and measures to control dispersion from source towards the worker					
Local Exhaust Ventilation	Yes		L		L
Organisational measures to prevent /limit releases, dispersion and exposure					
Conditions and measures related to personal protection, hygiene and health evaluation					
Respiratory protection	Respiratory protection is not used		L		
gloves	chemically resistant gloves with basic training [Dermal: 90%]				A
wear chemically resistant gloves (tested to EN374) in combination with basic employee training					



SODIUM CHLORITE (SOLUTION)

Additional good practice advice beyond the REACH CSA					
Control of workers exposure for "Transfer at dedicated facilities" [PROC 8b]					
		Inhal*)		Derm*)	
		Loc	Sys	Loc	Sys
Product characteristics					
Substance in preparation	No		L		
Amounts used					
Frequency and duration of use/exposure					
Duration of activity	>4 hours		L		
Human factors not influenced by risk management					
Other given operational conditions affecting workers exposure					
Place of use	Indoors		L		
Surface of skin exposed	Two hands face (480 cm ²)				L
Technical conditions and measures at process level (source) to prevent release					
Technical conditions and measures to control dispersion from source towards the worker					
Local Exhaust Ventilation	Yes		L		L
Organisational measures to prevent /limit releases, dispersion and exposure					
SCC	100 [Inhalation: 100%; Dermal: 100%]				A
Conditions and measures related to personal protection, hygiene and health evaluation					
Respiratory protection	Respiratory protection is not used		L		
gloves	chemically resistant gloves with basic training [Dermal: 90%]				AL
wear chemically resistant gloves (tested to EN374) in combination with basic employee training					
Additional good practice advice beyond the REACH CSA					
Control of workers exposure for "trasfer in to small containers" [PROC 9]					
		Inhal*)		Derm*)	
		Loc	Sys	Loc	Sys
Product characteristics					
Substance in preparation	No		L		
Amounts used					
Frequency and duration of use/exposure					
Duration of activity	>4 hours		L		
Human factors not influenced by risk management					
Other given operational conditions affecting workers exposure					



SODIUM CHLORITE (SOLUTION)

Place of use	Indoors	L			
Surface of skin exposed	Two hands face (480 cm ²)				L
Technical conditions and measures at process level (source) to prevent release					
Technical conditions and measures to control dispersion from source towards the worker					
Local Exhaust Ventilation	Yes	L			L
Organisational measures to prevent /limit releases, dispersion and exposure					
Conditions and measures related to personal protection, hygiene and health evaluation					
Respiratory protection	Respiratory protection is not used	L			
gloves	chemically resistant gloves with basic training [Dermal: 90%]				L
wear chemically resistant gloves (tested to EN374) in combination with basic employee training					
Additional good practice advice beyond the REACH CSA					
Control of workers exposure for "Use as laboratory reagent" [PROC 15]					
		Inhal*)	Derm*)		
		Loc	Sys	Loc	Sys
Product characteristics					
Substance in preparation	No	L			
Amounts used					
Frequency and duration of use/exposure					
Duration of activity	>4 hours	L			
Human factors not influenced by risk management					
Other given operational conditions affecting workers exposure					
Place of use	Indoors	L			
Surface of skin exposed	One hand face only (240 cm ²)				L
Technical conditions and measures at process level (source) to prevent release					
Technical conditions and measures to control dispersion from source towards the worker					
Local Exhaust Ventilation	Yes	L			L
Organisational measures to prevent /limit releases, dispersion and exposure					
Conditions and measures related to personal protection, hygiene and health evaluation					
Respiratory protection	Respiratory protection is not used	L			
Additional good practice advice beyond the REACH CSA					
Section 3.- Exposure estimation					
See: http://www.ercros.es/eng/internas.asp?arxiu=sl_1					
Section 4.- Guidance to DU to evaluate whether he works inside the boundaries set by the ES					



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The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions and implemented risk management measures are adequate. This has to be done by showing that they limit the inhalation and dermal exposure to a level below the respective DNEL (given that the processes and activities in question are covered by the PROCs listed above) as given below. If measured data are not available, the DU may make use of an appropriate scaling tool such as

Dermal exposure: ECETOC TRA v2 (with modifications)

Important note: By demonstrating a safe use when comparing exposure estimates with the long-term DNEL, the acute DNEL is therefore also covered (according to R.14 guidance, acute exposure levels can be derived by multiplying long-term exposure estimates by a factor of 2).

*) The route of exposure (**Inhalation**, **Dermal**) and type of effect (**Local**, **Systemic** and **Acute** or **Long term**) for which the determinant has been used for exposure estimation are reported.

Safety Data Sheet

Ammonia Solution 25-35%

Safety Data Sheet dated 5/2/2013, version 12

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Identification of the substance

Trade name: Ammonia Solution 25-35%
Trade code: SDS 10S
CAS number: 1336-21-6
EC number: 215-647-6
Index 67/548/EEC: 007-001-01-2
REACH number: 01-2119488876-14

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended use:

FOR INDUSTRIAL USE
FERTILIZER

1.3. Details of the supplier of the safety data sheet

Company:
Esseco UK Limited
Calder Vale Road
Wakefield
West Yorkshire, WF1 5PH
UK
Esseco UK Limited - Phone n. +44 (0) 1924 371 919

Competent person responsible for the safety data sheet:

sds@essecouk.com

1.4. Emergency telephone number

Esseco UK Limited - Phone n. +44 (0) 1924 371 919

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Directive criteria, 67/548/CE, 99/45/EC and following amendments thereof:


Properties / Symbols:

C Corrosive
N Dangerous for the environment


R Phrases:

R34 Causes burns.
R50 Very toxic to aquatic organisms.

EC regulation criteria 1272/2008 (CLP)

 Danger, Skin Corr. 1B, Causes severe skin burns and eye damage.

 Warning, Aquatic Acute 1, Very toxic to aquatic life.

 Warning, STOT SE 3, May cause respiratory irritation.

Adverse physicochemical, human health and environmental effects:

No other hazards

2.2. Label elements

Symbols:

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Ammonia Solution 25-35%



Danger

Hazard statements:

H314 Causes severe skin burns and eye damage.

H400 Very toxic to aquatic life.

H335 May cause respiratory irritation.

Precautionary statements:

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P273 Avoid release to the environment.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P301+P330+P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.

P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Special Provisions:

None

Special provisions according to Annex XVII of REACH and subsequent amendments:

None

2.3. Other hazards

vPvB Substances: None - PBT Substances: None

Other Hazards:

No other hazards

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Trade name: Ammonia Solution 25-35%

CAS number: 1336-21-6

EC number: 215-647-6

REACH number:

Hazardous components within the meaning of EEC directive 67/548 and CLP regulation and related classification:

30% - 40% Anhydrous Ammonia

Index number: 007-001-00-5, CAS: 7664-41-7, EC: 231-635-3

T,C,N; R10-23-34-50

2.2/2 Flam. Gas 2 H221



2.5 Press. Gas H280



3.1/3/Inhal Acute Tox. 3 H331



3.2/1B Skin Corr. 1B H314



4.1/A1 Aquatic Acute 1 H400

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Ammonia Solution 25-35%

3.2. Mixtures
N.A.

SECTION 4: First aid measures

4.1. Description of first aid measures

In case of skin contact:

Immediately take off all contaminated clothing.

Areas of the body that have - or are only even suspected of having - come into contact with the product must be rinsed immediately with plenty of running water and possibly with soap.

OBTAIN IMMEDIATE MEDICAL ATTENTION.

Wash thoroughly the body (shower or bath).

Remove contaminated clothing immediately and dispose off safely.

After contact with skin, wash immediately with soap and plenty of water.

In case of eyes contact:

After contact with the eyes, rinse with water with the eyelids open for a sufficient length of time, then consult an ophthalmologist immediately.

Protect uninjured eye.

In case of Ingestion:

Do NOT induce vomiting.

In case of Inhalation:

Remove casualty to fresh air and keep warm and at rest.

If breathing is irregular or stopped, administer artificial respiration.

In case of inhalation, consult a doctor immediately and show him packing or label.

4.2. Most important symptoms and effects, both acute and delayed

None

4.3. Indication of any immediate medical attention and special treatment needed

In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

Treatment:

None

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:

Water.

Carbon dioxide (CO₂).

Extinguishing media which must not be used for safety reasons:

None in particular.

5.2. Special hazards arising from the substance or mixture

Do not inhale explosion and combustion gases.

5.3. Advice for firefighters

Use suitable breathing apparatus .

Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

Move undamaged containers from immediate hazard area if it can be done safely.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Wear personal protection equipment.

Remove persons to safety.

See protective measures under point 7 and 8.

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Ammonia Solution 25-35%

- 6.2. Environmental precautions
Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.
Retain contaminated washing water and dispose it.
In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.
Suitable material for taking up: absorbing material, organic, sand
- 6.3. Methods and material for containment and cleaning up
Wash with plenty of water.
- 6.4. Reference to other sections
See also section 8 and 13

SECTION 7: Handling and storage

- 7.1. Precautions for safe handling
Avoid contact with skin and eyes, inhalation of vapours and mists.
Don't use empty container before they have been cleaned.
Before making transfer operations, assure that there aren't any incompatible material residuals in the containers.
Contaminated clothing should be changed before entering eating areas.
Do not eat or drink while working.
See also section 8 for recommended protective equipment.
- 7.2. Conditions for safe storage, including any incompatibilities
Keep away from food, drink and feed.
Incompatible materials:
Keep away from acids, metals, halogens, nitrogen oxides and hypochlorites.
Instructions as regards storage premises:
Adequately ventilated premises.
- 7.3. Specific end use(s)
None in particular

SECTION 8: Exposure controls/personal protection

- 8.1. Control parameters
No occupational exposure limit available
DNEL Exposure Limit Values
N.A.
PNEC Exposure Limit Values
N.A.
- 8.2. Exposure controls
Eye protection:
Use close fitting safety goggles, don't use eye lens.
Protection for skin:
Use clothing that provides comprehensive protection to the skin, e.g. cotton, rubber, PVC or viton.
Protection for hands:
Use protective gloves that provides comprehensive protection, e.g. P.V.C., neoprene or rubber.
Respiratory protection:
Use respiratory protection where ventilation is insufficient or exposure is prolonged, e.g. CEN/FFP-2 or CEN/FFP-3.
Thermal Hazards:
None
Environmental exposure controls:
None

SECTION 9: Physical and chemical properties

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Ammonia Solution 25-35%

9.1. Information on basic physical and chemical properties

Appearance and colour:	Liquid
Odour:	Pungent
Odour threshold:	5 - 53 ppm
pH:	14
Melting point / freezing point:	-62 °C (25% w/w sol)
Initial boiling point and boiling range:	37 °C (25% w/w sol)
Solid/gas flammability:	16 - 27% ammonia
Upper/lower flammability or explosive limits:	N.A.
Vapour density:	N.A.
Flash point:	N.A.
Evaporation rate:	N.A.
Vapour pressure:	50000 Pa @ 20 °C (25% w/w sol)
Relative density:	0.910 @ 15.5 °C (25%)
Solubility in water:	Completely
Solubility in oil:	N.A.
Partition coefficient (n-octanol/water):	N.A.
Auto-ignition temperature:	650 °C (ammonia gas)
Decomposition temperature:	N.A.
Viscosity:	N.A.
Explosive properties:	16 - 27% ammonia
Oxidizing properties:	N.A.

9.2. Other information

Miscibility:	N.A.
Fat Solubility:	N.A.
Conductivity:	N.A.
Substance Groups relevant properties	N.A.

SECTION 10: Stability and reactivity

10.1. Reactivity

Stable under normal conditions

10.2. Chemical stability

Stable under normal conditions

10.3. Possibility of hazardous reactions

None

10.4. Conditions to avoid

Stable under normal conditions.

10.5. Incompatible materials

Acids, mercury, cadmium, silver, halogens, nitric acid, nitrogen oxides and hypochlorites. It corrodes copper, cadmium, zinc, tin and their alloys.

10.6. Hazardous decomposition products

Toxic gas.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Toxicological information of the mixture:

Ammonia Solution 25-35% - CAS: 1336-21-6

a) acute toxicity:

Test: LD50 - Route: Oral - Species: Rat = 350 mg/kg

Toxicological information of the main substances found in the mixture:

N.A.

If not differently specified, the information required in Regulation 453/2010/EC listed below must be considered as N.A.:

a) acute toxicity;

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- b) skin corrosion/irritation;
- c) serious eye damage/irritation;
- d) respiratory or skin sensitisation;
- e) germ cell mutagenicity;
- f) carcinogenicity;
- g) reproductive toxicity;
- h) STOT-single exposure;
- i) STOT-repeated exposure;
- j) aspiration hazard.

SECTION 12: Ecological information

- 12.1. Toxicity
Adopt good working practices, so that the product is not released into the environment.
Very toxic to aquatic organisms.
Ammonia Solution 25-35% - CAS: 1336-21-6
Endpoint: EC50 - Species: Daphnia - Duration h: 48
- 12.2. Persistence and degradability
None
N.A.
- 12.3. Bioaccumulative potential
N.A.
- 12.4. Mobility in soil
1 Mobile
N.A.
- 12.5. Results of PBT and vPvB assessment
vPvB Substances: None - PBT Substances: None
- 12.6. Other adverse effects
None

SECTION 13: Disposal considerations

- 13.1. Waste treatment methods
Recover, if possible. Send to authorised disposal plants or for incineration under controlled conditions. In so doing, comply with the local and national regulations currently in force.

SECTION 14: Transport information



- 14.1. UN number
ADR-UN Number: 2672
IATA-UN Number: 2672
IMDG-UN Number: 2672
- 14.2. UN proper shipping name
ADR-Shipping Name: AMMONIA SOLUTION, relative density between 0.880 and 0.957 at 15 °C in water, with more than 10% but not more than 35% ammonia
IATA-Shipping Name: AMMONIA SOLUTION, relative density between 0.880 and 0.957 at 15 °C in water, with more than 10% but not more than 35% ammonia

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- IMDG-Shipping Name: AMMONIA SOLUTION, relative density between 0.880 and 0.957 at 15 °C in water, with more than 10% but not more than 35% ammonia
- 14.3. Transport hazard class(es)
 ADR-Class: 8
 ADR - Hazard identification number: 80
 IATA-Class: 8
 IATA-Label: 8
 IMDG-Class: 8
- 14.4. Packing group
 ADR-Packing Group: III
 IATA-Packing group: III
 IMDG-Packing group: III
- 14.5. Environmental hazards
 ADR-Environmental Pollutant: Yes
 IMDG-Marine pollutant: Marine Pollutant
- 14.6. Special precautions for user
 ADR-Subsidiary risks: -
 ADR-S.P.: 543
 ADR-Tunnel Restriction Code: (E)
 IATA-Passenger Aircraft: 852
 IATA-Subsidiary risks: -
 IATA-Cargo Aircraft: 615
 IATA-S.P.: -
 IATA-ERG: 8L
 IMDG-EmS: F-A , S-B
 IMDG-Subsidiary risks: -
 IMDG-Storage category: Category A
 IMDG-Storage notes: "Separated from" acids. "Away from" ammonium salts.
- 14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
 N.A.

