

PHYSICAL DESCRIPTION / PROPERTIES



APPEARANCE

White, slightly hygroscopic crystalline powder. Slight chlorine odour. Strong oxidising material. Soluble in water and decomposes to Chlorine gas, hypochlorous acid and cyanuric acid. Anhydrous form contains 64.5% available chlorine CAS 2893-78-9. Loose bulk density about 0.6 g/cc; granulated 0.91 g/cc. Note: Commercial grades are usually the dihydrate form which contains 56% available chlorine [CAS 51580-86-0]. Its transport is not regulated under the provision of SP139 of the Aust. DG Code.

Boiling Point	Not applicable.
Melting Point	240-250 (decomp)
Vapour Pressure (kPa)	Not available.
Specific Gravity	0.91-1.00
Flash Point (deg C)	Not applicable
Lower Explosive Limit (%)	Not applicable
Upper Explosive Limit (%)	Not applicable
Solubility in Water (g/L)	Miscible

INGREDIENTS

NAME	CAS RN	%
Sodium Dichloroisocyanurate	2893-78-9	>95
In presence of moisture/water evolves chlorine	7782-50-5	^

HEALTH HAZARD



ACUTE HEALTH EFFECTS

SWALLOWED

Considered an unlikely route of entry in commercial/industrial environments The material is extremely discomforting and corrosive if swallowed and is capable of causing burns to mouth, throat, oesophagus, with extreme discomfort, pain. Ingestion may result in nausea, abdominal irritation, pain and vomiting. Other acute toxic effects are salivation, lachrymation, dyspnea, weakness, lethargy, diarrhoea and coma. Single and repeated dose studies in animals by oral and skin routes of cyanuric acid and some cyanurates generally show a low degree of toxicity. Biochemical and haematological changes were not found in any studies although at high doses several studies showed kidney damage (dystrophic changes, dilation of distal collecting tubules and Bellini's duct, fibrosis and focal areas of epithelial proliferation). Short-term administration of derivatives of s-triazines cause structural damage to the liver of test animals. The significance of these results (if any) for human exposure cannot, as yet, be determined. [Foltinova etal - Folia Histochemica 1971]. The s-triazines appear to act at the level of carbohydrate metabolism. The chlorinated, methoxy and methylthio derivatives inhibit starch accumulation by blocking sugar production. The s-triazines also cause the disappearance of sucrose and glyceric acid with the formation of aspartic and malic acids.

EYE

The dust may be highly discomforting and corrosive to the eyes, may cause burns and is capable of causing severe damage with loss of sight. The material may produce moderate eye irritation leading to inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

SKIN

The material is highly discomforting to the skin if contact is prolonged. Solution of material in moisture on the skin, or perspiration, may increase irritant effects and is capable of causing burns. The material may produce severe skin irritation after prolonged or repeated exposure, and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) and swelling (oedema) which may progress to vesiculation, scaling and thickening of the epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis.

Prolonged contact is unlikely, given the severity of response, but repeated exposures may produce severe ulceration.

INHALED

The dust may be extremely discomforting / corrosive if inhaled. The vapour from material which is wet is highly discomforting and may be toxic if inhaled and if exposure is prolonged.

CHRONIC HEALTH EFFECTS

Principal routes of exposure are usually by inhalation of generated dust, skin contact with the dry and wet material and inhalation of vapour given off by material that has become wet or damp. Ingestion will give rise to corrosive attack on the mouth, oesophagus and internal organs and may result in weakness, lethargy, tremors, salivation, lachrymation and possibly coma. Chlorine evolved from decomposition when wet is a severe respiratory irritant, corrosive and highly toxic. Delayed effects can include shortness of breath, violent headaches, pulmonary oedema and pneumonia. Experimental studies on laboratory animals indicate possible teratogenic and other reproductive effects. [BASF]

FIRST AID

SWALLOWED

Rinse mouth out with plenty of water.

If poisoning occurs, contact a doctor or Poisons Information Centre.

