



**C013/ E2014**

**C7.1 Planning status**

Attached: Current planning permission

Note: The relative DNO application for this change will be submitted once the plans have been endorsed by MIP. MEPA will be advised of the corresponding number once in hand.

**AMINO CHEMICALS Limited**

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Fax +356 21 24922.6  
VAT MT 11154213

THIS IS AN AFFIDAVIT DOCUMENT  
DEVELOPMENT CONTROL COMMISSION

*[Signature]*

SITE

PLAN No. FA 4782/07/12

D.C.C. Board No. \_\_\_\_\_

Max Easting = 54068 Max Northing = 2014.76

757466



Ministry of Planning  
Maldives

Copy of Original Decision Notice



Mr. Mario Abela  
Malta Industrial Parks Ltd.  
UB8, Industrial Estate  
San Gwann

Date: 14 Dec 2010  
Our Ref: PA/04782/09

Application Number: PA/04782/09  
Application Type: Full development permission  
Date Received: 29 October 2009  
Approved Documents: PA4782/09/1C/41B/47A

Approved Documents

PA4782/09/40A - Revised Fire Safety / Ventilation Report  
PA4782/09/48 - Revised Emergency Contingency Plan  
PA4782/09/48A - Revised Risk Assessment Report

Location: Marsa A50 Factory, Qasam Industrijali, Marsa  
Proposal: Proposed additions and alterations to approved PA 5423/06. To include underground storage tanks to be relocated above ground and link between Marsa A50 factory and Marsa A61 factory.

**Development Planning Act, 1992  
Full Development Permission**

The Malta Environment & Planning Authority hereby grants development permission in accordance with the application and plans described above, subject to the following conditions:

- 1 a) All works shall be carried out strictly in accordance with the approved plans and the conditions of this permission. Where a matter is not specified on the plans then the conditions of this permission and of Development Control Policy and Design Guidance shall take precedence and modify the plans accordingly.
- b) This development permission does not remove or replace the need to obtain the consent of the land/building owner to this development before it is carried out. Furthermore, it does not imply that consent will necessarily be forthcoming nor does it bind the land/building owner to agree to this development. Where the land/building is owned or administered by the Government of Malta a specific clearance and agreement must be obtained for this development from the Land and/or Estate Management Departments.
- c) Before any part of the development hereby permitted commences, the enclosed green copy of the Development Permit shall be displayed on the site. This must be mounted on a notice board, suitably protected from the weather and located not more than 2 metres above ground level at a point on the site boundary where it is clearly visible and can be

PA/04782/09

Print Date: 14/12/2010

easily read from the street. The copy of the permit must be maintained in a good condition and it shall remain displayed on the site until the works are complete.

d) No building material, waste material, machinery or plant shall obstruct the pavement or the smooth flow of traffic on the road in the vicinity of the site. The deposit of materials or the placing of equipment in the street must be authorised.

e) Copies of all approved plans and elevations must be available for inspection on site by Malta Environment & Planning Authority staff at all reasonable times.

f) All building works shall be erected in accordance with the official alignment and proposed/existing finished road levels as set out on site by the Malta Environment & Planning Authority's Land Surveyor. The Setting Out Request Notice must be returned to the Land Survey Unit of the Malta Environment & Planning Authority when the setting out of the alignment and levels is required.

g) Where the street bordering the site is unopened or unformed, it shall be opened up and brought up to its proper and approved formation levels prior to the commencement of the building operations hereby permitted.

h) This development permission is valid for a period of FIVE YEARS from the date of this notice but will cease to be valid if the development is not completed by the end of this five year period.

i) The enclosed Commencement Notice shall be returned to the Malta Environment & Planning Authority so that it is received at least five days prior to the commencement of the development hereby permitted.

j) It should be noted that a third party may have the right of appeal against this permission. Any development which is carried out when such an appeal has been made, or until the time limit for the submission of such an appeal has expired, is undertaken at the risk that this permission may be revoked by the Planning Appeals Board or quashed by the Court of Appeal.

k) The permit is issued on condition that, where applicable, any excavation shall be subject to the requirements of the Civil Code regarding neighbouring tenements.

l) Where applicable, the development, hereby permitted, shall be carried out in accordance with the provisions of the Environmental Management Construction Site Regulations, LN 295 of 2007.

m) This permission relates only to the additions and alterations specifically indicated on the approved drawings. This permission does not sanction any illegal development that may exist on the site.