SECTION 15: Regulatory information

- 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
 Dir. 67/548/EEC (Classification, packaging and labelling of dangerous substances)
 Dir. 99/45/EC (Classification, packaging and labelling of dangerous preparations)
 Dir. 98/24/EC (Risks related to chemical agents at work)
 Dir. 2000/39/EC (Occupational exposure limit values)
 Dir. 2006/8/EC
 Regulation (EC) n. 1907/2006 (REACH)
 Regulation (EC) n. 1272/2008 (CLP)
 Regulation (EC) n. 790/2009 (ATP 1 CLP)
 Regulation (EU) n. 453/2010 (Annex I)
 Restrictions related to the product or the substances contained according to Annex XVII Regulation (EC) 1907/2006 (REACH) and subsequent modifications:
 Restriction 3
 Where applicable, refer to the following regulatory provisions :
 Directive 82/501/EEC ('Activities linked to risks of serious accidents') and subsequent amendments.
 Regulation (EC) nr 648/2004 (detergents).
 1999/13/EC (VOC directive)
- 15.2. Chemical safety assessment
 No

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Ammonia Solution 25-35%

SECTION 16: Other information

Full text of phrases referred to in Section 3:

R10 Flammable.
R23 Toxic by inhalation.
R34 Causes burns.
R50 Very toxic to aquatic organisms.

H221 Flammable gas.
H280 Contains gas under pressure; may explode if heated.
H331 Toxic if inhaled.
H314 Causes severe skin burns and eye damage.
H400 Very toxic to aquatic life.

This document was prepared by a competent person who has received appropriate training.

Main bibliographic sources:

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre,
Commission of the European Communities
SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van
Nostrand Reinold
CCNL - Appendix 1

Insert further consulted bibliography

The information contained herein is based on our state of knowledge at the above-specified date.
It refers solely to the product indicated and constitutes no guarantee of particular quality.
It is the duty of the user to ensure that this information is appropriate and complete with respect to
the specific use intended.

This MSDS cancels and replaces any preceding release.

ADR:	European Agreement concerning the International Carriage of Dangerous Goods by Road.
CAS:	Chemical Abstracts Service (division of the American Chemical Society).
CLP:	Classification, Labeling, Packaging.
DNEL:	Derived No Effect Level.
EINECS:	European Inventory of Existing Commercial Chemical Substances.
GefStoffVO:	Ordinance on Hazardous Substances, Germany.
GHS:	Globally Harmonized System of Classification and Labeling of Chemicals.
IATA:	International Air Transport Association.
IATA-DGR:	Dangerous Goods Regulation by the "International Air Transport Association" (IATA).
ICAO:	International Civil Aviation Organization.
ICAO-TI:	Technical Instructions by the "International Civil Aviation Organization" (ICAO).
IMDG:	International Maritime Code for Dangerous Goods.
INCI:	International Nomenclature of Cosmetic Ingredients.
KSt:	Explosion coefficient.
LC50:	Lethal concentration, for 50 percent of test population.
LD50:	Lethal dose, for 50 percent of test population.
LTE:	Long-term exposure.
PNEC:	Predicted No Effect Concentration.
RID:	Regulation Concerning the International Transport of Dangerous Goods by Rail.
STE:	Short-term exposure.
STEL:	Short Term Exposure limit.
STOT:	Specific Target Organ Toxicity.
TLV:	Threshold Limiting Value.

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Ammonia Solution 25-35%

TWATLV: Threshold Limit Value for the Time Weighted Average 8 hour day.
(ACGIH Standard).
WGK: German Water Hazard Class.
N.A.: N.A.
N.D.:

HYDROCHLORIC ACID $\geq 25\%$

Code : 13021

Responsible for distribution:

BRENNTAG N.V.
Nijverheidslaan 38 - BE-8540 DEERLIJK
TEL: +32(0)56/77.69.44 - FAX: +32(0)56/77.57.11
E-MAIL : info@brenntag.be - Website: www.brenntag.be

BRENNTAG Nederland B.V.
Donker Duyvisweg 44 - NL-3316 BM DORDRECHT
TEL: +31(0)78/65.44.944 - FAX: +31(0)78/65.44.919
E-MAIL : info@brenntag.nl - Website: www.brenntag.nl

In case of emergency:

Belgium:
Antipoison Center - Brussels :
TEL: 070/245.245

The Netherlands:
National Poisoning Information Center - Bilthoven :
TEL: 030/274.88.88

1. Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

- * Chemical description : Hydrochloric acid , Hydrogen chloride , Chloric acid , solution ($\geq 25\%$).
- Type of product : Pure product in solution .
- * Reach registration number : 01-2119484862-27

1.2. Relevant identified uses of the substance or mixture and uses advised against

- * Identified use(s) : At this time we do not yet have information on identified uses. They will be included when available.
- * Use(s) advised against : At this time we do not yet have information on uses advised against. They will be included when available.

1.3. Details of the supplier of the safety data sheet

Company identification : See heading of Material Safety Data Sheet.

1.4. Emergency telephone number

Emergency phone number : See heading of Material Safety Data Sheet.

2. Hazards identification

2.1. Classification of the substance or mixture

Classification according to Directive 67/548/EEC or 1999/45/EC

Corrosive (C; R34)
Irritant (Xi; R37)

Classification according to Regulation (EC) No 1272/2008

- * Corrosive to metals - Category 1 - Warning (Met. Corr. 1; H290)
- Skin corrosion - Category 1A - Danger (Skin. Corr. 1A; H314)
- Specific Target Organ Toxicity - Single exposure - Respiratory tract irritation - Category 3 - Warning (STOT SE 3; H335)

2.2. Label elements

Label in accordance with Regulation (EC) No 1272/2008

- * • Dangerous ingredient(s) : Hydrochloric acid ...%
- * • Hazard pictogram(s)



- * • Signal word : Danger
- * • Hazard statements : H290 - May be corrosive to metals. H314 - Causes severe skin burns and eye damage. H335 - May cause respiratory irritation.
- Precautionary statements

HYDROCHLORIC ACID >=25%

Code : 13021

2. Hazards identification (continued)

- * - Prevention : P260 - Do not breathe dust, fume, gas, mist, vapours, spray.
- * - Response : P303+P361+P353 - IF ON SKIN (or hair) : Remove immediately all contaminated clothing. Rinse skin with water/shower. P304+P340 - IF INHALED : Remove to fresh air and keep at rest in a position comfortable for breathing. P305+P351+P338 - IF IN EYES : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P309+P311 - IF exposed or if you feel unwell : Call a POISON CENTER or doctor.
- * - Storage : P234 - Keep only in original container.
- * - Disposal considerations : P501 - Dispose of this material and its container to hazardous or special waste collection point.

2.3. Other hazards

- * Physical/chemical hazards : Attacks metals with liberation of hydrogen gas.
The corrosive vapours are heavier than air, and spread through the floor.
- * Hazards for the health : A health dangerous concentration in the air will very quickly be reached by evaporation of this substance at app. 20°C; even faster by spraying.
- * Hazards for the environment : Product causes a strong drop of the pH-value of water and soil.
This product is no substance or contains no PBT or vPvB (in accordance with Annex XIII).
- * Hazards for the safety : No significant danger.

3. Composition/information on ingredients

3.1. Substances

Name component(s)	Weight %	CAS nr	EINECS nr	Index nr	Reach nr	CLASSIFICATION
* Hydrochloric acid ...%	: >= 25 %	7647-01-0	231-595-7	017-002-01-X	01-2119484862-27	C; R34 Xi; R37 Met. Corr. 1; H290 Skin Corr. 1B; H314 STOT SE 3; H335

- * The full text of the R-phrases and (EU)H-statements is in section 16.

Nota B (Regulation (EC) No 1272/2008) applies to the product or one or more of its components.

4. First aid measures

4.1. Description of first aid measures

- General : CALL A PHYSICIAN IN ALL CIRCUMSTANCES.
Never give anything by mouth to an unconscious person.
- First Aid Measures
- Inhalation : Remove victim into fresh air.
Allow the affected person to rest.
If not breathing, give artificial respiration.
Take the patient IMMEDIATELY to the hospital.
- Skin Contact : Remove contaminated clothing and shoes while rinsing.
Rinse skin immediately with plenty of water. (shower if necessary).
Seek medical attention or take to hospital.
- Eye Contact : Rinse immediately thoroughly and long (at least 15 min.) with plenty of water.
Remove contact lenses after a few minutes rinse.
Contact ophthalmologist IMMEDIATELY.
Do not use a neutralisation agent.

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4. First aid measures (continued)

- Ingestion : DO NOT INDUCE VOMITING. Rinse mouth with water.
Take the patient IMMEDIATELY to the hospital.

4.2. Most important symptoms and effects, both acute and delayed

- * See section 11.

4.3. Indication of any immediate medical attention and special treatment needed

- * For specialist advice doctors should contact the NVCI or the Belgian Poison center.

5. Firefighting measures

5.1. Extinguishing media

Extinguishing Media

- * - Suitable : Water spray .
- * - Insuitable : Extinguishing powder Class D , Heavy water stream .

5.2. Special hazards arising from the substance or mixture

Special Exposure Hazards : Fire may liberate toxic chlorine gasses. (E.g. Chlorine , Dichlorodimethylether)

5.3. Advice for firefighters

- * Special Protective Equipment for Firefighters : Use self-contained breathing apparatus and wear protective clothes when in close proximity to fire.
- Special Procedures : Apply water spray or fog to cool nearby equipment. Avoid fire-fighting water to enter environment.
Neutralize extinguishing water with a basic product.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal Precautions : Evacuate all personnel immediately and ventilate area.
Avoid breathing vapour and contact with skin, eyes and clothing. Wear recommended personal protective equipment. (See section 8)

6.2. Environmental precautions

Environmental Precautions : Shut off leaks if without risks.
Dike in the spilled product as much as possible with inert material.
Prevent entry of product in public water, sewers or soil.
Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

- * Methods for Cleaning Up : Collect the spillage in closable, corrosion resistant, suitable disposal containers.
Dilute spilled liquid immediately with plenty of water and neutralise with base. (e.g. Sodium carbonate)
Rinse abundantly with water.

6.4. Reference to other sections

- * For personal protection, see section 8.
- For the removal of the waste product, see section 13.

7. Handling and storage

7.1. Precautions for safe handling

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7. Handling and storage (continued)

- * Handling : STRONG HYGIENE !
Avoid breathing vapour and contact with skin, eyes and clothing. Wear recommended personal protective equipment. (See section 8)
Avoid heating, splashing and formation of vapour when emptying, pouring, diluting or dissolving the product.
When diluting, always pour the acid solution upon the water, never the other way round.
When using, do not eat, drink or smoke.
Emergency eye wash fountains and showers should be available in the immediate vicinity of any potential exposure.

7.2. Conditions for safe storage, including any incompatibilities

- * Storage : Keep only in the original, safely locked container in a well ventilated, cool and dark place.
All dangerous products should be placed on a drip tray or should be barreled.
Keep away from : Oxidizing agents , Bases .
- Packaging Material : Steel covered with Ebonite or Enamel or Graphite or Rubber , PVC , Polyethylene , Polypropylene , Glass .
- Insuitable Packaging Material : Steel , Lead , Aluminium , Iron , Copper , Tin , Zinc , Nickel , Bronze .

7.3. Specific end use(s)

- * For identified uses, see subsection 1.2 and/or exposure scenarios.

8. Exposure controls/personal protection

8.1. Control parameters

- * Occupational Exposure Limits : Hydrochloric acid ...% : Limit value (BE) : 5 ppm (8 mg/m³) (2009)
Hydrochloric acid ...% : Short time value (BE) : 10 ppm (15 mg/m³) (2009)
Hydrochloric acid ...% : Limit value (TWA 8 h) (NL) : 5 ppm (8 mg/m³) (2007)
Hydrochloric acid ...% : Limit value (TWA 15 min) (NL) : 10 ppm (15 mg/m³) (2007)
- * Biological limit values : They will be included when available.
- * DNELs : • Hydrochloric acid ...% : Worker, acute - local effects, inhalation : 15 mg/m³
• Hydrochloric acid ...% : Worker, long-term - local effects, inhalation : 8 mg/m³
- * PNECs : • Hydrochloric acid ...% : Fresh water sediment : Not relevant.
• Hydrochloric acid ...% : Marine water sediment : Not relevant.
• Hydrochloric acid ...% : Fresh water : 0,036 mg/l
• Hydrochloric acid ...% : Marine water : 0,036 mg/l
• Hydrochloric acid ...% : Soil : 0,036 mg/l
• Hydrochloric acid ...% : Intermittent release : 0,045 mg/l
• Hydrochloric acid ...% : Sewage treatment plant : 0,036 mg/l

8.2. Exposure controls

- * Engineering Measures : Ventilation (If possible through the floor) , Local exhaust .
- Personal Protection Equipment
- * - Respiratory protection : CE-approved gas respirator (Combination filter type B/E/P2).
- Skin protection : Corrosion-proof protective clothing.
- * - Hand protection : Suitable material for safety gloves (EN 374):
Butyl rubber : penetration time > 480' - thickness 0,5 mm
Nitril rubber : penetration time > 480' - thickness 0,35 mm
PVC : penetration time > 480' - thickness 0,5 mm
- Eye/Face protection : Closed safety glasses or face shield.
- * Environmental exposure controls : See sections 6, 7, 12 en 13.

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9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

- * See technical data sheet for detailed information.
- Physical State (20°C) : Liquid .
- Form/Colour : Clear , Colourless .
- Odour : Pungent odour .
- * Odour threshold : No data available.
- pH value : Strong acid .
- * Melting/Freezing point : app. -50 °C ($\leq 30\%$)
- * Boiling Point/Range (1013 hPa) : app. 90 °C (30%)
- Flash point : Not applicable.
- * Evaporation rate : Not applicable.
- * Fire hazard : Not applicable.
- Explosion limits in air : Not applicable.
- * Vapour pressure (20°C) : 2 kPa (25%)
- * Relative vapour density (air=1) : 1,18
- * Relative density of saturated vapour/air mixture (air=1) : 1,0
- Density (20°C) : 1,12 - 1,16 kg/l
- * Soluble in : Alcohol , Acetic acid , Acetone , Benzene , Chloroform , Ether .
- * Solubility in water : Complete solubility .
- * Log P Octanol/Water at 25°C : Not applicable.
- Auto-ignition temperature : Not applicable.
- * Minimum ignition energy : Not applicable.
- Decomposition temperature : Not applicable.
- * Viscosity (20°C) : $> 1,5$ mPa.s (Dynamic)
- * Explosive properties : Not applicable.
- * Oxidizing properties : Not applicable.

10. Stability and reactivity

10.1. Reactivity

- * Reactivity : Reacts violently with oxidizing agents and lyes.

10.2. Chemical stability

Stability : Stable at normal circumstances .

10.3. Possibility of hazardous reactions

- * Hazardous reactions : Exothermic reaction with Water , Bases .
Contact with metallic substances may release inflammable hydrogen gas.

10.4. Conditions to avoid

Conditions to avoid : High temperatures .

10.5. Incompatible materials

- * Materials to avoid : Oxidizing agents , Bases (Formaldehyde , Sodium hypochlorite , ...).

