

PENTAFLUOROPENTANOL

MATERIAL SAFETY DATA SHEET

According to Regulation (EC) No. 1907/2006
Revision: 00 – Revision date: 02.04.2012

SECTION 1 IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY

1.1 Product identifier

Product name: PENTAFLUOROPENTANOL
Synonyms: 4,4,5,5,5-Pentafluoro-1-pentanol
CAS Number: 148043-73-6
EC Number: 421-360-9
INDEX Number: 603-202-00-2
Registration Number: No data available
Molecular Weight: 178.1
Molecular Formula: C₅H₇F₅O

1.2 Relevant identified uses of the substance

Common use: Chemical intermediate for the preparation of pharmaceutical and chemical products

1.3 Details of the supplier of the safety data sheet

Company name: STERLING S.r.l.
Address: Via della Carboneria, 30
06073 Solomeo di Corciano (PG) – Italy

E-mail address: spatriarca@sterling.it
Telephone: 075/5294001
Fax: 075/5294000

1.4 Emergency telephone number

Italy: +39 02 66101029 (Poison Information Centre Niguarda Ca' Granda – Milano)
Foreign countries: Contact the closest Poisons Information Centre.

SECTION 2 HAZARDS IDENTIFICATION

2.1 Classification of the substance

2.1.1 Classification according to Regulation (EC) N. 1272/2008 (CLP/GHS) (ATP01) and f.a.

Acute Tox. 4: H302
Aquatic Chronic 3: H412

2.1.2 Classification of the substance according to Directive 67/548/EEC

Xn; R22
R52-53

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

2.2 Label elements



Signal Word:

WARNING

Hazard Statement

H302 : Harmful if swallowed

H412 : Harmful to aquatic life with long lasting effects

Precautionary Statement

Prevention

P261 : Avoid breathing dust/fume/gas/mist/vapours/spray

P264 : Wash face, hands and any exposed skin thoroughly after handling

P270 : Do not eat, drink or smoke when using this product

P273 : Avoid release to the environment

Response

P330: Rinse mouth

P301 + P312 : IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell

Disposal

P501 : Dispose of contents/container in accordance with local/regional/national/international

2.3 Other hazards

No data available

SECTION 3**COMPOSITION/INFORMATION ON INGREDIENTS****3.1 Substance**

<i>Product name :</i>	Pentafluoropentanol
<i>Chemical name :</i>	4,4,5,5,5-Pentafluoro-1-pentanol; 4,4,5,5,5-Pentafluoropentan-1-ol
<i>Molecular Weight :</i>	178.1
<i>Molecular formula :</i>	C ₅ H ₇ F ₅ O
<i>CAS No. :</i>	148043-73-6
<i>EC No. :</i>	421-360-9
<i>INDEX No. :</i>	603-202-00-2
<i>Concentration :</i>	>98%

3.2 Mixture

Not applicable

SECTION 4**FIRST AID MEASURES****4.1 Description of first aid measures**

General advice:	In case of contact with the substances immediately change contaminated clothing.
Ingestion:	In case of ingestion, if conscious, rinse mouth with water. If the casualty is unconscious, place in the recovery position.
Inhalation:	Remove casualty to fresh air as quickly as possible. Keep warm and at rest. If breathing is difficult, give oxygen if possible, or assisted ventilation.
Skin contact:	In case of skin contact with the product or solutions immediately rinse affected area with copious amount of water and then wash with soap and water. Remove contaminated clothing and shoes.
Eye contact:	Irrigate eyes with copious amounts of water for at least 10-15 min, holding eyelids apart to ensure thorough rinsing.

4.2 Most important symptoms and effects, both acute and delayed

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. Thus, no indication on both acute and delayed effects are available.

4.3 Indication of any immediate medical attention and special treatment needed

Obtain medical assistance if breathing remains difficult and if there is persistent irritation of the eyes. Induce vomiting only if indicated by your doctor.

SECTION 5 FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media: Carbon dioxide (CO₂), foam, dry chemical powder, water spray, and water jet, unless otherwise stated.

Unsuitable extinguishing media: None

NOTE:

Cool containers that are not involved in the fire but exposed to fire with water to prevent possible explosion and fire propagation.

5.2 Special hazards arising from the substance

Specific hazard(s): The product is combustible and can make an explosive mixture with air. When heated or in the event of a fire, vapors may be harmful to health: carbon oxides (CO_x) and hydrogen fluoride (HF).