- 2 This development permission does not preclude the applicant from obtaining other necessary permission and/or licenses from other Authorities, Departments or agencies.
- 3 Loading and unloading shall take place solely within the premises, and not from/on the public pavement or street.



4 The storage tanks structure shall not exceed a height of 6 metres from ground level as indicated on the approved drawings.

5 The following conditions are imposed by the Malta Resources Authority:

a) There should be no direct or indirect discharges of effluents into the environment or groundwater in particular. These effluents will include all substances which have a deleterious effect on the physical and chemical composition of groundwater and, compounds which are liable to cause the formation of such substances in ground water such as to render it unfit for human consumption as outlined in LN 203/02 'Regulations for the Protection of Groundwater against pollution caused by certain dangerous substances'. The storage tank structure in its entirety, should therefore be completely isolated and sealed off from the underlying bedrock.

b) The operator shall also undertake the obligation to restore any contaminated ground resulting from the proposed development.

The applicant shall consult Malta Resources Authority during the construction phase of the development hereby approved, to ensure that the development is carried out in conformity with the conditions imposed by the Malta Resources Authority.

6 The following conditions are imposed by the Environment Protection Directorate:

a) No discharge point for any type of effluent to land, storm drains or sea is allowed, unless specifically approved under a permit issued by MEPA.

b) Foul sewer drains must be strictly segregated from stormwater drains.

c) All discharges to the foul sewer, including process effluents and wash waters (e.g. contaminated with industrial detergents etc.), shall comply with the requirements of a license issued by the Water Services Corporation. In particular, cooking oil shall not be discharged to the foul sewer. Any grease trap or sedimentation tank or other equipment specified by the WSC shall be adequately sized.

d) The specific use of the installation shall be subject to the IPPC permit and shall be limited to chemicals production storage.

e) The conditions laid down in this planning permit are without prejudice to any conditions related to the operation and monitoring of the facility that may be included in the IPPC permit.

The applicant shall consult Environment Protection Directorate during the construction phase of the development hereby approved, to ensure that the development is carried out in conformity with the conditions imposed by the Environment Protection Directorate.

7 The development hereby permitted shall not be brought into use until the Final Compliance (Completion) Certificate, certifying that the development has been carried out in full accordance with the plans approved by this permission and with the other conditions imposed in this permission, has been issued by the Malta Environment & Planning Authority. Prior to the issuing of the Final Compliance Certificate for this development, this applicant shall submit, to MEPA,

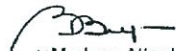
(i) clearance from the Civil Protection Department verifying that the development fully satisfies the fire fighting requirements to their satisfaction.

(ii) certification from a qualified engineer confirming that the development fully satisfies the requirements specified in the approved reports PA4782/09/48, PA4782/09/48A and PA4782/09/40A.

8 Conditions imposed in permit PA5423/06 still apply for this approved development.

Should the site fall within areas designated as HOS and property originating from the Housing Authority, this permit does not exonerate the applicant from obtaining the necessary clearances from the same Authority.

This permit is granted saving third party rights. The applicant is not excused from obtaining any other permission required by law. The applicant should contact the following regarding the location and provision of services prior to commencing development:- Enemalta, Water Services Corporation and Cable Network Operators.