10.6. Hazardous decomposition products

Hazardous Decomposition Products : Fire may liberate toxic chlorine gasses. (E.g. Chlorine , Dichlorodimethylether)

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Code : 13021

11. Toxicological information

11.1. Information on toxicological effects

Acute toxicity

- * - Inhalation : Irritating to respiratory system .
Inhalation can cause pneumonia and/or pulmonary oedema, but only after signs of corrosive effects on the mucous membranes of the eyes and/or the upper respiratory tract.
Inhalation of high concentrations can cause permanent lung damage.
Symptoms include: Sore throat , Cough , Shortness of breath , Difficulty in breathing .
• Hydrochloric acid ...% : LC50 (Rat, inhalation, 30') : 8,3 mg/l
- Skin contact : Stinging to skin .
Symptoms include: Redness , Pain , Severe burns .
• Hydrochloric acid ...% : LD50 (Rabbit, dermal) : > 5000 mg/kg
- Eye contact : Stinging to eyes .
Symptoms include: Bad vision , Severe burns .
- * - Ingestion : Stinging to mouth, throat and digestive system .
Tooth erosion may occur .
Symptoms include: Burning pain in mouth, throat, oesophagus and stomach , Vomiting , Diarrhea , Reduced blood pressure , Unconsciousness .
• Hydrochloric acid ...% : LD50 (Rat, oral) : 238-277 mg/kg
- * Skin corrosion/irritation : Rabbit : Stinging , Severe burns .
- * Serious eye damage/irritation : Rabbit : Stinging , Risk of serious damage to eyes .
- * Aspiration hazard : The product may affect the upper and lower airways, causing infections and impaired lung function.
- * Respiratory or skin sensitisation : Not sensitive .
- * Carcinogenicity : Not listed as carcinogenic .
- * Mutagenicity : Not listed as mutagenic .
- * Reproductive toxicity : Not listed for reproductive toxicity .
- * Specific target organ toxicity - single exposure : To human : Respiratory tract irritation .
- * Specific target organ toxicity - repeated exposure : To human : Listed not for organ toxicity .
For animals : No effects known.

12. Ecological information

12.1. Toxicity

- * Ecotoxicity : • Hydrochloric acid ...% : EC50 (Daphnia magna, 48 h) : 0,45 mg/l (pH 4,9)
• Hydrochloric acid ...% : EC50 (Algae, 72 h) : 0,73 mg/l (pH 4,7)
• Hydrochloric acid ...% : LC0 (Fish, 96 h) : 20,5 mg/l (pH 3,25-3,5)

12.2. Persistence and degradability

- Persistence and degradability : • Hydrochloric acid ...% : Persistence and degradability : Anorganic .

12.3. Bioaccumulative potential

- Bioaccumulation : • Hydrochloric acid ...% : Bioaccumulation : Bioaccumulation not expected .

12.4. Mobility in soil

- Mobility : • Hydrochloric acid ...% : Mobility : Completely soluble in water .

12.5. Results of PBT and vPvB assessment

- * Evaluation : • Hydrochloric acid ...% : PBT/vPvB : No

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12. Ecological information (continued)

12.6. Other adverse effects

WGK class (DE)	: 1 (Weak water pollutant).
Water damaging (NL)	: 9
Decontamination exertion (NL)	: B
* Photochemical ozone creation potential	: No data available.
* Ozone depletion potential	: None .
* Endocrine disrupting potential	: No data available.
* Global warming potential	: No data available.

13. Disposal considerations

13.1. Waste treatment methods

Waste from residues/Unused products	: The product has to be destroyed according to national or local legislation, by a company specialised in handling hazardous waste products.
* European list of waste products	: XXXXXX - European waste product code. This code is assigned on the basis of the most current applications and can not be representative for pollutions which are arisen at the effective use of the product. The producer of the waste has to evaluate its process himself and has to grant the appropriate waste coding. See Decision 2001/118/EC.
Removal contaminated packaging	: Packing is to be used exclusively for the packing of this product. After use, empty and close the packing very carefully. In case of returned packing, the empty packing can be offered back to the supplier.

14. Transport information

14.1. UN number

UN Number : 1789

14.2. UN proper shipping name

* ADR Name	: UN 1789 Hydrochloric acid, 8, II, (E)
* ADN Name	: UN 1789 Hydrochloric acid , 8, II
IMDG Name	: UN 1789 Hydrochloric acid , 8, II

14.3. Transport hazard classe(s)

Class : 8

14.4. Packing group

Packaging Group : II

14.5. Environmental hazards

* Environmentally hazard	: No
Marine pollutant	: No

14.6. Special precautions for user

Danger number	: 80
Hazard Label(s)	: 8
EmS-N°	: F-A , S-B

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

* Type ship	: No data available.
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14. Transport information (continued)

* Pollution category : No data available.

15. Regulatory information
15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

- * Inventories : Australian inventory (AICS): Listed in inventory.
Canadian inventory (DSL): Listed in inventory.
Canadian inventory (NDSL): Listed in inventory.
Chinese inventory (IECS): Listed in inventory.
European inventory (EINECS): Listed in inventory.
Japanese inventory (ENCS): Listed in inventory.
Korean inventory (KECI): Listed in inventory.
Philippine inventory (PICCS): Listed in inventory.
Inventory of the United States (TSCA): Listed in inventory.
- * NFPA n° : 3-0-0 (At concentration $>36\%$: 3-0-1)
- * Relevant EU Rule(s) : Directive 98/24/EC of the Council of 7 April 1998 on the protection of the health and safety of workers from the risks related to chemical agents at work
Decision 2001/118/EC of the Commission of 16 January 2001 amending Decision 2000/532/EC as regards the list of wastes
Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006
Regulation (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (Reach)

15.2. Chemical Safety Assessment

- * A chemical safety assessment has been carried out for the substance(s) that make up this material or for the material itself.

16. Other information


- * This safety data sheet has been drawn up in accordance with Regulation (EU) No 453/2010.
This safety data sheet is exclusively made for industrial/professional use.
- * Has changed compared to previous revision.
- * Changes : General revision .
- * Sources of used key data : The information contained herein is based on the present state of our knowledge (Producer(s) , Chemical cards , ...).
See also on the webaddress:
<http://apps.echa.europa.eu/registered/registered-sub.aspx#search>
- R-phrases : R34 - Causes burns.
R37 - Irritating to respiratory system.
- * (EU)H-statements : H290 - May be corrosive to metals.
H314 - Causes severe skin burns and eye damage.
H335 - May cause respiratory irritation.
- * List of abbreviations and acronyms : ADN (Accord européen relatif au transport international des marchandises Dangereuses par voie de Navigation interieur) : European agreement concerning the international carriage of dangerous goods by inland waterways
ADR (Accord européen relatif au transport international des marchandises Dangereuses par Route) : European agreement concerning the international carriage of dangerous goods by road
DNEL (Derived No Effect Level) : an estimated safe exposure level

HYDROCHLORIC ACID $\geq 25\%$ **Code : 13021****16. Other information (continued)**

EmS (Emergency Schedule) : the first code refers to the relevant fire schedule and the second code refers to the relevant spillage schedule
IMDG (International Maritime Dangerous Goods code)
NFPA (National Fire Protection Association) or fire diamant
NVCi : National Poisoning Information Center
PBT : persistent, bioaccumulative and toxic
PNEC (Predicted No Effect Concentration) : concentration below which exposure to a substance is not expected to cause adverse effects
REACH : Registration, Evaluation, Authorisation and restriction of Chemicals
TWA (Time-Weighted Average) : the average exposure over a specified period
vPvB : very persistent and very bioaccumulative
WGK (Wassergefährdungsklasse) : a German classification of substances that indicate the environmental hazard for surface water

This information is to our knowledge correct and complete on the date of issue of this safety data sheet. The information only concerns the product and does not give any guarantee for the quality and the completeness of the properties of the product, or in case of mixing or using in any other process. It remains the responsibility of the user to assure himself that the information is suitable and complete concerning the special use he makes of the product.
BRENNTAG denies all responsibility for loss or damage resulting from the use of these data.

End of document

	AZIENDA CON SISTEMA DI GESTIONE PER LA QUALITÀ CERTIFICATO DA DNV = UNI EN ISO 9001:2008 =	<h1 style="text-align: center;">SAFETY DATA SHEET</h1> <h2 style="text-align: center;">MOD.91/155/CEE</h2>
Date of emission 01/11/10	Rev. 11	Page n. 1 di 8

1. Identification of the preparation and company.

1.1 Identification of the preparation

Trade name CELLULOSE THINNER EC DN 350

1.2 Intended use.....Solvent

1.3 Identification of the company

Name..... SOL.VE.T. srl

Address Via A. Sciesa n°43

Location/State 20010 Marcallo con Casone (MI) Italy Tel. 02/9760829-9761274

laboratorio@solvvet.it Fax 02/9761623

1.4 Safety Data Sheets responsible addresse – laboratorio@solvvet.it

Emergency number to turn for general information (house office) Laboratorio +39 029761274

Emergency number to contact in case of poisoning +39 0266101029 Center Niguarda (MI)



2. Risks identification

2.1 Identification of the risk (chemical-physical): Highly flammable – Harmful by inhalation, in contact with skin and if swallowed – Possible risk of irreversible effects through inhalation, in contact with skin and if swallowed – Possible risk of harm to the unborn child - Harmful: may cause lung damage if swallowed - Repeated exposure may cause skin dryness or cracking

2.2 Advise (prevention): Keep out of the reach of children - Keep container in a well-ventilated place - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice - Keep away from sources of ignition, no smoking – In case of fire use CO2, foam and/or powder - Wear suitable protective clothing and gloves - This material and its container must be disposed of as hazardous waste - Avoid release to the environment. Refer to special instructions/safety data sheet - Do not empty into drains - Take precautionary measures against static discharges - If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label

F	Xn
Highly flammable	Harmful

2.3 Advise (reaction):

In case of contact with eyes: rinse thoroughly with water for several minutes, remove the contact lenses if easy to do and continue to rinse. If irritation continues consult a doctor.

In case of inhalation: remove the person to fresh air and keep at rest in a position comfortable for breathing.

In case of contact with skin: (or hairs) wash thoroughly with soap and water, take off the contaminated clothing, wash before reuse.

In case of injection: rinse mouth, do not induce vomiting, go immediately to the emergency room if possible with the MSDS of the product ingested or the packing label. In the case of exposure contact a poison control center or doctor +39 02 66101029 Poison Center of Milan, Niguarda.

2.4 Advise (conservation): Keep container tightly closed in a cool and ventilated place. Keep locked up.

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2.5 Advise (disposal): Dispose of contents / container in a collection points for hazardous or special waste and / or by specialized companies.

2.6 Possible risks (classification): (in conformità alla Direttiva 67/548/CEE o 1999/45/CE)

Highly flammable

Harmful

3. Composition/information on ingredients

Chemical character: Solvent

Product or chemical family	N. CAS	N.EINECS	Concentration	Classification
Ketons	67-64-1		10-20 %	F - Xi R11-36-66-67
NAPHTHA (PETROLEUM), LIGHT HYDRODESULFURIZED, dearomatized*	92045-53-9		10-20%	F-Xn-N R11-38-51/53-65-67
Estere	79-20-9		30-50%	F – Xi R11-36-66-67
Toluene	108-88-3		20-30%	F - Xn R11-38-48/20-63-65-67
Methylic alcohol	67-56-1		5-10%	F - T R23/24/25-39/23/24/25-36

* Applicable note H and P (Directive 67/548/EEC, Annex I).

See Section 16 for sentences R explanation

* *All concentrations are expressed in percentage by weight ranges, except for gas whose gas concentrations are in percentage by volume

4. First-aid measures

4.1 Inhalation: Bring the person into fresh air. In case of unconsciousness, make artificial respiration and call the ambulance. In case of extended illness, consult the doctor.

4.2 Skin Contact: Take off wetted clothing immediately. Wash with plenty of water and soap.

4.3 Eye contact: Rinse the eyes carefully and plentifully with water for at least 15 minutes and contact the doctor.

4.4 Swallowing: Do not induce vomiting. Make the person drink water and charcoal. Call immediately an ambulance or take the person to the hospital with this safety data sheet or the product label.

4.5 Instrucion for the doctor: Treatment: in the Symptomatic treatment (decontamination, vital functions) does not exist a specific antidote. Prophylaxis for pulmonary edema. Medical supervision for at least 24 hours

5. Fire-fighting measures

5.1 Extinguishing media: Extinguish with carbon dioxide, powder, foam. Cool containers nearby the fire with water spray.

5.2 Inappropriate Extinguishing Media: Straight streams of water

5.3 Fire Fighting Instructions: Flammable. Evacuate area. Prevent leakage or seepage of fire materials into waterways, sewers, or drinking water. Firefighters must use standard protective equipment and - in enclosed spaces - SCBA breathing apparatus. Use water spray to cool fire exposed surfaces and protect personnel.

5.4 Unusual Fire Hazards: Flammable. Vapors are flammable and heavier than air. Vapors may travel along the ground and reach remote ignition sources causing a danger of backfiring.

5.5 Hazardous Combustion Products: Smoke, Fume, Incomplete combustion products., Oxides of carbon.

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6. Accidental release measures

6.1 NOTIFICATION PROCEDURES: In case of a spill or accidental release, notify relevant authorities responsible for compliance with all applicable regulations.

6.2 PROTECTIVE MEASURES: Avoid contact with spilled material. If necessary, Warn or evacuate occupants in surrounding and downwind areas due to toxicity or flammability of material. See Section 5 for fire fighting. See "Hazard Identifications" to see the greatest risk. See Section 4 for First Aid. See Section 8's Personal Protective Equipment.

6.3 SPILL MANAGEMENT:**6.31 Land Spill:** Eliminate all ignition sources (no smoking and keep flares, sparks or flames in immediate area). Stop leak if you can do it without risk. All equipment used when handling the product must be properly grounded. Not touch or walk through spilled material. Avoid 'infiltration into streams, networks sewer, basements or confined areas. To reduce the amount of vapor you can use a foam evaporation Collect absorbed material using clean non-sparking tools. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Spills large dimensions: Water spray may reduce vapor but may not prevent ignition in closed spaces. Recover by pumping or with suitable absorbent.

6.32 Water Spill: Stop leak if you can do it without risk. Eliminate sources of ignition. If necessary, Warn or evacuate occupants in surrounding areas and downwind due to toxicity or flammability of the material. If the flash point exceeds the ambient temperature of 10 ° C, use of containment barriers and remove from surface by skimming or with suitable absorbents when conditions permit. If the flash point shall not exceed the ambient temperature of 10 ° C, using barriers such as dams to protect shorelines and allow evaporation of the material. Consult a specialist before using dispersant.

Please note that Recommendations for spills on land and are based on the spill scenario more likely for this product, however, geographic conditions, wind, temperature (and in case of spills in water) and current direction and speed may greatly influence the appropriate action to taken. For this reason, local experts should be consulted.

7. Handling and storage

7.1 Handling: Avoid contact with skin. The material heated / agitated, may develop vapors / fumes of potentially irritating or toxic. Make sure there are enough air changing and/or ventilation at the workplace. Take the necessary precautions against the discharge of static energy. Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause a spark (ignition source). Use appropriate procedures for storage and ground.

Charge/Discharge temperature: [room temperature]

Transport temperature: [room temperature]

Transport pressure: [room temperature]

7.2 Static Accumulator: This material is a static accumulator. A liquid is typically a battery static non-conductive, if it is conductive, it is below 100 pS / m (Siemens per meter 100x10E-12) and it is considered a static accumulator semiconducting, if the conductivity is lower to 10,000 pS / m. Even if the liquid is conductive or semiconductor, the precautions are the same. A number of factors, such as temperature liquid, the presence of contaminants, additives and anti-static filters can greatly influence the conductivity of the liquid.

7.3 Storage: The choice of container, such as tankers, can influence the accumulation and dissipation of static charge. Keep container closed. Handle containers with care. Open slowly to control possible pressure release. Store in a cool, well ventilated area. The containers are stored should be grounded and bonded. Fixed storage containers, containers for decanting and associated equipment must be grounded and coated to prevent buildup of static electricity.

