

COSHH (Control of substances hazardous to health).

General Information

Fire fighting equipment can contain chemicals that are potentially damaging to your health under certain circumstances. You should be aware of the substances and their potential hazards you will encounter during your employment duties.

The COSHH regulations require the provision of information in respect of the chemical content of such products. The following pages give this information for the common products. The action that should be taken is detailed should an incident arise and must be followed.

Possible effects are detailed and you should be aware of these enabling you to identify any problems you may have. Relevant information to be passed to a doctor, if required, is provided. If in any doubt about a situation involving your contact with chemical substances always seek professional advice.

CARBON DIOXIDE

Common Name:	Carbon dioxide.
Other Names:	CO ₂ , carbonic acid, carbonic anhydrite.
CAS Name & No:	Carbon dioxide (124-38-9).
Chemical Used In:	Portable fire extinguishers, fire extinguishing systems and trolley units.
Main Hazard:	Asphyxiation and frost burn.

Emergency Procedure in the event of CO₂:-

In Fire:	Not applicable. Material is a fire suppressant and will not support combustion.
In Eye:	The gaseous state has no harmful effect. Contact with solid may cause frost burn, avoid rubbing affecting area, maintain body at normal temperature, and loosen clothing to maintain circulation. Seek medical attention as soon as possible.
On Skin:	As above.
Inhaled:	Remove patient to fresh air. Rapid recovery from choking in fresh air should occur. Give pure oxygen under medical control for laboured breathing. If breathing stops keep patient warm, administer artificial respiration with pure oxygen under qualified control until medical attention is available.
Ingested:	Not likely, material gaseous, see product inhaled.
Spillage:	Ventilate area, remove personnel from confined spaces.

Effect of CO₂:-

On Eyes:	The gaseous state presents no hazard to eyes. The solid state may cause frost blisters or burns even on short periods of contact.
On Skin:	As eyes above.
By Ingestion:	Most unlikely, material gaseous.
Inhalation Acute:	Below 5% concentration by volume exposure may lead to headache, exhaustion and slight choking together with signs of intoxication and increased breathing rate.
Inhalation Chronic:	Greater than 5% concentration by volume, those symptoms above plus possible ringing in the ears, visual disturbance, impaired judgement. Above 10% may lead to unconsciousness and if exposed for long periods death may result from asphyxiation.

CO₂ Storage Precautions

CO₂ containers should be stored in cool areas with good low level ventilation out of sunlight and away from sources of heat. Do not expose to temperatures in excess of 55 C.

CO₂ Handling Precautions

Handle cylinders in line with good industrial cylinder practice. Protective caps should be fitted during handling. Fire extinguishers should be used by means of valve handles only, do not hold body or horn assembly unless fitted with handle.

Note for Doctors [CO₂]

TLV 5,000 PPM. STPL 30,000 PPM. Effects of limited exposure may be remedied by allowing patients plenty of fresh air. In extreme cases pure oxygen respiration should be administered.

FLUOROFILM

The information given is for the concentrate; in use this is the premix solution where water is the prime component.

Common Name: Fluorofilm AFFF Liquid Concentrate.
Other Names: Fluorochemical foam concentrate, aqueous film forming foam concentrate.
CAS Name & No: None.
Chemical Used In: Portable fire extinguishers and trolley units.
Main Hazard: Ingestion.

Emergency Procedure in the event of Foam:-

In Fire: Not applicable, Material is a fire suppressant.
In Eye: Wash infected area using plenty of water or eyewash solution. May cause irritation, if persistent seek medical advice?
On Skin: Wash off with warm soapy water. May cause mild degreasing, and irritate sensitive skin.
Inhaled: Material is a liquid. Odour not unpleasant and non toxic.
Ingested: Seek medical advice. Liquid is non-toxic but should not be swallowed. May cause sickness and stomach discomfort.
Spillage: Absorb with earth, ash or sawdust for subsequent dry disposal, or wash away with water. Spillage's cause slippery floors and washing away may cause the formation of excessive foam.

Effect of Foam:-

On Eyes: May cause irritation. Wash out with plenty of water or eye-wash solution. Eye protection recommended if splashes may enter eyes.
On Skin: May cause mild degreasing and irritate sensitive skin. Wash off with warm soapy water.
By Ingestion: Non-toxic, but may cause temporary nausea and sickness. Seek medical advice.
Inhalation Acute: No hazard.
Inhalation Chronic: No hazard.