Marlene Attard  
Head DCC Secretariat  
Development Control Commission

[PADCNCopy]

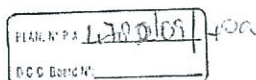
CAMILLERI &amp; CUSCHIERI REPORT: Development of a new chemical plant for the production of amino chemicals



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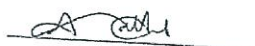
**CAMILLERI & CUSCHIERI**  
 Consulting Engineers

 Dasein Centre  
 Level 2, Triq. T-Tor.  
 Sankar, Birkirkara,  
 Malta.

 Tel: 2122 0431, 2125 1737  
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 e-mail: info@camilleriandcuschieri.com  
 website: www.camilleriandcuschieri.com  
 VAT Reg. No. MT1043 6416

 THIS IS AN APPROVED DOCUMENT  
 DEVELOPMENT CONTROL COMMISSION

 6<sup>th</sup> May 2010

 Amino Chemicals Ltd  
 A61, Industrial Estate,  
 Marsa



### New Amino Chemicals production storage and office facilities

#### Updated Fire safety and ventilation Report

With reference to the request for a fire safety report for the New Amino Chemicals facility, please find our comments as follows;

#### 1.0 Storage tanks

The systems shall be installed and operated in accordance with the *DRAFT* General Binding Rules (Chemicals, Fuels and Gases group) as issued by MEPA in October 2009 and shall abide by the following general requirements, including the following namely:

- The operator shall become familiar with his legal obligations and good environmental practice.
- Staff shall be made aware of the importance of environmental protection and receive appropriate training.
- The site shall be maintained in a tidy condition, free from litter and waste (whether arising from own activities or external sources).
- The site must be well secured to minimize the opportunity for unauthorized entry.
- An Emergency Response Plan shall be prepared containing details of the nature and quantity of chemicals/oils stored, any special hazards, plans and sections showing location of drains, reservoirs for fire water etc. and the emergency phone number of the Operator. The emergency phone number shall be displayed publicly at the site.
- The operator shall abide with all relevant Legal Notices including those pertaining to the emissions of volatile organic compounds (LN 151-2007), activities involving solvents (LN 225-2001), Waste Management Regulation (LN 337-2001)

All storage tanks shall be supplied with appropriate certification both as regards their structural integrity (maximum pressure, operating pressure etc.) but also regards their suitability to hold the particular substance that shall be stored in them

Eng. Camilleri Cuschieri B.Eng.(Eng), Hon., C.Eng., F.I.E.E., MASHRAE, Eur. Ing.  
 Eng. Jonathan Bonet B.Eng.(Hons.), Eur. Ing. MIM, MCIBSE, C.Eng.



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An SOP for the periodic inspection of the tanks and piping system shall be put in place in accordance with the manufacturer's recommendations as well as the recommendations given in the DRAFT General Binding Rules (Chemicals, Fuels and Gases group)

A full technical report re the installation and operation of these tanks has already been prepared and submitted

## **2.0 Fire detection installation.**

The premises is to be furnished with a fire detection installation comprising of fire alarm panel, rate of rise heat detectors, smoke detectors, multi sensor detectors (combined, heat and smoke) manual call points, visual beacon indicators and fire alarm sounders as may be seen from drawing 07.005.001 rev 01

### **2.01 Fire alarm panel**

The fire alarm panel shall be located near the entrance to premises and shall have clear zoning indications such that in the event of a fire, the location of the detector triggered can easily and accurately be located. In addition, besides being connected to the essential power supply, the panel shall have a battery backup with 72 hours autonomy such that the system would remain operative for three days despite a power failure. The panel can be connected to the fire brigade by means of an auto dialler which shall be programmed to dial up selected numbers in the event of the fire alarm being triggered.

### **2.02 Rate of Rise Heat detectors.**

In locations where vapour could be present, shall be furnished with rate of rise heat detectors installed as indicated in the drawings. These shall have dual sensing facilities in that they are triggered both by a sudden rise in temperature as well as a fixed temperature mechanism set at 60°C. This combination makes them suitable to be installed where reliable performance and early warning capabilities are essential.