In Australia phone 13 1126; New Zealand 03 4747000.

If swallowed, do NOT induce vomiting. Give a glass of water.

If vomiting occurs, give more water.

EYE

If this product comes in contact with the eyes:

1: Immediately hold the eyes open and wash continuously for at least 15 minutes with fresh running water.

2: Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.

3: Transport to hospital or doctor without delay.

4: Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

Brush off dust. If product comes in contact with the skin:

1: Immediately remove all contaminated clothing, including footwear (after rinsing with water).

2: Wash affected areas thoroughly with water (and soap if available).

3: Seek medical attention in event of irritation.

INHALED

1: If dust is inhaled, remove to fresh air.

2: Encourage patient to blow nose to ensure clear breathing passages.

3: Ask patient to rinse mouth with water but to not drink water.

4: Seek immediate medical attention. or

1: If fumes or combustion products are inhaled: Remove to fresh air.

2: Lay patient down. Keep warm and rested.

3: If breathing is shallow or has stopped, ensure clear airway and apply resuscitation, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.

4: Transport to hospital, or doctor.

ADVISE TO THE DOCTOR

Treat symptomatically.

Effects from exposure to chlorine gas include pulmonary oedema, which may be delayed. Observation in hospital for 48 hours is recommended.

PRECAUTIONS FOR USE



EXPOSURE STANDARDS

REL: 0.5 mg/m³; STEL: 1.5 mg/m³ [Manfr.]
Evolves chlorine in presence of moisture/water.

chlorine:

TLV TWA: 0.5 ppm, 1.5 mg/m³; STEL: 1 ppm, 2.9 mg/m³
ES Peak: 1 ppm, 3 mg/m³ :

ODOUR SAFETY FACTOR (OSF)

OSF=1.6

Exposed individuals are NOT reasonably expected to be warned, by smell, that the Exposure Standard is being exceeded. Odour Safety Factor (OSF) is determined to fall into either Class C, D or E. The Odour Safety Factor (OSF) is defined as: OSF= Exposure Standard (TWA) ppm/ Odour Threshold Value (OTV) ppm Classification into classes follows:

Class	OSF	Description
A	550	Over 90% of exposed individuals are aware by smell that the Exposure Standard (TLV-TWA for example) is being reached, even when distracted by working activities
B	26-550	Idem for 50-90% of persons being distracted
C	1-26	Idem for less than 50% of persons being distracted
D	0.18-1	10-50% of persons aware of being tested perceive by smell that the Exposure Standard is being reached
E	<0.18	Idem for less than 10% of persons aware of being tested

Amoore and Hautala * have determined that it is only at an OSF value of 26 that 50% of distracted persons can detect the substance at the Exposure Standard value. In the case of alerted persons, an OSF of 26 means that 99% of them can detect the odour at the Exposure Standard value. It is ONLY for substances belonging to Class A and B that there is a reasonable chance of being warned in time, that the Exposure Standard is being exceeded.

* Journal Applied Toxicology: Vol 3, 1983, p272

NOTE: The use of the OSF may be inappropriate for mixtures where substances mask the odour of others.

ENGINEERING CONTROLS

Use in a well-ventilated area General exhaust is adequate under normal operating conditions. Local exhaust ventilation may be required in special circumstances. If risk of overexposure exists, wear approved respirator Supplied-air type respirator may be required in special circumstances. Correct fit is essential to ensure adequate protection. Provide adequate ventilation in warehouses and enclosed storage areas.

PERSONAL PROTECTION

EYES

Safety glasses with side shields Chemical goggles.

Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.

HANDS / FEET

Wear chemical protective gloves, eg. PVC. Wear safety footwear.

DO NOT handle directly. Wear gloves and use scoop / tongs / tools.

Neoprene gloves.

Nitrile rubber gloves.

OTHER

1: Overalls.

2: PVC Apron.

3: PVC protective suit may be required if exposure severe.

4: Eyewash unit.