Foam Storage Precautions

Store in a cool dry place in original containers.
Temperature range 6%, I -55 C. 3% and 1% 2 C - 50 C.

Foam Handling Precautions

Avoid spillages.

Note for Doctors [Foam]

These liquids are non-toxic and non-hazardous containing surfactants and glycol ether solvents in aqueous solution.

BCF (HALON)

It should be noted that the products of decomposition in a fire situation are in addition to those created by the fire itself and are dependent on the burning material.

Common Name:	BCF - Halon 1211.
Other Names:	Chlorodifluorobromomethane, Arcton R12B1.
CAS Name & No:	Bromochlorodifluoromethane (353-59-3).
Chemical Used In:	Portable fire extinguishers and fire extinguishing systems.
Main Hazard:	Toxic vapour with narcotic action in concentrations above 5% by volume.

Emergency Procedure in the event of Halon:-

In Fire:	Not applicable. Material is a fire suppressant and will not support combustion.
In Eye:	Wash eyes with copious amounts of water.
On Skin:	Skin contact with the liquid should be avoided. Rapid vaporisation could cause skin chilling. Seek medical advice.
Inhaled:	Vapour toxic, heavier than air. Persons should be moved to open air and the use of adrenaline or similar drugs avoided.
Ingested:	Chemical products should not be swallowed. Material gaseous, see procedure for product inhaled.
Spillage:	Ventilate area. If entry is necessary into a contaminated area, full breathing apparatus should be worn.

Effect of Halon:-

On Eyes:	Vapour irritating. Within a fire situation the products may cause severe watering of the eyes during exposure.
On Skin:	Owing to rapid vaporisation of the liquid chilling may result from skin contact. By way of its solvent action the liquid may remove natural oils.
By Ingestion:	Most unlikely, material gaseous but freeze burns and shock will occur, see inhalation below.
Inhalation Acute:	Dizziness, impaired co-ordination and reduced mental activity due to the narcotic action in atmospheric concentration of 5% for one minute.
Inhalation Chronic:	Exposure to greater than 5 % concentrations for long periods may lead to cardiac arrhythmia. (irregularities of the heartbeat).

Halon Storage Precautions

In portable extinguishers store and use below 60C. Keep out of direct sunlight, do not site near to a heat source.

Halon Handling Precautions

As described on extinguisher body. Vapour heavier than air, dispersal achieved by low level ventilation.

Note for Doctors [Halon]

The effects of limited exposure may be remedied by allowing the patient plenty of fresh air.

In all cases the use of adrenaline and other sympathomimetic drugs should be avoided.

ABC POWDER

Common Name:	ABC Dry Powder.
Other Names:	General Purpose Powder, GP Powder.
CAS Name & No:	None.
Chemical Used In:	Portable fire extinguishers and trolley units.
Main Hazard:	Inhalation.

Emergency Procedure in the event of ABC Powder:-

In Fire:	Not applicable. Material is a fire suppressant and will not support combustion.
In Eye:	Wash away with copious amounts of water or eye-wash.
On Skin:	Material non-irritating to normal skin. For sensitive skin gloves and other protective clothing should be worn. If irritation occurs wash off with water.
Inhaled:	Material generally non-toxic, but coughing or sneezing may occur, this effect will be short lived.
Ingested:	Chemical products should not be swallowed. This powder is non-toxic and no lasting effects will be caused, though temporary sickness may be experienced.
Spillage:	Vacuum, sweep or wash away any spillage's with water.

Effect of ABC Powder:-

On Skin:	Material non-toxic, non-irritating. If handled for long periods drying of the skin surfaces may occur.
By Ingestion:	May cause dry feeling, but effect is not lasting, though temporary sickness may be experienced.
Inhalation Acute:	May cause irritation to mouth, nose and throat, with some coughing and sneezing, but will cause no lasting harm.
Inhalation Chronic:	No hazard.

ABC Powder Storage Precautions

Store in a cool dry place. Temperature limits: -40C to +60C.

ABC Powder Handling Precautions

Follow instructions on extinguishers. Keep refill packs closed until required for use.

Note for Doctors [ABC Powder]

Powder based on mono ammonium phosphate and ammonium sulphate, siliconised to repel water. Materials are non toxic and non hazardous.