### **2.03 Break glass manual call points**

These shall be located at strategic locations around the premises, essentially next to each exit such that in the event of someone noticing a fire in its conception stages prior to the heat detectors triggering, can sound the alarm by pressing the call point.

### **2.04 Fire alarm sounders**

These shall be of the electronic sounder type rated at a minimum of 105dB at 1m. These shall be positioned as indicated in the drawing to ensure a minimum sounder level of 70dB at any location within the area. Beacon indicators shall also be installed next to fire



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sounders to provide a visual as well as audible indication that the fire alarm has been triggered.

## 2.05 Smoke detectors

Smoke detectors shall be used in most areas to detect a fire by the sensing of smoke. They shall be of the ionisation or optical type as required in the particular area. The spacing of the detectors shall be according to British Standards and the sensitivity of the detectors.

## 2.06 Multi sensor detectors

Multi sensor detectors comprising a combined smoke and a heat detector shall be installed in critical detection areas as indicated in the drawings. These types of detectors retain the better characteristic of the rate of rise heat detector and smoke detectors, making them more efficient and more resistant to false alarms.

## 2.07 Gas leakage detectors

Gas leakage detectors are to be installed in designated areas depending of the fluid being transported / stored. These are to be calibrated and periodically tested by a certified engineer.

The fire Detection system shall be periodically tested by a competent engineer

## 2.08 Conclusion

From the above, it may be concluded that the premises shall be furnished with adequate fire detection measures.

## 3.0 Fire Fighting

The premises shall include for fire fighting cabinets in strategic positions to make effective first aid fire fighting possible. The details for the fire fighting system are to be as per drawing 07.005002 rev 02. A wet fire hydrant using a fire hose reel inside the fire fighting cabinet as well as fire extinguishers of the AFFF, dry powder and CO2 type is to be used for fire fighting. Small fires are best controlled using fire extinguishers. Various types of fire extinguishers shall be used. The different types of fire extinguishers are suitable for different types of fires.

- a) AFFF - very effective on many classes of fires but is not recommended for use on electrical fires
- b) Dry powder - Effective on most types of fires but is rather messy when used. This type makes a lot of damage on delicate electronic equipment.

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- c) CO2 - The CO2 are effective on electrical fires but is more difficult to use than the other two.
- d) Fire blankets shall also be provided in each fire fighting cabinet.
- e) Argonite - This is the replacement of the Halon extinguisher which has been withdrawn from the market due to its ozone depletion effect. The argonite system is particularly suited for areas where electronic apparatus is to be found e.g. computer rooms, PABX rooms etc.

The cabinets are also to contain fire blankets which are particularly suited for smothering fires in their early stages.

The wet riser system shall comprise a fire pump set which shall start automatically when any one of the hose reels is activated. The pump set shall draw water from a dedicated reservoir having a minimum water storage volume of 100m<sup>3</sup>. A fireman's breech point located externally shall enable the Civil Protection Department to connect their fire engine water supply to the system, and landing valves located in the building shall enable them to connect their flat type hoses, making all areas immediately accessible.

The areas in close proximity to the fire escapes shall be furnished with landing valves which shall enable the civil protection department to hook up their hoses at strategic locates within the facility.

Critical fire hazard areas shall be furnished with an automatic sprinkler / deluge system as indicate in the drawings. A sprinkler system shall be located on the least sensitive areas. The sprinkler shall trigger in the event of a fire in proximity of the sprinkler itself.

A copy of a communication with specific requirements for the Civil Protection Department is also being annexed.

### 3.1 Conclusion

From the above, it may be observed that the premises shall be furnished with adequate fire fighting measures.