Storage temperature: [room temperature]

Storage pressure: [room temperature]

7.4 Compatible materials and coatings (chemical compatibility): Carbon Steel, Stainless, Steel, Polyethylene, Polypropylene, Polyester, Teflon.

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7.5 Materials and coatings are not compatible: Natural Rubber, Butyl Rubber, Ethylene Monomer-propilenediene (EPMD), polystyrene.

8. Exposure controls/personal protection.

8.1 PERSONAL PROTECTION

The choice of personal protective equipment varies depending on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment, as provided below, is based, normal usage.

8.1 Respiratory protection: gas mask filter / vapor if you exceed the TLV and / or in case of development of gas or vapor (boiling point <65 ° C for example. EN 14387 type AX)-Provide ventilation adjusted so as not to exceed the exposure limits. Use ventilation systems to test explosion.

Hand protection: Rubber gloves for brief contact (recommendation: at least index Protection 2, corresponding to > 30 min. Permeation second EN374)

Eye protection: Safety glasses with side shields (frame goggles for example. EN 166)

8.2 HYGIENIC MEASURES

Do not breathe vapours – Avoid contact with skin or eyes – Keep away from foods and beverages – Wash hands before break and at the end of the working day - Take off contaminated clothing and use again after washing.

8.3 CONTROL PARAMETERS

Limits of TLV exposition:

SUBSTANCE NAME	TYPE	LIMIT/STANDARD	NOTES
Ketons	TLV-TWA	500 ppm	TLV ACGIH
Estere	TLV-TWA	750 ppm	TLV ACGIH
Toluene	TLV-TWA	100 ppm	TLV ACGIH
Methylic alcohol	TLV-TWA	200 ppm	TLV ACGIH
Naphta petroleum light	TLV-TWA	300 ppm	TLV ACGIH

9. Physical and Chemical properties

9.1 GENERAL INFORMATION

Form : Liquid

Colour: Clear, colourless

Odour: Characteristic

Odour threshold: N/D

9.2 IMPORTANT INFORMATION ABOUT HEALTH, SECURITY AND ENVIRONMENT

Density (at 20°C): 0,846 kg/m³

Flammable point : <21°C [ASTM D-56]

Flammable Limits (Approximate volume % in air): N/D

Ignition temperature: 250°C

Boiling point/range: from 53 to 183 °C

Vapours density (air=1): > 1 to 101 kPa

pH: N/A

Log Pow (Coefficient n-octanol/water): N/D

Water solubility: Negligible

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Oxidant property: see Risks Identification section

10. Stability and reactivity

Stability.....Stable in normal condition.
Reactivity.....No information available
Avoid mix with.....Strong oxidant agents.
Avoid condition with.....Heat, flames and sparks
Dangerous decomposition products.....Nothing in normal condition of using.
Dangerous reaction..... Formation of explosive mixtures gas-vapors/air

11. Toxicological information

11.1 ACUTE TOXICITY

Exposure's way	Conclusion/Observations
Inhalation	
Observation	Prolonged inhalation of vapors at high concentrations may have a narcotic effect on the central nervous system, which may be weak (dizziness, headache and drowsiness) or acute
Irritation	High concentrations of vapor or aerosol may be irritating to the respiratory
Swallowing	
Toxicity: LD 50 Oral Rat mg/kg	7400 mg/kg Ketons - >2000 mg/kg (Aromatic Hydrocarbons) - 6000 mg/kg Naphta Petroleum Light - 5000 mg/kg Methylic alcohol
Observation	Harmful - if accidentally swallowed the product can enter the lungs because of its low viscosity and cause the rapid development of severe lung lesions (check with your doctor within 24 hours)
Skin	
Irritation: Available information	Slightly irritating to skin with prolonged exposure. In according to data of tests for structurally similar materials.
Eyes	
Irritating: Available information	It can cause mild, short in the eyes. Based on test data for structurally similar materials.

11.2 CHRONIC EFFECTS/OTHER

For the product:

Vapor concentrations above recommended exposure levels are irritating to eyes and respiratory system, may cause headache and dizziness, to have an anesthetic effect and cause other effects on the central nervous system. The repeated and / or prolonged contact with skin with low viscosity materials may degrease the skin with possible development irritation and dermatitis. Small amounts of liquid aspirated into the lungs in case of ingestion or vomiting may cause chemical pneumonia or pulmonary edema.

11.3 IRRITATION

Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of product.

11.4 SENSIBILITY TO THE RESPIRATORY SYSTEM

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Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, fatigue, nausea and vomiting.

11.5 MUTAGENICITY ON GERM CELLS

Mutagenicity assessment: There was no mutagenic effect in various experiments on bacteria and mammals.

This product has not been tested. The toxicological data have been derived from the properties of individual components.

12. Ecological information

12.1 Refer to Table D of the Decree of the Ministry of Environment of 12 July 1990 in accordance with standard enunciated by DPR 203 of May 24, 1988. The same parameters also affect the activities at the Legislative Decree 152/06

Class of emission..... 15% V – 64% IV – 11% III – 10% not calssed

12.2 Decree of 16 January 2004, n. 44 Implementation of Directive 1999/13/EC on the limitation of volatile organic compound emissions of certain industrial activities under Article 3, paragraph 2 of the Decree of President of the Republic May 24, 1988, No 203

CONCENTRATION OF VOC.....100%

12.3Decree. 161/06 in implementing the Directive 2004/42/EC

Class	Concentration of VOC in gr/lt	Limit for the category
Preparatory	846 gr/lt	850 gr/lt

The product meets the characteristics required by the RoHS Directive 2002/95/EC of 27 January 2003

13. Disposal considerations

13.1 DISPOSAL INFORMATION: According to local and national rules. You can not specify the waste code in accordance with the European Waste Catalogue as it depends use. The code must be specified on the basis of an agreement between the disposer, the producer and the authorities

13.2 WASTE/UNUSED PRODUCTS: Only qualified societies can dispose of waste according to the law in force.

13.3 POLLUTED CONTAINERS: Warning on empty containers (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. The empty cans must be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be recycled, recovered or disposed of by a contractor qualified or licensed and in compliance with government regulations. DO NOT PUT UNDER PRESSURE, CUT, WELD, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

14. Transport information

14.1 ADR/RID (Land transport)

Class of danger: **3**

Packing group: **II**

ID Number: **UN1263**

Danger Label: **3**

14.2 ADR/ADN (Shipping internal transport)

Class of danger: **3**

Packing group: **II**

ID Number: **UN1263**

REVISIONE 11	SAFETY DATA SHEET	PRODUCT
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Danger Label: 3

Technical name: Paint related material

14.3 IMDG (Sea Transport)

Class of danger: 3

Packing group: II

ID Number: UN1263

Danger Label: 3

Technical name: Paint related material

14.4 Rules in case of emergency during transport:

- Stop the engine.
- Call immediately police and fire brigade.
- Do not use uncontrolled flames – do not smoke.
- Point out the danger with road signs and advice other drivers.
- Keep unknown people away from the dangerous area.
- Stay fair wind.

15. Regulation

The product has been classified and marked in accordance with E.U. Directives for the dangerous products/substances.

15.1 CLASSIFICATION: Highly Flammable. Harmful .. The classification of this product is based wholly or partly on test data supplied

15.2 EU LABELING:

symbol:

F	Xn
Highly flammable	Harmful

15.3 Nature of Special Risk: R11; Highly flammable R52/53 Harmful to aquatic organisms, may cause long term adverse effects in the aquatic environment R63 Possible risk of harm to children unborn R68/20/21/22 Possibility of irreversible effects through inhalation and ingestion skin contact R R65; Harmful: may cause lung damage if swallowed. R66; Repeated exposure may cause skin dryness or cracking.

15.4 Security Council: S2 Keep out of reach of children S9 Keep container in a well-ventilated place S29 Do not empty into drains S33 Avoid accumulation of electrostatic charges S36/37 Wear gloves and suitable protective clothing S60 This material and / or its container must be disposed of as S61 Dispose of hazardous waste. Refer to special information sheets on Security S62 If swallowed do not induce vomiting but seek medical advice immediately and show container or label

Contains: NAFTA (OIL) Light - Toluene - Methyl Alcohol

REGULATORY INFORMATION AND LAWS AND REGULATIONS

Satisfies the following requirements of the national inventories / European Chemicals Bureau: AICS, IECSC, DSL, EINECS, KECI, PICCS, TSCA

EU directives and regulations applicable:

EU Directives: Directive 1999/13/EC and its amendments (the limitation of emissions of volatile organic compounds)

National Laws and regulations: DECREE April 9, 2008, No 81 and subsequent amendments

16. Other information:

N/D = NOT GIVEN, N/A = NOT APPLIED

REVISIONE 11	SAFETY DATA SHEET	PRODUCT
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16.1 LEGENDS OF THE RISKS PHRASES INDICATED INT SECTION 2 AND 3 OF THIS DOCUEMNT:

R11 Highly flammable
 R20 Harmful by inhalation
 R21 Harmful by contact with skin
 R23/24/25 Toxic by inhalation, in contact with skin and if swallowed
 R36 Irritating to eyes
 R38 Irritating to skin
 R39/23/24/25 Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed
 R48/20 Harmful: danger of serious damage to health by prolonged exposure through inhalation
 R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment
 R52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment
 R63 Possible risk of harm to the unborn child
 R65 Harmful: may cause lung damage if swallowed
 R66 Repeated exposure may cause skin dryness or cracking
 R67 Repeated exposure may cause skin dryness or cracking

Bibliography :

DM 28/01/92 - 28/04/97 - 10/04/00 - 03/02/97-Decreti legislativo n°52 (03/02/97) n°285 (16/07/98)
 Direttiva CEE 91/325-Direttiva 2004/74/CE del28/02/06 recante XXIX adeguamento della 67/548/CEE
 Regolamentazione REACH, Regolamento (CE) n.1907/2006-Dlgs. 161/06 in recepimento alla Direttive
 2004/42/CEDECRETO
 16 gennaio 2004, n.44-Direttiva 2001/59/CE-Gazzetta ufficiale del 28/11/91-DL 65 14/03/03-Direttiva
 RoHs 2002/95/CE 27/01/03-Schede Tecniche e di Sicurezza delle materie prime.

The information contained herein are based on our knowledge and they are used to describe the product according to the safety. We will not be responsible for damages resulting from use of these information.

Users are directly responsible in the observance of the laws used in Italy about work hygiene, accidents prevention, products transport and conservation.

These information are referred to the material indicated herein only and they could not be applied in case of use of this product with other ones for its transformation.

These information are neither guarantee nor certificate of quality, we will be not responsible for their utilization.

CAUSTIC SODA PEARLS

1. PRODUCT AND COMPANY IDENTIFICATION

1.1. Product identifiers

- Product name	: CAUSTIC SODA PEARLS
- Chemical Name	: Sodium hydroxide
- Synonyms	: Sodium hydrate
- Molecular formula	: NaOH
- Type of product	: Substance

1.2. Identified uses / Uses advised against

- Identified uses	:	- Reagent
		- pH-regulating agent
		- Ion exchange resins regenerating agent
		- Catalyst
		- Etching agent
		- Cleaning agent
		- Chemical intermediate

1.3. Manufacturer or supplier's details

- Company	: SOLVAY CHEMICALS INTERNATIONAL SA
- Address	: RUE DU PRINCE ALBERT, 44 B- 1050 BRUXELLES
- Telephone	: +3225096111
- Fax	: +3225096624
- E-mail address	: sdstracking@solvay.com

1.4. Emergency telephone number

- Emergency telephone number	+44(0)1235 239 670 [CareChem 24] (Europe) GB: +44-1925-651277 (Product information)
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2. HAZARDS IDENTIFICATION

2.1. GHS Classification

2.1.1. European regulation (EC) 1272/2008, as amended

Classified as hazardous according to the European regulation (EC) 1272/2008, as amended

Hazard class	Hazard category	Route of exposure	H Phrases
Skin corrosion	Category 1A		H314
Corrosive to metals	Category 1		H290

2.1.2. European Directive 67/548/EEC or 1999/45/EC, as amended

Classified as hazardous according to European Directive 67/548/EEC or 1999/45/EC, as amended

Hazard class / Hazard category	R-phrases
C	R35

2.2. EC Label - According to Regulation (EC) 1272/2008, as amended

2.2.1. Name(s) on label

Hazardous components	: Sodium hydroxide
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2.2.2. Signal word

Danger

2.2.3. Hazard symbols2.2.4. Hazard statements

- H314 - Causes severe skin burns and eye damage.
 H290 - May be corrosive to metals.

2.2.5. Precautionary statements

- | | | |
|-------------------|--|--|
| Prevention | P260
P280 | - Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
- Wear protective gloves/ protective clothing/ eye protection/ face protection. |
| Response | P303 + P361 + P353
P305 + P351 + P338
P310 | - IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- Immediately call a POISON CENTER or doctor/ physician. |

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Concentration

Substance name:	Concentration
Sodium hydroxide	>= 99 %
CAS-No.: 1310-73-2 / EC-No.: 215-185-5 / Index-No.: 011-002-00-6	

4. FIRST AID MEASURES

4.1. Description of necessary first-aid measures

4.1.1. If inhaled

- Move to fresh air.
- Oxygen or artificial respiration if needed.
- Victim to lie down in the recovery position, cover and keep him warm.
- Call a physician immediately.

4.1.2. In case of eye contact

- Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
- In the case of difficulty of opening the lids, administer an analgesic eye wash (oxybuprocaine).
- Call a physician or poison control centre immediately.
- Take victim immediately to hospital.

4.1.3. In case of skin contact

- Take off contaminated clothing and shoes immediately.
- Wash off immediately with plenty of water.
- Keep warm and in a quiet place.
- Call a physician or poison control centre immediately.
- Wash contaminated clothing before re-use.

4.1.4. If swallowed

- Call a physician or poison control centre immediately.
- Take victim immediately to hospital.
- If swallowed, rinse mouth with water (only if the person is conscious).
- Do NOT induce vomiting.
- Artificial respiration and/or oxygen may be necessary.



4.2. Most important symptoms/effects, acute and delayed**4.2.1. Inhalation**

- Corrosive to respiratory system
- Symptoms: Breathing difficulties, Cough, chemical pneumonitis, pulmonary oedema
- Repeated or prolonged exposure: Risk of sore throat, nose bleeds, chronic bronchitis

4.2.2. Skin contact

- Causes severe burns.
- Symptoms: Redness, Swelling of tissue, Burn

4.2.3. Eye contact

- Causes severe burns.
- Small amounts splashed into eyes can cause irreversible tissue damage and blindness.
- May cause permanent eye injury.
- Symptoms: Redness, Lachrymation, Swelling of tissue, Burn

4.2.4. Ingestion

- If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the oesophagus and the stomach.
- Symptoms: Nausea, Abdominal pain, Bloody vomiting, Diarrhoea, Suffocation, Cough, Severe shortness of breath

5. FIRE-FIGHTING MEASURES**5.1. Extinguishing media****5.1.1. Suitable extinguishing media**

- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

5.1.2. Unsuitable extinguishing media

- Water may be ineffective.

5.2. Specific hazards arising from the chemical

- The product is not flammable.
- Not combustible.
- Reacts violently with water.
- Gives off hydrogen by reaction with metals.

5.3. Special protective actions for fire-fighters

- In the event of fire, wear self-contained breathing apparatus.
- Use personal protective equipment.
- Wear chemical resistant oversuit
- Cool containers / tanks with water spray.