5.3 Advice for firefighters

Special fire fighting procedures: Protective Equipment: Wear full fire resistant self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

SECTION 6 ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Procedure(s) of personal precaution(s):

- Keep non-involved personnel away from the area of spillage.
- Use personal protective equipment.
- The vapors of the substance can accumulate in confined spaces and form explosive atmospheres.
- Ventilate area.
- Eliminate sources of ignition.
- Avoid contact with skin, eyes and inhalation of vapors.
- Avoid breathing vapors/mist/gas.
- See also sections 8 (protective equipment)

6.2 Environmental precautions

Prevent product from entering sewers, rivers or other bodies of water.
If required, notify relevant authorities according to all applicable regulations.

6.3 Methods and material for containment and cleaning up

Contain spills of small quantities of product with inert absorbent material. Dike in the event of a spill of large quantities of product. Draw the product with machines protected for static electricity or with a wet brush. Transfer into suitable containers, waterproof and suitable for storage and transportation of material collected. Transfer the gathered product and the washings to suitable tanks or containers and store/dispose according to relevant regulations.

6.4 Reference to other sections

See also sections 8 (protective equipment) 12 (ecology) and 13 (disposal).

SECTION 7 HANDLING AND STORAGE

7.1 Precautions for safe handling

Use of personal protective equipment must be consistent with good occupational hygiene practices.

Avoid direct contact with skin, eyes and clothing.

Avoid breathing aerosols or vapors of the product.

Eliminate sources of ignition.

Ensure adequate ventilation of the working environment, especially if confined spaces where you can form an explosive atmosphere.

Do not reuse contaminated clothing.

Do not eat, drink or smoke when using this product.

Wash hands thoroughly with soap and water before meals and after work shift.

7.2 Conditions for safe storage

Store in at room temperature. Keep container tightly closed in a dry and well ventilated place. Keep container tightly closed and kept upright to prevent leakage. Store away from all heat sources, including direct sunlight. Open flame. Sources of ignition. Sparks. Incompatible materials.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control Parameter

Exposure limit values (ACGIH 2010):

- TLV TWA: No data available
- TLV STEL: No data available

Monitoring procedures:

Refer to Dir. 96/82/EC.

8.2 Exposure Controls

8.2.1 Appropriate engineering controls

When feasible, use closed loop systems or with local exhaust.

When inside buildings or confined spaces, ensure adequate ventilation.

Provide eyewash fountains at the workplace.

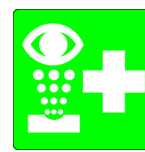
8.2.2 **Personal protection measures, such as personal protective equipment**

Personal Protective Equipment: The personal protective equipment should be chosen in the configuration according to the concentration and quantity of hazardous substances specifically for the workplace.

- a) *Eye / Face Protection:* Use face shield and safety glasses with side shields (EN 166).
- b) *Skin and body Protection:* Full protective clothing resistant to chemicals. Handle using rubber or synthetic gloves (EN 374). Gloves must be inspected before being used. Using an appropriate technique to remove gloves (without touching the outer surface of the glove) to prevent skin contact with this product.
- c) *Respiratory Protection:* Avoid inhalation of vapors and aerosols; Respiratory Protection: Use a full face mask with combined gas filters, type A, B, E, and K (EN 141).
When required, use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).
- d) *Heat Dangers:* The product is not handled hot.

8.2.3 **Environmental Exposure Controls**

Take all the technical precautions necessary to prevent the spread of the product into the surrounding.



SECTION 9**PHYSICAL AND CHEMICAL PROPERTIES****9.1 Information on basic physical and chemical properties**

a) Appearance	Liquid colourless
b) Odor	No data available
c) Odor threshold	No data available
d) pH	No data available
e) Melting point/freezing point	-78.2°C
f) Initial boiling point and boiling range	62 - 64°C @ 47 hPa - lit.
g) Flash point	62.8°C – Closed cup
h) Evaporation rate	0.18
i) Flammability (solid, gas)	No data available
j) Upper/lower flammability or explosive limits	UEL 10% - LEL 1.2%
k) Vapor pressure	0.276 hPa @ 20°C
l) Vapor density	6.15 - (Aria = 1,0)
m) Relative density	1.35 g/cm ³ @ 25°C
n) Solubility(ies)	Slightly soluble in water
o) Partition coefficient: <i>n</i> -octanol/water	Log Pow 1.413
p) Auto-ignition temperature	No data available
q) Decomposition temperature	No data available
r) Viscosity	No data available
s) Explosive properties	No data available
t) Oxidising properties	No data available

9.2. Other information

No data available

SECTION 10 STABILITY AND REACTIVITY

10.1 Reactivity

The substance does not present additional dangers of reactivity than those reported in the next subtitles.