### 4.0 Ventilation

The premises shall be furnished with a forced ventilation system as may be seen in drawing 07.005.003 rev 01. Fresh air shall be introduced in the circulation spaces and offices to keep them under positive pressure with respect to the storage areas where extraction shall be carried out. Transfer grills shall be installed as indicated in the drawings. These shall be c/w with fire dampers to retain the fire compartmentalisation at all times. It may be observed from the drawings the intake and extraction grills are located at opposite ends of the areas such that a cross ventilation process is generated



Ing J. Bonett

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MINISTRY FOR HOME AFFAIRS

Department tal-Protezzjoni Civli

Civil Protection Department

Our Ref:

22<sup>nd</sup> April 2010

Malta Environment & Planning Authority  
Application: PA 04782/09

Extension to Amino Chemicals Ltd., Marsa A50, Marsa

Attn: Mr. Bernard Ferry

With reference to the above mentioned proposal the Civil Protection Department finds that all the technical reports submitted by Architect Philip Micallef by which they were endorsed by a warranted engineer outlining issues with the proposed installation where to our fulfillment consequently we have no further comments to make except to the emergency water supply.

Fire Mains

The company has its own emergency water reservoir to supply its fixed fire fighting installation and not to supply the fire fighting vehicles in case of need, outside the existing factory there is an inlet breaching to fill the reservoir from street level by fire service means, the fire service connection outlets should be made into BS 338 male instantaneous couplings as at the moment the inlets are made to Italian fire service connection consequently they do not match our connections. It is to my understanding that the company is working on this matter. The applicant should also be aware that the existing shop floor fire hydrant outlets are not compatible with ours these should be replaced or at least four adaptors should be made available in order to change into our requirements if needed.

Fire hydrants are an exception locally and this brings fire fighting operations complexity in industrial emergencies.

As the company handles solvents especially polar solvents the fire fighting foam we have in stock is not compatible. The company has its foam in stock, it is important that this stock is always made available and at the right quantities as we will not be capable to handle any emergencies with the foam we have.

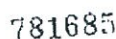
Regards,

Tony Pisani  
Operations manager

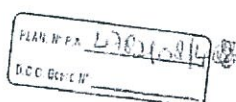
Patrick Murgio  
Director Civil Protection

Ta' Knebbja, L-o Siggiewi  
Tel. 462610-3, Fax. 462667





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website: www.camif@andcushier.com  
VAT No: No. MT10434416



THIS IS A NATIONAL GOVERNMENT  
DEVELOPMENT CONTRACT COMMISSION

6<sup>th</sup> May 2010

Amino Chemicals Ltd  
A61, Industrial Estate,  
Marsa

**New Amino Chemicals production storage and office facilities**

## Updated Emergency Contingency Plan

With reference to the emergency contingency plan for the amino chemicals facility, please find our comments as follows:

- The premises are to be furnished with comprehensive signage. Signage is to include the location of the first aid centres, fire fighting and emergency escape routes and emergency assembly points both inside and outside the building
- The emergency escape routes are to be furnished with battery backed up light fittings which will illuminate in the event of a utility failure together with self illuminating signs.
- The premises are to be furnished with first aid points. The first aid points are also to include for eye wash stations
- The employees are to be furnished with all safety equipment including shoes, ear defenders, breathing masks etc as may be required.
- The fire safety team is to be equipped with breathing apparatus for use in the event of a fire / chemical leak. The team is to be fully acquainted with and trained on the use of this equipment
- Fire drills and emergency evacuation procedures are to be put in place
- A safety officer / team is to be put in place
- The fire safety team is to be fully conversant with all the fire safety installations within the premises including the extinguishers, blankets, hose reels, deluge systems, sprinkler systems etc.

Ing. Carmelo J. Casanovi, B.Sc.(Eng.) Hon., C. Eng., F.I.E.E., MASHRAE, Eur. Ing.  
Ing. Jonathan Bonell, B.Eng. (Hons.), Eur. Ing., M.I.M., MCBSE, C. Eng.