FOAM COMPATIBLE POWDER

Common Name:	Foam Compatible Standard Dry Powder.
Other Names:	Standard Powder, Class B Powder.
CAS Name & No:	None.
Chemical Used In:	Portable fire extinguishers & Trolley Units.
Main Hazard:	Inhalation of powder.

Emergency Procedures in the event of Foam Compatible Powder:-

In Fire:	Not applicable. Material is a fire suppressant and will not support combustion.
In Eye:	Wash away with copious amounts of water or eye-wash.
On Skin:	Material non-irritating to normal skin. For sensitive skin gloves and other protective clothing should be worn. If irritation occurs wash off with water.
Inhaled:	Material generally non-toxic, but coughing or sneezing may occur, this effect will be short lived.
Ingested:	Chemical products should not be swallowed. This powder is non-toxic and no lasting effects will be caused, though temporary sickness may be experienced.
Spillage:	Vacuum, sweep or wash away any spillage's with water.

Effects of Foam Compatible Powder:-

On Skin:	Material non-toxic, non-irritating. If handled for long periods drying of the skin surfaces may occur.
By Ingestion:	May cause dry feeling, but effect is not lasting, though temporary sickness may be experienced.
Inhalation Acute:	May cause irritation to mouth, nose and throat, with some coughing and sneezing, but will cause no lasting harm.
Inhalation Chronic:	No hazard.

Foam Compatible Powder Storage Precautions

Store in a cool dry place. Temperature limits: -40C to +60C.

Foam Compatible Powder Handling Precautions

Follow instructions on extinguishers. Keep refill packs closed until required for use.

Note or Doctors [Foam Compatible Powder]

Based on Sodium Bi-Carbonate (materials with moisture repellent and flow-promoting additives).
Materials are non toxic and non hazardous.

M28 POWDER

Common Name:	M28 Powder.
Other Names:	Class D, Metal Powder
CAS Name & No:	None.
Chemical Used In:	Portable fire extinguishers and trolley units.
Main Hazard:	Inhalation. Large doses may cause irritation of the stomach and increase in blood pressure.

Emergency Procedure in the event of M28 Powder:-

In Fire:	Not applicable. Material is a fire suppressant and will not support combustion.
In Eye:	Promptly wash eyes with plenty of water while lifting the eye lids. Continue for at least 15 minutes.
On Skin:	Wash skin immediately with soap and water.
Inhaled:	Remove casualty from exposure, provide rest, warmth and fresh air.
Ingested:	Rinse mouth with water and give plenty of water to drink. Do not induce vomiting.
Spillage:	Vacuum, sweep or wash away any spillage's with water.

Effect of M28 Powder:-

On Skin:	Prolonged or repeated exposure may cause irritation.
Inhalation Acute:	Long term inhalation of dust may irritate respiratory system of lungs.
Inhalation Chronic:	Harmful, moderately toxic.

M28 Powder Storage Precautions

Store in a cool dry place in the absence of vibrations. Maintain good housekeeping practice

M28 Powder Handling Precautions

Follow instructions on extinguishers. Keep refill packs closed until required for use. Avoid generation of dust.

Note for Doctors [M28 Powder]

Toxic Date – LD 50: Sodium Chloride: 3000 mg/kg (oral rat).

Exposure Controls

Gloves advisable, wear approved chemical safety glasses where eye exposure is reasonably probable. Wash at the end of each work shift and before eating or using the toilet.

MONNEX POWDER

Common Name:	Monnex
Other Names:	
CAS Name & No:	8068-13-1
Chemical Used In:	Portable fire extinguishers and trolley units.
Main Hazard:	Inhalation.

Emergency Procedure in the event of Monnex Powder:-

In Fire:	Not applicable. Material is a fire suppressant and will not support combustion.
In Eye:	Promptly wash eyes with plenty of water while lifting the eye lids. Continue for at least 15 minutes.
On Skin:	Wash skin immediately with soap and water.
Inhaled:	Remove casualty from exposure, provide rest, warmth and fresh air.
Ingested:	Rinse mouth with water and give plenty of water to drink. Do not induce vomiting. If other symptoms persist, seek medical advice.
Spillage:	Vacuum, sweep or wash away any spillage's with water.