10.2 Chemical stability

Store in at room temperature. Store away from all heat sources, including direct sunlight, open flame, sources of ignition and sparks.

10.3 Possibility of hazardous reactions

Product does not polymerise.

10.4 Conditions to avoid

Heat, flames, source of ignition, and static electricity.

10.5 Incompatible materials

Store separately from strong oxidizing agents.

10.6 Hazardous decomposition products

When heated or in the event of a fire, vapors may be harmful to health: Carbon oxides (CO_x) and hydrofluoric acid (HF).

SECTION 11 TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Signs and Symptoms of Exposure: To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. Thus, no indication on both acute and delayed effects are available.

CLASS OF RELEVANT RISK FOR SUBSTANCE:

a) Acute toxicity:	Product is harmful by ingestion.
b) Skin corrosion / irritation:	May cause skin irritation.
c) Serious eye damage / serious eye irritation:	Causes severe eye irritation.
d) Respiratory / skin sensitization:	Not reported evidence concerning this effect
e) Germ cell mutagenicity	Not reported evidence concerning this effect
f) Carcinogenicity	Not reported evidence concerning this effect
g) Reproductive toxicity:	Not reported evidence concerning this effect
h) Specific target organ toxicity (STOT)-Single exposure-	The product may cause mild irritation of the mucous membranes and upper respiratory tract
h) Specific target organ toxicity (STOT)-Repeated exposure-	Not reported evidence concerning this effect
j) Aspiration hazard	Not applicable
Other information	

SECTION 12 ECOLOGICAL INFORMATION

Ecological Information: Use according to good manufacturing practices, avoid dispersion into the environment.
Notify relevant authorities according to all applicable regulations if the product can reach waterways or sewers or contaminate soil or vegetation.

12.1 Toxicity

The product is harmful to aquatic organisms, may cause long term adverse effects in the aquatic environment

12.2 Persistence and degradability

Not reported evidence concerning this outcome

12.3 Bioaccumulative potential

Not reported evidence concerning this outcome

12.4 Mobility in soil

Not reported evidence concerning this outcome

12.5 Results of PBT and vPvB assessment

No data available

12.6 Other adverse effects

No data available

SECTION 13 DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Prevent environmental discharge.
Dispose of waste or used sacks/containers according to local regulations.

SECTION 14 TRANSPORT INFORMATION

The substance is not considered dangerous within the meaning of the regulations governing the transport of dangerous goods by road (ADR), rail (RID), sea (IMDG Code) and by air (IATA/ICAO).

SECTION 15 REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Authorizations according to REACH Regulation: the substance is not subjected

Restrictions according to REACH Regulation: the substance is not subjected

Other UE:

The substance is not dangerous under the Seveso Regulation (Dir. 96/82/CE and f.a.)

15.2 Chemical Safety Assessment

A chemical safety assessment has not been carried out for this product.

SECTION 16**OTHER INFORMATION***List of relevant phrases*

Classification according to Regulation (EC) No 1272/2008 (CLP/GHS) as amended

H302 : Harmful if swallowed

H412 : Harmful to aquatic life with long lasting effects

Classification according to European Directive 67/548/CEE as amended

R22: Harmful if swallowed

R52/53: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Guidelines for the formation

Workers potentially exposed to this substance must be trained adequately on the basis of the contents of this MSDS.

More information

No data available

Bibliography

BANCA DATI SOSTANZE CHIMICHE - ICARO S.R.L. - CORTONA (AR)

Update Reason

Update according to Annex I of Regulation UE453/2010 which amended Annex II of EC Regulation 1907/2006 (REACH).

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Update Num. 00

The contained information is based upon our current understanding. It is applicable only to the indicated product and does not constitute any guarantee of the properties of the product. The user is responsible to ensure his or her own fitness and completeness of such information in relation to the specific use. The contained information is intended for the use of the product exclusively by appropriately qualified personnel. STERLING S.r.l. shall not be held liable for any damages caused from handling or from contact with the substance.

STERLING S.r.l.