- All employees are to be familiar with the fire safety system installed. They should be able to recognise the tones of the fire sounders and have suitable instruction on how to act upon hearing it. The employees shall also be familiar with the manual triggering of the fire system using call points.
- All employees are to be familiar with the gas leak detection system and alarms installed near the chemical storage tanks
- The fire detection installation and the gas leak detection system shall be connected to the telephony networks via an autodialler. In this way, relevant personnel, emergency services can be notified automatically and immediately if any one of these systems is triggered.
- Fire assembly points are to be designated both inside and immediately outside the factory. All employees are to be aware of their emergency assembly points.
- A system is to be put in place whereby all visitors are assigned to a permanent employee who will be responsible for the visitor in an emergency.
- The premises are to be furnished with an emergency paging system to impart information to the employees / guest of the facility. This can either be a separate system or included as part of the fire detection system.
- The storage tank system shall be installed and operated in accordance with the *DRAFT* General Binding Rules (Chemicals, Fuels and Gases group) as issued by MEPA in October 2009. (The operator shall become familiar with his legal obligations and good environmental practice. An Emergency Response Plan shall be prepared containing details of the nature and quantity of chemicals/oils stored, any special hazards, plans and sections showing location of drains, reservoirs for fire water etc. and the emergency phone number of the Operator. The emergency phone number shall be displayed publicly at the site.



Ing. J. Bonnett

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Project: New Chemicals Production Plant, Marsa Matruh, Egypt. Drawing: 110102 - Development of the Plant. Date: 2010/05/06. Rev: 01. Page: 1 of 1.

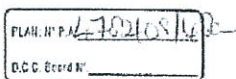


Amino Chemicals Ltd  
 A61, Industrial Estate,  
 Marsa

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THIS IS A DEVELOPMENT CONTROL CONSULTATION

*[Signature]*



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 e-mail: info@camillerianduscieri.com  
 website: www.camillerianduscieri.com  
 VAT Reg. No: MT1043-6416

6<sup>th</sup> May 2010

**New Amino Chemicals production storage facilities**  
**Updated Risk Assessment Report**

With reference to the request for a risk assessment report for the New Amino Chemicals facility, please find our comments as follows;

**1.0 Layouts.**

The area shall be comprised from a building having only one floor as well as an outdoor area as may be seen from the accompanying drawing.

**1.1 External area**

The external shall cater for the underground storage tanks as well as the loading / unloading bay

**1.2 Internal area**

The internal area shall house

- The main stores, including raw materials, finished goods, cold storage and rejected products
- Packing area
- Plant room
- Warehouse office

**2.0 Storage tanks**

The systems shall be installed and operated in accordance with the *DRAFT* General Binding Rules (Chemicals, Fuels and Gases group) as issued by MEPA in October 2009 and shall abide by the following general requirements, including the following namely:

Ing. Carmelo J. Cuscheri, B.Sc.(Eng.) Hon., C. Eng., F.I.E.C., MASHRAE, Eur. Ing.  
 Ing. Jonathan Bonell, B.Eng.(Hons.), Eur. Ing., M.I.M., M.C.I.B.S.E., C. Eng.

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- The operator shall become familiar with his legal obligations and good environmental practice.
- Staff shall be made aware of the importance of environmental protection and receive appropriate training.
- The site shall be maintained in a tidy condition, free from litter and waste (whether arising from own activities or external sources).
- The site must be well secured to minimize the opportunity for unauthorized entry.
- An Emergency Response Plan shall be prepared containing details of the nature and quantity of chemicals/oils stored, any special hazards, plans and sections showing location of drains, reservoirs for fire water etc. and the emergency phone number of the Operator. The emergency phone number shall be displayed publicly at the site.
- The operator shall abide with all relevant Legal Notices including those pertaining to the emissions of volatile organic compounds (LN 151-2007), activities involving solvents (LN 225-2001), Waste Management Regulation (LN 337-2001)

A full technical report re the installation and operation of these tanks has already been prepared and submitted

### 3.0 Fire detection installation.

The premises is to be furnished with a fire detection installation comprising of fire alarm panel, rate of rise heat detectors, smoke detectors, multi sensor detectors (combined heat and smoke) manual call points, visual beacon indicators and fire alarm sounders as may be seen from drawing 07.005.001 rev.01

#### 3.01 Fire alarm panel

The fire alarm panel shall be located near the entrance to premises and shall have clear zoning indications such that in the event of a fire, the location of the detector triggered can easily and accurately be located. In addition, besides being connected to the essential power supply, the panel shall have a battery backup with 72 hours autonomy such that the system would remain operative for three days despite a power failure. The panel can be connected to the fire brigade by means of an auto dialler which shall be programmed to dial up selected numbers in the event of the fire alarm being triggered.