Effect of Monnex Powder:-

On Skin:	Mild irritant.
Ingestion:	Practically non-harmful.
Inhalation:	Long term inhalation of dust may impair lung function.

Monnex Powder Storage Precautions

Store in a cool dry place in the absence of vibrations. Maintain good housekeeping practice. Store away from sodium hypochlorite (bleach).

Monnex Powder Handling Precautions

Follow instructions on extinguishers. Keep refill packs closed until required for use. Avoid generation of dust.

Note for Doctors [Monnex Powder]

Toxic Date – LD 50: Potassium Allophonate/Potassium Bicarbonate: 4000 mg/kg (oral rat).

Exposure Controls

Gloves advisable, wear approved chemical safety glasses where eye exposure is reasonably probable. Wash at the end of each work shift and before eating or using the toilet.

LOW FREEZE ADDITIVE

In use Low Freeze Additive is part of a premix solution, the details given are for the concentrate.

Common Name: Low Freeze Additive.
Other Names: LFA 50, LFA 75, LFA 480, Low Freeze Depressant.
CAS Name & No: The principal component is Mono Ethylene Glycol (107-21-1).
Chemical Used In: Fire extinguishers of water-based media types as anti-freeze.
Main Hazard: Ingestion.

Emergency Procedure in the event of Low Freeze Additive:-

In Fire: In concentrated form, not as in extinguishers. Extinguish small fires with dry powder, halon, carbon dioxide or water spray.
In Eye: Wash away with copious amounts of water.
On Skin: Wash away splashes with water. Prolonged skin contact should be avoided, protective clothing should be worn.
Inhaled: Avoid prolonged vapour inhalation, especially in confined spaces.
Ingested: **Do not** induce vomiting. Dilute stomach contents with about 250ml of water. If only confined to mouth, give large quantities of mouth wash, do not allow swallowing.
Spillage: Soak up onto soil or appropriate solid absorbent, prior to disposal.

Effect of Low Freeze Additive:-

On Skin: May cause mild degreasing effect. Prolonged exposure is not to be encouraged.
By Ingestion: May be fatal. Slowly oxidises the body to oxalic acid. Adult fatal dose 100ml, normally the fault of deliberate action. Lesser quantities may result in unsteady gait, restlessness, drowsiness, coma or injury to kidneys.
Inhalation Acute: Even in concentrated form the volatility is low, toxic concentrations are unlikely to occur in normal storage or use.
Inhalation Chronic: See above.

Low Freeze Additive Storage Precautions

Store in a cool well ventilated room. Temperature range (concentrate) -12C to +60 C.

Low Freeze Additive Handling Precautions

Use as directed on extinguishers. Do not exceed 24% admixture in aqueous solution.

Note for Doctors [Low Freeze Additive]

After ingestion **do not** induce vomiting. See ingestion.

WET CHEMICAL

Common Name:	Class F
Other Names:	None
CAS Name & No:	None - Citrate in Water
Chemical Used In:	Portable fire extinguishers, fire extinguishing systems.
Composition:	Salt of carboxylic acid & water
Main Hazard:	No known acute health hazards.

Emergency Procedure in the event of Wet Chemical:-

In Fire:	Not applicable. Material is a fire suppressant and will not support combustion.
In Eye:	Wash out eyes with plenty of water or eye wash solution and seek medical attention.
On Skin:	Wash off with warm soapy water. A moisturiser may be used to replenish lost oils. If persistent irritation occurs, obtain medical attention.
Inhaled:	Remove casualty from exposure. If there is breathing difficulty or cough, keep patient at rest, seated in position of maximum comfort.
Ingested:	Send casualty to hospital immediately. If ingestion is suspected, do not induce vomiting.
Spillage:	Absorb with earth, place in a labelled, scalable container. Spillage cause slippery floors. Clean with an excess of water.

Effect of Wet Chemical:-

General:	Use only in well ventilated areas and follow general good housekeeping procedures.
On Eyes:	Wear safety goggles of an approved type.
On Skin:	Wear impervious gloves of an approved type.

Storage Precautions

Protect from sustained heat. Store in the original sealed containers or approved systems in an upright position not more than three high. Handle with care.

Note for Doctors [Wet Chemical]

Inhalation of hazardous amounts is unlikely, may cause irritation to respiratory tract. Low oral risk may cause nausea, vomiting and diarrhoea when ingested. May cause irritation to skin and eyes.