6. ACCIDENTAL RELEASE MEASURES**6.1. Personal precautions, protective equipment and emergency procedures****6.1.1. Advice for non-emergency personnel**

- Prevent further leakage or spillage if safe to do so.
- Keep away from Incompatible products.

6.1.2. Advice for emergency responders

- Evacuate personnel to safe areas.
- Keep people away from and upwind of spill/leak.
- Ventilate the area.
- Wear suitable protective clothing.

6.2. Environmental precautions

- Should not be released into the environment.
- Do not flush into surface water or sanitary sewer system.
- If the product contaminates rivers and lakes or drains inform respective authorities.

6.3. Methods and materials for containment and cleaning up

- Sweep up and shovel into suitable containers for disposal.
- Avoid dust formation.
- Keep in properly labelled containers.
- Keep in suitable, closed containers for disposal.



- Treat recovered material as described in the section "Disposal considerations".

6.4. Reference to other sections

- Refer to protective measures listed in sections 7 and 8.

7. HANDLING AND STORAGE

7.1. Precautions for safe handling

- Used in closed system
- When diluting, always add the product to water. Never add water to the product.
- Use only equipment and materials which are compatible with the product.
- Keep away from Incompatible products.
- To avoid thermal decomposition, do not overheat.
- Preferably transfer by pump or gravity.

7.2. Conditions for storage, including incompatibilities

7.2.1. Storage

- Store in original container.
- Keep in a well-ventilated place.
- Keep in a dry place.
- Keep in properly labelled containers.
- Keep container closed.
- Avoid dust formation.
- Keep away from Incompatible products.

7.2.2. Packaging material

7.2.2.1. *Suitable material*

- Stainless steel
- Polyethylene
- Paper + PE.

7.2.2.2. *Unsuitable material*

- no data available

7.3. Specific use(s)

- For further information, please contact: Supplier

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

8.1.1. Exposure Limit Values

Sodium hydroxide

- UK. EH40 Workplace Exposure Limits (WELs) 2007
Short term exposure limit = 2 mg/m³
- US. ACGIH Threshold Limit Values 2009
Ceiling Limit Value = 2 mg/m³

8.1.2. Other information on limit values

8.1.2.1. *Derived No Effect Level / Derived minimal effect level*

- Workers, Inhalation, Chronic effects, 1 mg/m³

8.2. Exposure controls

8.2.1. Appropriate engineering controls

- Ensure adequate ventilation.
- Apply technical measures to comply with the occupational exposure limits.

8.2.2. Individual protection measures

8.2.2.1. *Respiratory protection*

- In the case of dust or aerosol formation use respirator with an approved filter.
- Recommended Filter type: P2

8.2.2.2. *Hand protection*

- Impervious gloves
- Suitable material: PVC, Neoprene, Natural Rubber, butyl-rubber
- Unsuitable material: Leather



8.2.2.3. *Eye protection*

- Chemical resistant goggles must be worn.

8.2.2.4. *Skin and body protection*

- Chemical resistant apron
- Apron/boots of PVC, neoprene in case of dusts.

8.2.2.5. *Hygiene measures*

- Eye wash bottles or eye wash stations in compliance with applicable standards.
- Take off contaminated clothing and shoes immediately.
- Handle in accordance with good industrial hygiene and safety practice.

8.2.3. Environmental exposure controls

- Dispose of rinse water in accordance with local and national regulations.

9. PHYSICAL AND CHEMICAL PROPERTIES**9.1. Physical and chemical properties**9.1.1. General Information

- | | |
|---------------------------|---|
| ■ Appearance | Solid form, crystalline, strongly hygroscopic, flakes, bales, microgranules |
| ■ Colour | white |
| ■ Odour | odourless |
| ■ Molecular Weight | 40.01 g/mol |

9.1.2. Important health safety and environmental information

- | | |
|---|--|
| ■ pH | > 13 |
| ■ pKa | No data |
| ■ Melting/freezing point | 318.4 °C |
| ■ Boiling point/boiling range | 1,388 °C, Pressure: 101.3 kPa |
| ■ Flash point | not applicable |
| ■ Evaporation rate | not applicable |
| ■ Flammability (solid, gas) | The product is not flammable. |
| ■ Flammability | not applicable |
| ■ Explosive properties | Not explosive, See section 10. |
| ■ Vapour pressure | 1 hPa, at 739 °C |
| ■ Vapour density | No data |
| ■ Relative density | 2.13, at 20 °C |
| ■ Bulk density | 1.14 kg/m ³ , at 20 °C |
| ■ Solubility | 420 g/l, Water, at 0 °C
1,100 g/l, Water, at 20 °C
3,470 g/l, Water, at 100 °C |
| ■ Solubility/qualitative | soluble, Alcohol (Glycerol) |
| ■ Partition coefficient: n-octanol/water | No data |
| ■ Autoignition temperature | No data |
| ■ Decomposition temperature | No data |
| ■ Viscosity | not applicable |
| ■ Oxidizing properties | Non oxidizer |



9.2. Other information

- Granulometry 0.8 mm, Mean diameter

10. STABILITY AND REACTIVITY**10.1. Reactivity**

- Potential for exothermic hazard
- May be corrosive to metals.

10.2. Chemical stability

- Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

- Gives off hydrogen by reaction with metals.
- Exothermic reaction with strong acids.
- Risk of violent reaction.
- Risk of explosion.
- Reacts violently with water.

10.4. Conditions to avoid

- Keep away from direct sunlight.
- To avoid thermal decomposition, do not overheat.
- Exposure to moisture.
- freezing

10.5. Materials to avoid

- Metals, Oxidizing agents, Water, Acids, Aluminium, other light metals and their alloys

10.6. Hazardous decomposition products

- Hydrogen

11. TOXICOLOGICAL INFORMATION**11.1. Acute toxicity****11.1.1. Acute oral toxicity**

- no data available

11.1.2. Acute inhalation toxicity

- no data available

11.1.3. Acute dermal toxicity

- no data available

11.2. Skin corrosion/irritation

- Corrosive

11.3. Serious eye damage/eye irritation

- Corrosive

11.4. Respiratory or skin sensitization

- no observed effect

11.5. Mutagenicity

- Animal testing did not show any mutagenic effects., In vitro tests did not show mutagenic effects

11.6. Carcinogenicity

- no data available

11.7. Toxicity for reproduction

- Effect on fertility, foetotoxic effect, no observed effect

11.8. Specific target organ toxicity - single exposure

- Inhalation, Remarks: Corrosive
- Oral, Remarks: Corrosive
- Dermal, Remarks: Corrosive



11.9. Specific target organ toxicity - repeated exposure

- Remarks: not applicable

12. ECOLOGICAL INFORMATION**12.1. Toxicity**

- Fishes, various species, LC50, 96 h, 35 - 189 mg/l
- Crustaceans, Ceriodaphnia sp., EC50, 48 h, 40.4 mg/l

12.2. Persistence and degradability**12.2.1. Abiotic degradation**

- Air
Result: neutralization by natural alkalinity
- Water
Result: ionization/neutralization
Conditions: pH
- Soil
Result: ionization/neutralization

12.3. Bioaccumulative potential

- Not relevant

12.4. Mobility

- Water, Soil/sediments
considerable solubility and mobility
- Soil
soluble, mobile, ionization/neutralization
- Air, Chemical degradation

12.5. PBT and vPvB assessment

- This substance is not considered to be persistent, bioaccumulating and toxic (PBT)., This substance is not considered to be very persistent and very bioaccumulating (vPvB).

12.6. Other adverse effects

- no data available

13. DISPOSAL CONSIDERATIONS**13.1. Waste disposal methods**

- Dilute with plenty of water.
- Solutions with high pH-value must be neutralized before discharge.
- Neutralise with acid.
- In accordance with local and national regulations.

13.2. Contaminated packaging

- Where possible recycling is preferred to disposal or incineration.
- Clean container with water.
- Dispose of as unused product.
- In accordance with local and national regulations.

14. TRANSPORT INFORMATION**14.1. UN-Number** 1823**14.2. Transport hazard class(es) / Packaging group****- IATA-DGR**

Class	8
Packing group	II
ICAO-Labels	CORROSIVE
Proper shipping name	SODIUM HYDROXIDE, SOLID



- IMDG

Class	8
Packing group	II
IMDG-Labels	Corrosive
HI/UN No.	1823
EmS:	F-A, S-B
Proper shipping name	SODIUM HYDROXIDE, SOLID

- ADR

Class	8
Packing group	II
ADR/RID-Labels	8
HI/UN No.	80/1823
Proper shipping name	SODIUM HYDROXIDE, SOLID

- RID

Class	8
Packing group	II
ADR/RID-Labels	8
HI/UN No.	80/1823
Proper shipping name	SODIUM HYDROXIDE, SOLID

- ADN

Class	8
Packing group	II
ADR/RID-Labels	8
Proper shipping name	SODIUM HYDROXIDE, SOLID

15. REGULATORY INFORMATION**15.1. Applicable Laws or Regulations**

- Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), as amended
- Council Directive 67/548/EEC of 27 June 1967 on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances, as amended
- Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, as amended
- Council Directive 98/24/EC of 7 April 1998 on the protection of the health and safety of workers from the risks related to chemical agents at work, as amended
- Commission Directive 2000/39/EC of 8 June 2000 establishing a first list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work, as amended
- Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste
- The List of Wastes (Wales) Regulations 2005. 2005 Welsh Statutory Instrument (WSI), number W.148 (1820), 14 July 2005
- The List of Wastes (England) Regulations 2005. 2005 Statutory Instrument (SI), number 895, 6 April 2005, as amended
- EH40/2005. Workplace Exposure Limits, as amended through 1,10, 2007 (WELs) Published by the Health and Safety Executive (HSE). Issued under the Control of Substances Hazardous to Health Regulations - as amended

15.2. Notification status

Inventory Information	Status
Toxic Substance Control Act list (TSCA)	- In compliance with inventory
Australian Inventory of Chemical Substances (AICS)	- In compliance with inventory
Canadian Domestic Substances List (DSL)	- In compliance with inventory
Korean Existing Chemicals List (ECL)	- In compliance with inventory
EU list of existing chemical substances (EINECS)	- In compliance with inventory
Japanese Existing and New Chemical Substances (MITI List) (ENCS)	- In compliance with inventory
Inventory of Existing Chemical Substances (China) (IECS)	- In compliance with inventory
Philippine Inventory of Chemicals and Chemical Substances (PICCS)	- In compliance with inventory



Inventory Information	Status
New Zealand Inventory of Chemicals (NZIOC)	- In compliance with inventory

16. OTHER INFORMATION

16.1. Full text of H-Statements referred to under section 3

See section 2.2

16.2. Full text of R-phrases referred to under sections 2 and 3

16.2.1. Full text of R-phrases referred to under section 2

R35 - Causes severe burns.

16.3. Other information

- New (MSDS)
- Distribute new edition to clients

This SDS is only intended for the indicated country to which it is applicable. The European SDS format compliant with the applicable European legislation is not intended for use nor distribution in countries outside the European Union with the exception of Norway and Switzerland. Safety datasheets applicable in other countries/regions are available upon request. The information given corresponds to the current state of our knowledge and experience of the product, and is not exhaustive. This applies to product which conforms to the specification, unless otherwise stated. In this case of combinations and mixtures one must make sure that no new dangers can arise. In any case, the user is not exempt from observing all legal, administrative and regulatory procedures relating to the product, personal hygiene, and protection of human welfare and the environment.

Print Date: 07.09.2010



BRENNTAG**MATERIAL SAFETY DATA
SHEET**

Page : 1

Revision nr : 5

Date : 21/1/2009

Supersedes : 23/10/2002

Code : M 6052

LOW TOXICITY CLEANING FLUID**Responsible for distribution:**

BRENNTAG N.V. Nijverheidslaan 38 - BE-8540 DEERLIJK
 TEL: +32(0)56/77.69.44 - FAX: +32(0)56/77.57.11
 E-mail: info@brenntag.be - Website: www.brenntag.be

In case of emergency:

Belgium:
 Antipoison Center - Brussels :
 TEL: 070/245.245

BRENNTAG Nederland B.V.

Donker Duyvisweg 44 - NL-3316 BM DORDRECHT
 TEL: +31(0)78/65.44.944 - FAX: +31(0)78/65.44.919
 E-mail: info@brenntag.nl - Website: www.brenntag.nl

The Netherlands:

National Poisoning Information Center - Bilthoven :
 TEL: 030/274.88.88

1. IDENTIFICATION OF THE PRODUCT AND THE COMPANY

Identification of the product

- Type of product : Pure product .
- Use of product : Several industrial applications (Solvent , Cleaning agent , ...).
- Company identification : See heading of Material Safety Data Sheet.
- Emergency phone number : See heading of Material Safety Data Sheet.

2. HAZARD IDENTIFICATION

- Carcinogenic (cat.3, Xn) : R40 - Limited evidence of a carcinogenic effect.
- Dangerous for the environment (N) : R51/53 - Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

Name component(s)	Weight %	CAS nr / EC nr / EC annex nr	Symbol(s)	R-Phrase(s)
• <u>Tetrachloroethylene</u>	: > 99 %	127-18-4 / 204-825-9 / 602-028-00-4	Xn N	40-51/53
Limit value (Belgium)	: 25 ppm (172 mg/m ³) (2007)			
Short time value (Belgium)	: 100 ppm (695 mg/m ³) (2007)			

The full text of the R-phrases is in chapter 16.

4. FIRST AID MEASURES

- General : CALL A PHYSICIAN IN ALL CIRCUMSTANCES.
Never give anything by mouth to an unconscious person.
- First Aid Measures
- - Inhalation : Remove victim into fresh air.
Allow the affected person to rest.
If not breathing, give artificial respiration.
Consult a doctor.
- - Skin Contact : Remove contaminated clothing.
Rinse skin immediately with plenty of water. (shower if necessary).
Consult doctor if irritation develops.
- - Eye Contact : Rinse immediately thoroughly and long (at least 15 min.) with plenty of water.
Remove contact lenses.
Consult eye doctor.
Do not use a neutralisation agent.
- - Ingestion : DO NOT INDUCE VOMITING. Rinse mouth with water.
Seek medical attention IMMEDIATELY or take to hospital.

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LOW TOXICTY CLEANING FLUID**5. FIRE-FIGHTING MEASURES**

- Extinguishing Media
- Suitable : Incombustible product.
In case of nearby fire, use of all extinguishing media allowed.
- Special Procedures : Apply water spray or fog to cool nearby equipment. Avoid fire-fighting water to enter environment.
- Special Exposure Hazards : Fire may liberate toxic (Chlorine, Fosgene, ...) and corrosive (Hydrochloric acid, ...) vapours.
- Special Protective Equipment for Firefighters : Use self-contained breathing apparatus when in close proximity to fire.

6. ACCIDENTAL RELEASE MEASURES

- Personal Precautions : Evacuate all personnel immediately and ventilate area.
Avoid breathing vapour and contact with skin, eyes and clothing. Wear recommended personal protective equipment. (See chapter 8).
- Environmental Precautions : Shut off leaks if without risks.
Dike in the spilled product as much as possible with inert material.
Prevent entry of product in public water, sewers or soil.
Notify authorities if product enters sewers or public waters.
- Methods for Cleaning Up : Collect the spillage in closable, suitable disposal containers.
Clean up any spills as soon as possible, using an inert absorbent material and eliminate as hazardous waste. (See chapter 13).
Eventual remaining residues may be washed down with a soap solution.