#### 3.02 Rate of Rise Heat detectors.

In locations where vapour could be present, shall be furnished with rate of rise heat detectors installed as indicated in the drawings. These shall have dual sensing facilities in that they are triggered both by a sudden rise in temperature as well as a fixed temperature mechanism set at 60°C. This combination makes them suitable to be installed where reliable performance and early warning capabilities are essential.



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### 3.03 Break glass manual call points 781689

These shall be located at strategic locations around the premises, essentially next to each exit such that in the event of someone noticing a fire in its conception stages prior to the heat detectors triggering, can sound the alarm by pressing the call point.

### 3.04 Fire alarm sounders

These shall be of the electronic sounder type rated at a minimum of 105dB at 1m. These shall be positioned as indicated in the drawing to ensure a minimum sounder level of 70dB at any location within the area. Beacon Indicators shall also be installed next to fire sounders to provide a visual as well as audible indication that the fire alarm has been triggered.

### 3.05 Smoke detectors

Smoke detectors shall be used in most areas to detect a fire by the sensing of smoke. They shall be of the ionisation or optical type as required in the particular area. The spacing of the detectors shall be according to British Standards and the sensitivity of the detectors.

### 3.06 Multi sensor detectors

Multi sensor detectors comprising a combined smoke and a heat detector shall be installed in critical detection areas as indicated in the drawings. These types of detectors retain the better characteristic of the rate of rise heat detector and smoke detectors, making them more efficient and more resistant to false alarms.

### 3.07 Gas leakage detectors

Gas leakage detectors are to be installed in designated areas depending of the fluid being transported / stored. These are to be calibrated and periodically tested by a certified engineer.

The fire Detection system shall be periodically tested by a competent engineer

## 4.0 Fire Fighting

The premises is to include fire fighting cabinets in strategic positions to make effective first aid fire fighting possible. The details for the fire fighting system are to be as per drawing 07.005.002 rev01. A wet fire hydrant using a fire hose reel inside the fire fighting cabinet as well as fire extinguishers of the AFFF, dry powder and CO2 type is to be used for fire fighting. Small fires are best controlled using fire extinguishers. Various types of fire extinguishers shall be used. The different types of fire extinguishers are suitable for different types of fires.



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- a) AFFF - very effective on many classes of fires but is not recommended for use on electrical fires
- b) Dry powder - Effective on most types of fires but is rather messy when used. This type makes a lot of damage on delicate electronic equipment.
- c) CO2 - The CO2 are effective on electrical fires but is more difficult to use than the other two.
- d) Fire blankets shall also be provided in each fire fighting cabinet.
- e) Argonite - This is the replacement of the Halon extinguisher which has been withdrawn from the market due to its ozone depletion effect. The argonite system is particularly suited for areas where electronic apparatus is to be found e.g. computer rooms, PABX rooms etc.

The cabinets are also to contain fire blankets which are particularly suited for smothering fires in their early stages.

The wet riser system shall comprise a fire pump set which shall start automatically when any one of the hose reels is activated. The pump set shall draw water from a dedicated reservoir having a minimum water storage volume of 100m<sup>3</sup>. A fireman's breech point located externally shall enable the Civil Protection Department to connect their fire engine water supply to the system, and landing valves located in the building shall enable them to connect their flat type hoses, making all areas immediately accessible.

The areas in close proximity to the fire escapes shall be furnished with landing valves which shall enable the civil protection department to hook up their hoses at strategic locations within the facility.

Critical fire hazard areas shall be furnished with an automatic sprinkler / deluge system as indicate in the drawings. A sprinkler system shall be located in the least sensitive areas. The sprinkler shall trigger in the event of a fire in proximity of the sprinkler itself.

The fire fighting system shall be periodically tested by a competent engineer

## 5.0 Ventilation

The premises shall be furnished with a forced ventilation system as may be seen in drawing 07.005.003 rev 01. Fresh air shall be introduced in the circulation spaces and offices to keep them under positive pressure with respect to the storage areas where extraction shall be carried out. Transfer grills shall be installed as indicated in the drawings. These shall be c/w with fire dampers to retain the fire compartmentalisation at all times.

## 6.0 Miscellaneous Services and systems

- The premises is to be furnished with comprehensive signage. Signage is to include the location of the first aid centres, fire fighting and emergency escape routes
- The premises is to be furnished with first aid points. The first aid points are also to include for eye wash stations

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- The premises is to be c/w emergency exit lights points together with self illuminating signs marking all possible escape routes.
- Any elevated storage areas including shelving etc are to be certified by a competent person
- All lifting machinery including fork lift trucks etc are to be certified by a warranted engineer
- All vertical transportation systems including lifts, hoists etc. are to be periodically certified by a competent engineer
- All dangerous materials (both as raw materials and / or finished goods are to be kept locked)
- The site shall be kept clear from clutter at all times. Designated waste disposal points are to be allocated throughout the premises.
- The bathrooms are to be furnished with hot water kept at above 60deg C in all wash hand basins.
- Fire drills and emergency evacuation procedures are to be listed and placed in designated positions.
- Fire assembly points are to be designated both inside and immediately outside the factory. All employees are to be aware of their emergency assembly points
- The electrical system is to be regularly inspected and certified by a competent electrical engineer
- All fire fighting equipment is to be adequately maintained and certified periodically.
- All fire detection systems is to be adequately maintained and certified periodically.
- All air conditioning equipment is to be adequately maintained with filters cleaned periodically. All drains are to be disinfected periodically
- The premises is to be furnished with adequate interceptors prior to the discharge of the waste waters in the sewerage system
- All water stored shall be adequately monitored and treated to ensure that there is no propagation of bacteria, algae etc.
- The lighting levels in each area are to conform to the relevant standards as certified by a competent engineer.
- There shall be emergency lighting such that a minimum luminance level of 2 lux shall be maintained for a minimum of 3 hours in case of power failure in every area of the premises.
- Lifts are to be certified by a competent authority and shall not be used prior to the issue of such certification.
- The fire escape routes are to be protected by fire doors as indicated on drawing 07.005.001 rev01. The doors are to be one or three hour fire rated depending on the area
- All stores are to be protected by metal fire rated doors with a one or three hour fire rated depending on the area
- The site is to be furnished with fire escape routes in accordance with the recommendations of the BICC. The escape routes are to be furnished with fire doors in order to keep them clear from smoke in the event of a fire. These are to be kept clear at all times.
- The floor tiles in the shop floor and stores area shall be of a non-slip type.
- The floor in the production / stores areas shall be clearly marked to show designated passages for personnel / lifting machinery (e.g forklift trucks).
- All areas within the premises are to be clearly labelled showing their designated use.
- All areas housing hazardous substances are to be clearly labelled.
- Surface water pipe work shall be sized by a competent engineer and shall be suitable to take a minimum rainfall of 50mm / hour.
- All piped services shall be colour coded in accordance with international regulation for ease of identification of the fluid flowing through them.
- All insulation used for air conditioning systems and other services which require insulation, shall not be subject to rot and shall be vermin inhibiting.

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- All automatic doors (e.g. garage doors) are to be furnished with photocell arrangements to ensure that they shall stop if any personnel are to be found in their path during closing. These shall be periodically tested by a competent engineer.

  
Ing. J. Bonetti

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