7. HANDLING AND STORAGE

- Handling : **STRONG HYGIENE !**
Avoid breathing vapour and contact with skin, eyes and clothing. Wear recommended personal protective equipment. (See chapter 8).
- Protection against Fire and Explosion : Use special care to avoid static electric discharges.
- Storage : Keep only in the original, safely locked container in a well ventilated, cool and dark place.
All dangerous products should be placed on a drip tray or should be barreled.
Keep away from : Alkali- and earthalkali-metals, Light metals.
- Insuitable Packaging Material : Synthetic material.

8. MEASURES EXPOSURE CONTROL / PERSONAL PROTECTION

- Engineering Measures : Ventilate area. (Through the floor.)
- Industrial Hygiene : When using, do not eat, drink or smoke.
Emergency eye wash fountains and showers should be available in the immediate vicinity of any potential exposure.
- Occupational Exposure Limits : See chapter 3.
- Personal Protection Equipment : Ventilation, Local exhaust, Respiratory protection equipment (Filter type A).
- Respiratory Protection : Gloves (PVA, Nitril rubber, ...).
- Hand Protection : Closed safety glasses or face shield.
- Eye Protection : Suitable protective clothing.
- Skin and Body Protection

9. PHYSICAL AND CHEMICAL PROPERTIES

- Physical State (20°C) : Liquid.
- Form/Colour : Clear, Colourless.
- Odour : Characteristic odour.
- pH value : Not applicable.

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LOW TOXICTY CLEANING FLUID**9. PHYSICAL AND CHEMICAL PROPERTIES (continued)**

- Boiling Point/Range (1013 hPa) : 121 °C
- Congealing/Melting point : -19 °C
- Decomposition temperature : > 140 °C
- Flash point : Not applicable.
- Auto-ignition temperature : Not applicable.
- Explosion limits in air : Not applicable.
- Vapour pressure (20°C) : 18,9 mbar
- Relative vapour density (air=1) : 5,7
- Relative density of saturated vapour/air mixture (air=1) : 1,09
- Solubility in water : 0,02 g/100 ml
- Log P Octanol/Water (20°C) : 3,4
- Surface tension : 0,032 N/m
- Critical temperature : 347 °C
- Relative density (water=1) : 1,6
- Viscosity (20°C) : 0,0008 Pa.s
- Evaporation rate : 9 (Ether = 1)
- % Volatiles (by weight) : > 99
- Specific leading : 5,6*10E10 pS/m

10. STABILITY AND REACTIVITY

- Stability : Stable at normal circumstances.
- Conditions to avoid : High temperatures .
- Materials to avoid : Alkali- and earthalkali-metals , Light metals .
- Hazardous Decomposition Products : Fire may liberate toxic (Chlorine, Fosgene, ...) and corrosive (Hydrochloric acid, ...) vapours.

11. TOXICOLOGICAL INFORMATION

- Acute toxicity
- - Inhalation : May cause irritation of respiratory tract.
Exposure to high concentrations may cause lowering of consciousness.
Symptoms include: Dizziness , Drowsiness , Unconsciousness .
• Tetrachloroethylene : LC50 (Rat, inhalation, 4 h) : 4000 ppm
- - Skin contact : May be irritating for the skin.
Product degrades skin. Product is being absorbed through the skin.
Symptoms include: Redness , Pain .
• Tetrachloroethylene : LD50 (Rabbit, dermal) : > 10000 mg/kg
- - Eye contact : May be irritating to eyes.
Symptoms include: Redness , Pain .
- - Ingestion : Symptoms include: Abdominal pain , Diarrhea , Vomiting , See "Inhalation" .
• Tetrachloroethylene : LD50 (Rat, oral) : > 2000 mg/kg
- Other toxicological information : Alcohol will intensify the harmful action.
Product may affect kidney and liver, resulting in organ damages.
Ç áðáðþ áðñiÜðúi iðññáð ìá ðññéáéYóáé ìéá Yéæáíá-üðúó áíáðáñáþ áññiÜðúi áÜóáé ìéáð æéáñáééþð áíððáñáðçð.
• Information on the webaddress <http://ecb.jrc.it/ESIS> (see IUCLID Data Sheets).
- Carcinogenicity : Limited evidence of a carcinogenic effect. (Carc. cat. 3)
- IARC Group : 2B (possibly carcinogenic to humans).
- Specific effects on human health : The Netherlands : Perchloroethylene is included in the SZW list:
- Non-limitative list of reproduction toxic substances to which the additional registration-obligation applies as referred to in Article 4.2a, second paragraph of the

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LOW TOXICTY CLEANING FLUID**11. TOXICOLOGICAL INFORMATION (continued)**

Working conditions decree; Category 3 "development".

12. ECOLOGICAL INFORMATION

- This product is classified as a Volatile Organic Component according to Directive 1999/13/EC.
- Mobility : Badly soluble in water.
- Persistence and degradability : Biodegrade with difficulty.
- Bioaccumulation : Bioaccumulation not expected.
- Ecotoxicity : Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Air pollution: maximum concentration 0,10 g/m³ at an emission flow >=2 kg/h
 : • Tetrachloroethylene : LC50 (Fish, 96 h) : > 10 mg/l (Pimephales promelas)
 : • Tetrachloroethylene : EC50 (Daphnia magna, 48 h) : > 5 mg/l
- Other ecological information : Information on the webaddress <http://ecb.jrc.it/ESIS> (see IUCLID Data Sheets).
- WGK class (Germany) : 3 (Serious water pollutant).
- Water damaging (The Netherlands) : 1
- Decontamination exertion (The Netherlands) : A (Contains 'Zwarte lijst' substance)

13. DISPOSAL CONSIDERATIONS

- Waste from residues/Unused products : The product has to be destroyed according to national or local legislation, by a company specialised in handling hazardous waste products.
- Removal contaminated packaging : Packing is to be used exclusively for the packing of this product.
After use, empty and close the packing very carefully.
In case of returned packing, the empty packing can be offered back to the supplier.
- European list of waste products : 140603 - Other solvents and mixtures of solvents.

European waste product code: ' XX XX XX '. This code is assigned on the basis of the most current applications and can not be representative for pollutions which are arisen at the effective use of the product. The producer of the waste has to evaluate its process himself and has to grant the appropriate waste coding. See directive 2001/118/EC.

14. TRANSPORT INFORMATION

Land (Road/Railroad, ADR/RID)

- - ADR Name : UN 1897 Tetrachloroethylene, 6.1, III
- ADR Division : 6.1, III
- Hazard Label(s) : 6.1
- Danger number : 60
- Substance Ident. Number (UN-n°) : 1897

Sea Transport (IMDG)

- - Product Name : UN 1897 Tetrachloroethylene, 6.1, III, MARINE POLLUTANT
- Class : 6.1
- Hazard Label(s) : 6.1
- UN Number : 1897
- Packaging Group : III
- - EmS-N° : F-A, S-A
- Marine pollutant : YES

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LOW TOXICTY CLEANING FLUID**15. REGULATORY INFORMATION**

Name dangerous component(s) : Tetrachloroethylene .
 EC Number : 204-825-9
 Symbol(s) : Harmful (Xn).
 Dangerous for the environment (N).



R-Phrases : R40 - Limited evidence of a carcinogenic effect.
 R51/53 - Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S-Phrases : S23 - Do not breathe the gas/fumes/vapour/spray.
 S36/37 - Wear suitable protective clothing and gloves.
 S61 - Avoid release to the environment. Refer to special instructions/Safety data sheets.

X-Phrases (The Netherlands) : X02 - Restricted to professional users. Warning! Avoid exposure - obtain special instructions before use.

16. OTHER INFORMATION

- This safety data sheet has been drawn up in accordance with the EC Regulation n° 1907/2006.
 This safety data sheet is exclusively made for industrial/professional use.
- * Has changed compared to previous revision.
- Changes : General revision .
- R-phrases : R40 - Limited evidence of a carcinogenic effect.
 R51/53 - Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
- Inventories : Australian inventory (AICS): Listed in inventory.
 Canadian inventory (DSL): Listed in inventory.
 Chinese inventory (IECS): Listed in inventory.
 European inventory (EINECS): Listed in inventory.
 Japanese inventory (ENCS): Listed in inventory.
 Korean inventory (ECL): Listed in inventory.
 Philippine inventory (PICCS): Listed in inventory.
 Inventory of the United States (TSCA): Listed in inventory.
- NFPA n° : 2-0-0
- Sources of used key data : The information contained herein is based on the present state of our knowledge (Producer(s) , Chemical cards , ...).

This information is to our knowledge correct and complete on the date of issue of this safety data sheet. The information only concerns the product and does not give any guarantee for the quality and the completeness of the properties of the product, or in case of mixing or using in any other process. It remains the responsibility of the user to assure himself that the information is suitable and complete concerning the special use he makes of the product.
 BRENNTAG denies all responsibility for loss or damage resulting from the use of these data.

End of document

TECHNICAL DATA SHEET

BRENNTAG

LOW TOXICTY CLEANING FLUID – M 6052

Date of issue: 02/06/10

Replaces: 10/01/07

FORMULA : $\text{Cl}_2\text{C}=\text{CCl}_2$

(CAS : 127-18-4 / EINECS : 204-825-9)

Tetrachloroethylene, Perchloroethylene, PER

APPEARANCE

Colourless, clear solvent, with a characteristic smell.

CONCENTRATION

Tetrachloroethylene : min. 99,9 %

PHYSICAL PROPERTIES

Density (20/4°C)	: 1.620 – 1.625 kg/l
Colour	: max. 15 Hazes
Ph (watery extract)	: min. 8
Density range	: 1,620 – 1,625

CHEMICAL ANALYSIS

Water	: max. 30 ppm
Residue on evaporation	: max. 30 ppm
Alkalinity (as NaOH)	: max. 30 ppm
Oxidising compounds (Cl_2)	: max. 1 ppm

PACKING

Can be obtained in bulk, drums and cans.
Other packing are available on request.

SAFETY REGULATION

The safety data sheet is available on request.

Information in this publication is believed to be accurate and is given in good faith, but it is for the customer to satisfy itself of the suitability for its own particular purpose.

No representation, warranty or guarantee is made as to its accuracy, reliability or completeness.

1/1



SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

BOND + SEAL GREY - 300 ML

Version 1.0

Revision Date 11.06.2010

Print Date 31.03.2011

DE / EN

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product information

Commercial Product Name : BOND + SEAL GREY - 300 ML

Product code : 08901002

MSDS-Identcode : 10001980

Company : A. Wuerth GmbH & Co. KG
Reinhold-Würth-Str. 12-17
74653 Künzelsau
Germany

Telephone : +49 (0)7940 15 0

Telefax : +49 (0)7940 15 10 00

Responsible/issuing person : prodsafe.wurth@technidata.com

Emergency telephone : Giftnotrufzentrale Berlin
+49 (0)30 30686 790
Gesellschaft (07:00 – 18:00 Uhr) :
+49 (0)7940 15 2552

Use : Adhesives, Sealant

2. HAZARDS IDENTIFICATION



Xn Harmful

May cause sensitization by inhalation.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous components

Chemical Name	CAS-No.	EC-No. / Registration number	Classification	Concentration [%]
xylene	1330-20-7	215-535-7	R10 Xn; R20/21 Xi; R38	>= 2 - < 3
low boiling point hydro- gen treated naphtha	64742-82-1	265-185-4	R10 N; R51/53 Xn; R65 R66-R67	>= 2 - < 2,5



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Chemical Name	CAS-No.	EC-No. / Registration number	Classification	Concentration [%]
4,4'-methylenediphenyl diisocyanate	101-68-8	202-966-0	Carc.Cat.3; R40 Xn; R20-R48/20 Xi; R36/37/38 R42/43	>= 0,75 - < 1

For the full text of the R-phrases mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

- General advice : Symptoms of poisoning may only appear several hours later. Call a doctor immediately if allergic signs, particularly in the respiratory tract, are observed. In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). First aider needs to protect himself. Move out of dangerous area. Never give anything by mouth to an unconscious person. Take off contaminated clothing and shoes immediately.
- Inhalation : If breathed in, move person into fresh air. Keep patient warm and at rest. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.
- Skin contact : In case of contact, immediately flush skin with soap and plenty of water. Do NOT use solvents or thinners. If skin irritation persists, call a physician. Wash off with polyethylene glycol and afterwards with plenty of water.
- Eye contact : Protect unharmed eye. If easy to do, remove contact lens, if worn. In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- Ingestion : If swallowed, seek medical advice immediately and show this container or label. If swallowed, DO NOT induce vomiting. If a person vomits when lying on his back, place him in the recovery position.

5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media : Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
- Unsuitable extinguishing media : High volume water jet
- Specific hazards : Do not use a solid water stream as it may scatter and spread fire. Hazardous decomposition products may be formed under fire conditions (see section 10). Exposure to decomposition products may be a hazard to health.



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- Special protective equipment for fire-fighters : In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment.
- Further information : Standard procedure for chemical fires. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. In the event of fire and/or explosion do not breathe fumes. Use water spray to cool unopened containers. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

6. ACCIDENTAL RELEASE MEASURES

- Personal precautions : Refer to protective measures listed in sections 7 and 8. Use personal protective equipment. Avoid contact with skin and eyes. Ensure adequate ventilation, especially in confined areas. Immediately evacuate personnel to safe areas. Avoid inhalation of vapour or mist.
- Environmental precautions : Do not flush into surface water or sanitary sewer system. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.
- Methods for cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Do not flush with water. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Handling

- Advice on safe handling : For personal protection see section 8. Use with local exhaust ventilation. Use only in well-ventilated areas. Do not breathe vapours or spray mist. Avoid contact with skin and eyes. Handle with care. Persons with a history of skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.
- Advice on protection against fire and explosion : Normal measures for preventive fire protection.
- Dust explosion class : not applicable



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Storage

Requirements for storage areas and containers : Store in original container. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep in a well-ventilated place. Do not keep the container sealed.

Advice on common storage : Incompatible with oxidizing agents. Keep away from food, drink and animal feedingstuffs. Never allow product to get in contact with water during storage.

German storage class : 10, Combustible liquids not in Storage Class 3

Other data : No decomposition if stored and applied as directed.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Control parameters	Basis	Update
xylene	1330-20-7	AGW: 440 mg/m ³ , 100 ppm DFG, H,	DE TRGS 900	2009-02-16
low boiling point hydrogen treated naphtha	64742-82-1	AGW: 100 mg/m ³ , Group-AGW, AGS,	DE TRGS 900	2009-02-16
titanium dioxide	13463-67-7	AGW (Inhalable fraction): 10 mg/m ³ , AGS, AGW (Alveolate fraction): 3 mg/m ³ , AGS,	DE TRGS 900	2006-01-01
4,4'-methylenediphenyl diisocyanate	101-68-8	AGW: 0,05 mg/m ³ , DFG, 11, 12, =, Y, Sa,	DE TRGS 900	2009-07-02
Components	CAS-No.	Control parameters	Basis	Update
xylene	1330-20-7	TWA: 221 mg/m ³ , 50 ppm skin, STEL: 442 mg/m ³ , 100 ppm skin,	2000/39/EC	2000-06-16

Other information on limit values: see chapter 16

Biological occupational exposure limits - TRGS903

Substance name	CAS-No.	Control parameters	Sampling time	Update
xylene	1330-20-7	xylene: 1,5 mg/l (B) methylhippuric acid: 2 g/l (U)	b b	2006-12-01 2006-12-01



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4,4'-methylenediphenyl diisocyanate	101-68-8	4,4'-diaminodiphenylmethane: 0,01 mg/g Creatinine (U): BAT-values reflect the total body load absorbed through an inhalable, dermal etc. route. In occupational exposure against MDI the 4,4'-diaminodiphenylmethane (MDA) parameter encloses in urine all components of a complex MDI-mixture, because both monomers and oligomers of MDI are being build up independently of monomer MDA. However, the occupational exposure value for MDI only applies for the monomer MDI part. The BAT-value that has been set by the senate commission of the DFG to check the dangerous substances, is basically a correlation derived from the OEL-value for MDI. This correlation follows after several occupational medical studies on humans. In such exposure scenarios, in which mainly inhalable uptake of MDI appears and the ratio between monomers and oligo- resp. polymers corresponds with the one used to set the OEL-value, the BAT-value corresponds with the OEL-value. In case of an unusual division between monomer and polymer shares (in the meaning of excessive increase of polymers or in case of an increased dermal uptake), this leads to an increase of the parameters in biological material. In these cases one is "on the safe side" when using these BAT-values. Compared to the OEL-value, regarding the BAT-value results in a higher protection against oligo- resp. polymers of MDI and in case of increased dermal exposition. ()	b	2006-12-01
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Remarks:

a	No time limit
b	Immediately after exposition or after working hours
c	In case of long-term exposition: after more than one shift
d	Before the next shift

Engineering measures

Provide sufficient air exchange and/or exhaust in work rooms. Highly effective exhaust ventilation

Personal protective equipment

Respiratory protection : In the case of vapour formation use a respirator with an approved filter.
Respirator with combination filter for vapour/particulate (EN 141).

Respirator with filter type ABEK



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Hand protection

Material : butyl-rubber

Material : Nitrile rubber

Remarks : Choose gloves to protect hands against chemicals depending on the concentration and quantity of the hazardous substance and specific to place of work. For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer.

Eye protection : Safety glasses

Skin and body protection : Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.
General industrial hygiene practice.
Avoid breathing vapors, mist or gas.
Avoid contact with skin, eyes and clothing.
When using do not eat, drink or smoke.
Wash hands before breaks and at the end of workday.
Follow the skin protection plan.
Take off all contaminated clothing immediately.
Wash contaminated clothing before re-use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form : paste
Colour : grey
Odour : characteristic

Safety data

Flash point : > 70 °C
Method: closed cup

Vapour pressure : no data available
Density : ca. 1,26 g/cm³ at 20 °C

Water solubility : insoluble

Viscosity, dynamic : not applicable



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10. STABILITY AND REACTIVITY

Materials to avoid	: Oxidizing agents, Water Avoid contact with other chemicals.
Hazardous decomposition products	: Carbon oxides, Halogenated compounds, Metal oxides, Iso-cyanates
Hazardous reactions	: Evolution of CO ₂ in closed containers causes overpressure and produces a risk of bursting.
Stability	: No decomposition if stored and applied as directed.

11. TOXICOLOGICAL INFORMATION

<u>Acute oral toxicity</u>	: Acute toxicity estimate: 113.604,54 mg/kg Method: Calculation method
<u>Acute inhalation toxicity</u>	: Acute toxicity estimate: 1.120,04 mg/l Method: Calculation method
<u>Acute dermal toxicity</u>	: Acute toxicity estimate: 64.288,29 mg/kg Method: Calculation method
<u>Skin irritation:</u>	
xylene	: Mild skin irritation Note: Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.
low boiling point hydrogen treated naphtha	: Mild skin irritation
<u>Eye irritation:</u>	
xylene	: Mild eye irritation
low boiling point hydrogen treated naphtha	: Mild eye irritation
<u>Sensitisation</u>	: May cause sensitization by inhalation.



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Further information

: Persons allergic to isocyanates, and particularly those suffering from asthma or other respiratory conditions, should not work with isocyanates.

12. ECOLOGICAL INFORMATION

Toxicity to fish:

xylene : LC50 (Oncorhynchus mykiss (rainbow trout)): 8,2 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates.:

xylene : EC50 (Daphnia magna (Water flea)): 75,5 mg/l
Exposure time: 24 h

4,4'-methylenediphenyl diisocyanate : EC50 (Daphnia magna (Water flea)): 0,35 mg/l
Exposure time: 24 h

Adsorbed organic bound halogens (AOX) : not included

Additional ecological information : The product should not be allowed to enter drains, water courses or the soil.

13. DISPOSAL CONSIDERATIONS

Advice on disposal and packaging : Disposal:
In accordance with local and national regulations. Do not dispose of waste into sewer. This material and its container must be disposed of as hazardous waste. Do not dispose of together with household waste.
Waste codes should be assigned by the user based on the application for which the product was used.
The following Waste Codes are only suggestions:

Waste Code (EWC) : Waste Key (unused product):
080409, waste adhesives and sealants containing organic solvents or other dangerous substances

Waste key (used product):
080409, waste adhesives and sealants containing organic solvents or other dangerous substances

Disposal of uncleaned pack- : Waste key (uncleaned packaging):



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aging

150110, packaging containing residues of or contaminated by dangerous substances

Note: Empty containers should be taken to an approved waste handling site for recycling or disposal. Dispose of as unused product.

14. TRANSPORT INFORMATION

ADR

Not dangerous goods

RID

Not dangerous goods

IATA

Not dangerous goods

IMDG

Not dangerous goods

15. REGULATORY INFORMATION

Labelling according to EC Directives

1999/45/EC

Symbol(s)	: Xn	Harmful
R-phrases	: R42	May cause sensitization by inhalation.
S-phrases	: S23 S24/25 S45	Do not breathe vapour. Avoid contact with skin and eyes. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Hazardous components which must be listed on the label:

CAS-No. 101-68-8

4,4'-methylenediphenyl diisocyanate

Special labelling of certain mixtures	: Contains isocyanates. See information supplied by the manufacturer.
Further information	: Ensure a continuous supply of fresh air during and after operation. Persons who suffer from allergies or who have a chronic disposition to respiratory illness must not be required to work with this material.



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Reserved for industrial and professional use.

VOC : Directive 1999/13/EC
3,46 %

Directive (96/82/EC)	:	Petroleum products	Quantity 1 2.500 t	Quantity 2 25.000 t
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National legislation

Water contaminating class (Germany) : WGK 1 (slightly water endangering)
self classification

TA Luft List (Germany) : Inorganic substances in powdered form
Class III: unterstellt

Organic Substances
Class I: unterstellt

Other regulations : TRGS 430 (German regulatory requirements)

Observe national used protectional regulations.

16. OTHER INFORMATION

Full text of R-phrases referred to under sections 2 and 3

R10	Flammable.
R20	Harmful by inhalation.
R20/21	Harmful by inhalation and in contact with skin.
R36/37/38	Irritating to eyes, respiratory system and skin.
R38	Irritating to skin.
R40	Limited evidence of a carcinogenic effect.
R42	May cause sensitization by inhalation.
R42/43	May cause sensitization by inhalation and skin contact.
R48/20	Harmful: danger of serious damage to health by prolonged exposure through inhalation.
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R65	Harmful: may cause lung damage if swallowed.
R66	Repeated exposure may cause skin dryness or cracking.
R67	Vapours may cause drowsiness and dizziness.

Other information

= =

In well-found cases also a momentary value can be established, that never can be ex-



SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

BOND + SEAL GREY - 300 ML

Version 1.0

Revision Date 11.06.2010

Print Date 31.03.2011

DE / EN

11	ceeded. This substance will be indicated by = = in combination with an exceeding value.
12	Sum of vapor and aerosols.
AGS	The exposure limit is established for monomers. For regulatory details on oligomers and polymers see TRGS 430 "Isocyanate".
DFG	Commission for dangerous substances
Group-AGW	Senate commission for the review of compounds at the work place dangerous for the health (MAK-commission).
H	Group exposure limit for hydrocarbon solvent mixtures
Sa	Skin absorption
skin	Substance sensitizing through the respiratory system
Y	Identifies the possibility of significant uptake through the skin
	When there is compliance with the OEL and biological tolerance values, there is no risk of harming the unborn child

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Prepared by: : TechniData BCS GmbH
 Birkenbacher Str. 19
 D-57078 Siegen
 Germany
 Telephone: +49-(0)271-88072-0

Ref.: WIAG00001746



SAFETY DATA SHEET

AQUAMAX LT19NP

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Trade name or designation of the mixture AQUAMAX LT19NP

Version number 1.0

Revision date 17/01/2014

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses Deposit control agent

Uses advised against None known.

1.3. Details of the supplier of the safety data sheet

GE Water & Process Technologies BVBA

Toekomstlaan 54

Industriepark Wolfstee

2200 HERENTALS

tel : +32 14 / 25 91 11

fax : +32 14 / 25 91 12

e-mail : emea.productstewardship@ge.com

1.4. Emergency telephone number

Multilingual emergency number (24/7)

Europe, Middle East, Africa, Israel (Europe and English language speaking countries):

+44(0)1235 239670

Middle East & Africa (speaking Arabic):

+44(0)1235 239671

Anti Poison Centre

Mater Dei Hospital

Msida MSD 2090

Malta

+356 25456504

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Directive 67/548/EEC or 1999/45/EC as amended

Classification Xi;R36/38

Hazard summary

Physical hazards Not classified for physical hazards.

Health hazards Irritating to eyes and skin.

Environmental hazards Not classified for hazards to the environment.

Classification according to Regulation (EC) No 1272/2008 as amended

Health hazards

Skin corrosion/irritation Category 2

H315 - Causes skin irritation.

Serious eye damage/eye irritation Category 2

H319 - Causes serious eye irritation.

2.2. Label elements

SAFETY DATA SHEET

AQUAMAX LT19NP

Label according to Regulation (EC) No. 1272/2008 as amended

Hazard pictograms



Signal word

Warning

Hazard statements

H315

Causes skin irritation.

H319

Causes serious eye irritation.

Precautionary statements

Prevention

P280

Wear protective gloves and eye/face protection.

Response

P302 + P352

IF ON SKIN: Wash with plenty of soap and water.

P305 + P351 + P338

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P332 + P313

If skin irritation occurs: Get medical advice/attention.

P337 + P313

If eye irritation persists: Get medical advice/attention.

Supplemental label information

Not applicable.

2.3. Other hazards

Not assigned.

SECTION 3: Composition/information on ingredients

Mixtures

Chemical description

Aqueous alkaline solution of organic salts and polymer

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	INDEX No.	Notes
Tetrasodium (1-hydroxyethylidene)bisphosphonate	10 - < 25	3794-83-0 223-267-7	-	-	
Classification:	DSD: Xn;R22, Xi;R36/38				
	CLP: Acute Tox. 4;H302, Skin Irrit. 2;H315, Eye Irrit. 2;H319				

The classification of the above substance(s) is given, including the symbol letters, R-phrases, hazard class, category code and hazard statements which are assigned in accordance with their physicochemical, health and environmental hazards. Please refer to section 16 where the full text of each relevant R-phrases and H-statements is listed.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation	Remove to fresh air.
Skin contact	Remove contaminated clothing. Wash immediately with plenty of water. If irritation persists, seek medical advice.
Eye contact	Keep eyelids apart. Flush immediately with plenty of running water. If irritation persists, seek medical advice.
Ingestion	Rinse mouth with water. Immediately give 1-2 glasses of water, if victim is fully conscious. Do NOT induce vomiting!

4.2. Most important symptoms and effects, both acute and delayed

Irritant effects.

4.3. Indication of any immediate medical attention and special treatment needed

No special instructions.

SAFETY DATA SHEET

AQUAMAX LT19NP

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	Carbon dioxide, dry chemicals, foam, water spray (fog).
Unsuitable extinguishing media	None.

5.2. Special hazards arising from the substance or mixture Oxides of carbon and phosphorus evolved in fire.

5.3. Advice for firefighters

Special protective equipment for firefighters	Self contained breathing apparatus. (CEN : EN 137) Protective clothing (CEN : EN 469) Protective gloves (CEN : EN 659) Helmet (CEN : EN 443)
---	---

Special fire fighting procedures	Use standard firefighting procedures and consider the hazards of other involved materials. Prevent spillage and fire-fighting water from entering in public sewers or the immediate environment.
----------------------------------	---

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	Wear protective clothing, gloves and safety goggles.
-----------------------------	--

For emergency responders	Use personal protection recommended in Section 8 of the MSDS.
--------------------------	---

6.2. Environmental precautions Prevent from entering sewers or the immediate environment.
Accidental release of large quantities into the aquatic environment may harm aquatic organisms.

6.3. Methods and material for containment and cleaning up Absorb onto inert material and dispose of according to Hazardous Waste Regulations.
Remove small spills with plenty of water.

6.4. Reference to other sections Please refer also to section no. 8 'Exposure controls' for further information.

SECTION 7: Handling and storage

7.1. Precautions for safe handling Alkaline.
Do not mix with acidic material.

7.2. Conditions for safe storage, including any incompatibilities Protect from freezing.
Store containers closed when not in use.

7.3. Specific end use(s) Only for professional and industrial users

Shelf life 720 days

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits	No exposure limits noted for ingredient(s).
Biological limit values	No biological exposure limits noted for the ingredient(s).
Recommended monitoring procedures	Not available.
Derived no-effect level (DNEL)	Not available.
Predicted no effect concentrations (PNECs)	Not available.

8.2. Exposure controls

Appropriate engineering controls Adequate ventilation to maintain air contaminants below exposure limits.

Individual protection measures, such as personal protective equipment

Eye/face protection Safety goggles.
CEN : EN 166

Skin protection

**SAFETY DATA SHEET****AQUAMAX LT19NP**

- Hand protection	Neoprene gloves (Protection against unintentional short-term contact) Nitrile gloves (Protection against unintentional short-term contact) CEN : EN 374-1/2/3; EN 420
- Other	Protective clothing. CEN : EN 340; EN 369; EN 465
Respiratory protection	In case of insufficient ventilation, use a breathing mask with filter type: P2 CEN : EN 140; EN 143; EN 149
Thermal hazards	Not available.
Environmental exposure controls	Prevent from entering in public sewers or the immediate environment.

SECTION 9: Physical and chemical properties**9.1. Information on basic physical and chemical properties****Appearance**

Colour	Yellow
Physical state	Liquid
Odour	None
Odour threshold	Not available.
pH (concentrated product)	12,5
pH in aqueous solution	11,3 (5% SOL.)
Melting point/freezing point	-7 °C
Initial boiling point and boiling range	104 °C
Flash point	> 100 °C P-M(CC)
Evaporation rate	Not applicable.
Flammability (solid, gas)	Not applicable.

Upper/lower flammability or explosive limits

Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.

Vapour pressure	18 mm Hg
Vapor pressure temp.	21 °C
Vapour density	< 1 (Air = 1)
Relative density	1,26
Relative density temperature	21 °C

Solubilities

Solubility (water)	100 %
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not applicable.
Decomposition temperature	Not available.
Viscosity	13 cps
Viscosity temperature	21 °C
Explosive properties	Not available.
Oxidizing properties	Not available.

9.2. Other information

Percent volatile	0 (Estimated)
Pour point	-4 °C
Shelf life	720 days



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AQUAMAX LT19NP

SECTION 10: Stability and reactivity

10.1. Reactivity	Not available.
10.2. Chemical stability	Material is stable under normal conditions.
10.3. Possibility of hazardous reactions	Not applicable.
10.4. Conditions to avoid	Protect from freezing.
10.5. Incompatible materials	Avoid contact with strong acids and oxidisers.
10.6. Hazardous decomposition products	Oxides of carbon and phosphorus evolved in fire.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Product	Test results
AQUAMAX LT19NP (Mixture)	Acute Dermal LD50 Rabbit: > 5000 mg/kg (Estimated value) Acute Oral LD50 Rat: 3177 mg/kg
Components	Test results
Tetrasodium (1-hydroxyethylidene)bisphosphonate (3794-83-0)	Acute Oral LD50 Rat: 990 mg/kg
Acute toxicity	Not classified.
Skin corrosion/irritation	Causes skin irritation.
Respiratory sensitisation	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Specific target organ toxicity - single exposure	Not classified.
Carcinogenicity	Not classified.
Germ cell mutagenicity	Not classified.
Reproductive toxicity	Not classified.
Information on likely routes of exposure	
Ingestion	May cause slight gastrointestinal irritation.
Inhalation	Prolonged or repeated exposure may cause transient irritation.
Skin contact	Causes irritation.
Eye contact	Causes irritation.
Symptoms	Not available.
Mixture versus substance information	None known.
Other information	Not available.

SECTION 12: Ecological information

12.1. Toxicity

Product	Species	Test results
AQUAMAX LT19NP (CAS Mixture)	0% Mortality	Bluegill sunfish
	LC50	Fathead minnow
	NOEL	Fathead minnow
	Crustacea	0% Mortality
		Daphnia magna
		2000 mg/l, Static Screen, 96 hour > 5000 mg/l, Acute toxicity, 96 hour, (Estimated) 3440 mg/l, Acute toxicity, 96 hour, (Estimated) 1000 mg/l, Static Screen, 48 hour, (pH adjusted)



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AQUAMAX LT19NP

Product		Species	Test results
	80% Mortality	Daphnia magna	2000 mg/l, Static Screen, 48 hour, (pH adjusted)
Other	0% Mortality	Rainbow trout	2000 mg/l, Static Bioassay with 48-Hour Renewal, 96 hour, (pH adjusted)

12.2. Persistence and degradability

- COD (mgO₂/g) 137 (calculated data)
- BOD 5 (mgO₂/g) 1 (calculated data)
- BOD 28 (mgO₂/g) 3 (calculated data)
- Closed Bottle Test (% Degradation in 28 days) 2 (calculated data)
- Zahn-Wellens Test (% Degradation in 28 days) 2 (calculated data)
- TOC (mg C/g) 46 (calculated data)

12.3. Bioaccumulative potential

Not available.

Partition coefficient

Not available.

n-octanol/water (log K_{ow})

Bioconcentration factor (BCF)

Not available.

12.4. Mobility in soil

Not available.

12.5. Results of PBT and

vPvB assessment

Not a PBT or vPvB substance or mixture.

12.6. Other adverse effects

Nutrients: P : 45,7 mg/g, N : 0 mg/g

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Contaminated packaging

According to Hazardous Waste Regulations.

EWC (European Waste Code) recommendation : 15 01 10

15 Waste packaging; absorbents, wiping cloths, filter materials and protective clothing not otherwise specified.

15 01 Packaging (including separately collected municipal packaging waste).

15 01 10 Packaging containing residues of or contaminated by dangerous substances.

Depending on the origin and state of the waste, other EWC numbers may be applicable too.

Disposal methods/information

According to Hazardous Waste Regulations.

EWC (European Waste Code) recommendation : 16 03 05

16 Wastes not otherwise specified in the list.

16 03 Off-specification batches and unused products.

16 03 05 Organic wastes containing dangerous substances.

Depending on the origin and state of the waste, other EWC numbers may be applicable too.

SECTION 14: Transport information

ADR

Not regulated as dangerous goods.

RID

Not regulated as dangerous goods.

ADN

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.



SAFETY DATA SHEET

AQUAMAX LT19NP

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

EU regulations

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I

Not listed.

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex II

Not listed.

Regulation (EC) No. 850/2004 On persistent organic pollutants, Annex I as amended

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 1 as amended

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 2 as amended

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 3 as amended

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex V as amended

Not listed.

Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry

Not listed.

Regulation (EC) No. 1907/2006, REACH Article 59(1) Candidate List as currently published by ECHA

Not listed.

Authorisations

Regulation (EC) No. 143/2011 Annex XIV Substances Subject to Authorisation

Not listed.

Restrictions on use

Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended

Not listed.

Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work

Not regulated.

Directive 92/85/EEC: on the safety and health of pregnant workers and workers who have recently given birth or are breastfeeding

Not regulated.

Other EU regulations

Directive 96/82/EC (Seveso II) on the control of major-accident hazards involving dangerous substances

Not regulated.

Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work

Not regulated.

Directive 94/33/EC on the protection of young people at work

Not regulated.

National regulations Not available.

15.2. Chemical safety assessment Not available.

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)



SAFETY DATA SHEET

AQUAMAX LT19NP

SECTION 16: Other information

List of abbreviations

CAS: Chemical Abstract Service Registration Number
EC-No: European Commission Number
CLP: Regulation on classification, labeling and packaging of substances and mixtures
DSD: Dangerous Substances Directive
CEN: European Committee for Standardisation
TWA: Time Weighted Average
STEL: Short Term Exposure Limit
LD50: Lethal Dose, 50%
LC50: Lethal Concentration, 50%
EC50: Effect Concentration, 50%
NOEL: No Observed Effect Level
COD: Chemical Oxygen Demand
BOD: Biochemical Oxygen Demand
TOC: Total Organic Carbon
ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
IATA: International Air Transport Association
IMDG: International Maritime Dangerous Goods Code
RID: International Rule for Transport of Dangerous Substances by Railway

References

Information on evaluation method leading to the classification of mixture

Safety data sheets of raw materials.
The physical, health and environmental hazards of this mixture are assessed by applying the classification criteria for each hazard class or differentiation in Parts 2 to 5 of Annex I to Regulation (EC) No 1272/2008 (CLP).

Full text of any statements or R-phrases and H-statements under Sections 2 to 15

R22 Harmful if swallowed.
R36/38 Irritating to eyes and skin.

H302 Harmful if swallowed.
H315 Causes skin irritation.
H319 Causes serious eye irritation.

Revision information

Product and Company Identification: Product and Company Identification
Composition / Information on Ingredients: Disclosure Overrides
Physical & Chemical Properties: Multiple Properties
Ecological Information: Ecotoxicity
Transport Information: Material Transportation Information
Regulatory Information: Risk Phrases - Class.

Training information

Based on EC Directive / Regulations

Provide training on safe handling while considering the type of application and exposure scenarios.

1999/45/EC
2001/118/EC
(EC) No 1907/2006 (REACH)
(EC) No 453/2010
(EC) No 1272/2008

Further information

Correction in Section: 1,2,3,4,9,11,12,15,16

SAFETY DATA SHEET

1 Identification of the substance or preparation and of the company/undertaking

Product Name: **AQUABREAK PX**
 Datasheet Number: 575613 10. 0. 0
 Use of the substance/preparation: Cleaning agent
 Product Part Number: 575613 (25 liter), 575605 (210 liter)
 Head Office:: Wilhelmsen Ships Service AS
 address: Strandveien 20, N1324 Lysaker, Norway, Tel: (+47) 67 58 45 50
 Name of Supplier: Wilhelmsen Ships Service AS
 Address of Supplier: Willem Barentszstraat 50
 3165AB Rotterdam
 The Netherlands
 Telephone: +31 10 4877 777
 Fax: +31 10 4877 888
 Responsible Person: Patrick Rijdsdijk, Product HSE Manager, Tel.: +31 6 349 440 35
 Email: Patrick.Rijdsdijk@Wilhelmsen.com
 Emergency Telephone: ****ONLY TO BE USED IN CASE OF AN INCIDENT****
 NCEC: +44 1865 407333, CHEMTREC (800) 424 9300
 American Chemistry Council +1 703 527 3887,
 Greece +30 210 7793777

2 Hazards identification

Irritant

- Odour: Characteristic odour
- Appearance: Liquid, pale yellow, soluble in water
- Contact with eyes: Causes irritation
- Contact with skin: In cases of severe exposure, irritation may develop
- Inhalation: Vapours or aerosols may cause irritation of eyes, nose and respiratory tract
- Ingestion: The ingestion of significant quantities may cause gastro-intestinal disturbances

Classification of the substance or mixture

- Council Directive 1999/45/EEC Classification, packing and labelling of dangerous preparations.

Risk Phrases

- Irritating to eyes (R36)

Safety Phrases

- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice (S26)
- Wear suitable gloves and eye/face protection (S37/39)
- Keep out of reach of children (S2)

3 Composition/information on ingredients

Chemical Name	Concentration	CAS Number	EC Number	R/H Phrases*	Symbols
Fatty alcohol ethoxylate	5-10 %	34398-01-1	500-084-3	22, 41	Xn
Alkylglucoside	1-5 %	161074-93-7	500-529-1	41	Xi

AQUABREAK PX

Revision: 13/05/2011

3 Composition/information on ingredients (....)

2-2(butoxyethoxy)ethanol	1-5 %	112-34-5	203-961-6	36	Xi
Non classified ingredients	60-90 %	-	-	-	-

*See Section 16

4 First aid measures

Contact with skin

- Remove contaminated clothing immediately and drench affected skin with plenty of water. Then wash with soap and water
- Seek medical advice if necessary

Contact with eyes

- If substance has got into eyes, immediately wash out with plenty of water for at least 15 minutes
- Seek medical attention if irritation persists

Ingestion

- Never give anything by mouth to an unconscious person
- Give plenty of water to drink
- Obtain immediate medical attention

Inhalation

- Remove patient to fresh air
- Keep warm and at rest, in a half upright position. Loosen clothing
- Seek medical attention if irritation persists

General

- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible) (S45)

5 Fire-fighting measures

- Smoke from fires is irritating
- Not flammable. In case of fire use extinguishing media appropriate to surrounding conditions

6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

- Wear protective clothing as per section 8

Environmental Precautions

- No special precautions are required for this product

Methods and material for containment and cleaning up

- Absorb spillage in inert material and shovel up
- Flush spill area with copious amounts of water
- Shut off source of leak if safe to do so

7 Handling and storage

Precautions for safe handling

- The usual precautions for handling chemicals should be observed
- Eyewash bottles should be available
- See Section 8

Conditions for safe storage, including any incompatibilities

- Keep only in the original container in a cool, well ventilated place (S3/9/49)
- Protect from frost

AQUABREAK PX

Revision: 13/05/2011

8 Exposure controls/personal protection

Control parameters

- 2-(2-butoxyethoxy)ethanol
TLV (TWA) 68 mg/m³ ()

Exposure controls

- No special ventilation is required unless the product is used in a spray form

Occupational exposure controls

- Wear suitable protective clothing, including eye/face protection and gloves (plastic or rubber are recommended)
- No respiratory protection is required unless subject to contact with substance mist



Gloves



Goggles



Suit



No Smoking

9 Physical and chemical properties

- Odour: Characteristic odour
- Appearance: Liquid, pale yellow, soluble in water
- pH 10.5 - 11.5 at 5 - 10 % concentration
- Boiling point >100 °C at 760 mm /Hg
- Completely soluble in water
- Density 1,030 g/cm³ at 20 deg C

10 Stability and reactivity

- This article is considered stable under normal conditions
- See Section 5

11 Toxicological information

Information on toxicological effects

- No experimental data available

Inhalation

- Vapours or aerosols may cause irritation of eyes, nose and respiratory tract

Contact with skin

- In cases of severe exposure, redness and irritation may develop

Contact with eyes

- Causes irritation

Ingestion

- May cause gastro-intestinal disturbances

Carcinogenicity

- No evidence of carcinogenic effects

12 Ecological information

Ecotoxicity

- This product does not contain ingredients which are classified in the EU as dangerous for the environment.
- The product was found to meet the requirements of paragraph 1.8.2 of the P&A Standards and is included in MEPC.2/Circ.8
- LC50 (fish) (Fatty alcohol ethoxylate) 1-10 mg/l (96 hr)
- Biodegradability. OECD-test. 28 days >60 % (Fatty alcohol ethoxylate)
- LC50 (fish) (Alkylglucoside) >100 mg/l (96 hr)

AQUABREAK PX

Revision: 13/05/2011

12 Ecological information (....)

- Biodegradability. OECD-test. 28 days >60 % (Alkylglucoside)
- Biodegradability. OECD-test. 28 days >60 % (2-(2-Butoxyethoxy)ethanol)

Persistence and degradability

- Its main ingredients will either dissolve rapidly and dissociate in water or are readily/inherently biodegradable.

Bioaccumulation Potential

- Bioaccumulation of the components in this product is insignificant.

Mobility in soil

- Completely soluble in water

Other Adverse Effects

- No environmental problems are expected when the product is used / handled correctly.

13 Disposal considerations**Waste treatment methods**

- Do not discharge into drains or the environment, dispose to an authorised waste collection point
- Disposal should be in accordance with local, state or national legislation

Classification

- This material and/or its container must be disposed of as hazardous waste
- EU Waste class: -

14 Transport information**Special precautions for user**

- Not classified as hazardous for transport

15 Regulatory information**Classification and labelling**

- Council Directive 1999/45/EEC Classification, packing and labelling of dangerous preparations.
- This Safety Data Sheet is provided in compliance with The Dangerous Substances Directive (67/548/EEC)

Safety, health and environmental regulations/legislation specific for the substance or mixture

- This Safety Data Sheet has been prepared in accordance with article 31 and annex II in REACH and Directive 453/2010/EU.
-
- Composition information in accordance with Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents:
- Nonionic surfactants 5-15 %
- Phosphates <5 %

16 Other information

Text of R and S phrase codes used in this safety data sheet:- R22: Harmful if swallowed; R36: Irritating to eyes; R41: Risk of serious damage to eyes.

The information provided about the product on this Safety Data Sheet has been compiled from knowledge of the individual constituents

The data given here is based on current knowledge and experience. This Safety Data Sheet describes the product in terms of safety requirements and does not signify any warranty with regard to the product's properties

16 Other information (....)

The data given here only applies when product used for proper application(s). The product is not sold as suitable for other applications - usage in such may cause risks not mentioned in this sheet. Do not use for other application(s) without seeking advice from manufacturer

MAINTENANCE OF HFO AND DO TANKS BOUNDARY WALLS

Back in January 2014, an inspection was carried out in both HFO and DO tanks bunds. The aim for this inspection was to determine any structural damages that occurred due to weather elements and how these structural damages can be rectified.

The damages were all caused due to weather elements. The steel reinforcement concrete rods of the concrete bund walls got rusty, expanded and cracked the surface of the concrete bunds. This caused the steel reinforcement to be exposed more to bad weather conditions causing a ripple effect on the damage and the integrity of the bunds.

Hence a procedure was setup for these repairs to take place while a dedicated team was assigned to carry these works as per procedure.

The procedure consisted of:

- Removing the crest of loose concrete,
- De-scaling of the steel rods,
- Treating the steel rods with anti-rust paint,
- Plaster with a special plastering material,
- Continue to built up to the service with cement / sand mortar where the thickness is substantial.
- Finally all the repaired patches were treated with a particular paint that resist oils incase of spillages. In this case all the repairs will be protected both from environmental conditions and oil spillages.

All the procedure was submitted to Enemalta architects and civil engineers for approval. An engineer was in charge of these works.

Also all pipes and services that passes trough bund walls had their point of intersection inspected and sealed with a fire proof material so that it will not disintegrate if a spillage occur and a fire break up.

These are some pictures of the works progress and the end patches painted with fuel oil resistant paint.