5: Ensure there is ready access to a safety shower.

RESPIRATOR

Protection Factor	Half Face Respirator	Full Face Respirator	Powered Air Respirator
10 x ES	B P1 Air-line*	-	B PAPR-P1
50 x ES 100 x ES	Air-line** -	- B P2 B P3	- B PAPR-P2
100+ x ES	-	Air-line* Air-line**	- B PAPR-P3

* - Negative pressure demand

** - Continuous flow.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required. For further information, consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

SAFE HANDLING



STORAGE AND TRANSPORT

SUITABLE CONTAINER

Glass container or Plastic container.

Lined metal can Lined metal pail/drum

Plastic pail Polyliner drum

Packing as recommended by manufacturer.

Check all containers are clearly labelled and free from leaks.

DO NOT use aluminium, galvanised or tin-plated containers.

STORAGE INCOMPATIBILITY

Keep dry. Avoid mixing with organic materials / compounds, particularly finely divided combustible materials as ignition may result.

Contact with acids produces toxic fumes, i.e. chlorine.

Avoid storage with ammonia, urea or similar nitrogen containing compounds, inorganic reducing compounds, alkalis and water.

Reacts violently with calcium hypochlorite.

Corrosive to most metals in the presence of moisture.

STORAGE REQUIREMENTS

1: Store in original containers.

2: Keep containers securely sealed as supplied.

3: Store in a cool, well ventilated area.

4: Keep dry.

5: Store under cover and away from sunlight.

6: Store away from flammable or combustible materials, debris and waste.

Contact may cause fire or violent reaction.

7: Store away from incompatible materials and foodstuff containers.

8: DO NOT stack on wooden floors or pallets.

9: Protect containers from physical damage.

10: Check regularly for leaks.

11: Observe manufacturer's storage and handling recommendations.

TRANSPORTATION

Class 5.1 - Oxidising agents shall not be loaded in the same vehicle or packed in the same freight container with:

- Class 1 - Explosives;
- Class 2.1 - Flammable gases;
- Class 2.3 - Poisonous gases;
- Class 3 - Flammable liquids;
- Class 4.1 - Flammable solids;
- Class 4.2 - Spontaneously combustible substances;
- Class 4.3 - Dangerous when wet substances;
- Class 5.2 - Organic peroxides;
- Class 6 - Poisonous (toxic) substances (where the poisonous substances are capable of igniting and burning);
- Class 7 - Radioactive substances;
- Class 8 - Corrosives;
- Class 9 - Miscellaneous dangerous substances (where the miscellaneous dangerous substances are capable of igniting and burning) and substances other than dangerous goods, capable of igniting and burning.

SPILLS AND DISPOSAL

MINOR SPILLS

- 1: Clean up all spills immediately.
- 2: No smoking, naked lights, ignition sources.
- 3: Avoid all contact with any organic matter including fuel, solvents, sawdust, paper or cloth and other incompatible materials, as ignition may result.
- 4: Avoid breathing dust or vapours and all contact with skin and eyes.
- 5: Control personal contact by using protective equipment.
- 6: Contain and absorb spill with dry sand, earth, inert material or vermiculite
- 7: DO NOT use sawdust as fire may result.
- 8: Scoop up solid residues and seal in labelled drums for disposal.
- 9: Neutralise/decontaminate area.

MAJOR SPILLS

DO NOT delay. Restrict access to area. DO NOT touch the spill material.

- 1: Clear area of personnel and move upwind.
 - 2: Alert Fire Brigade and tell them location and nature of hazard.
 - 3: May be violently or explosively reactive.
 - 4: Wear full body protective clothing with breathing apparatus.
 - 5: Prevent, by any means available, spillage from entering drains or water course.
 - 6: Consider evacuation (or protect in place).
 - 7: No smoking, flames or ignition sources.
 - 8: Increase ventilation.
 - 9: Contain spill with sand, earth or other clean, inert materials.
 - 10: NEVER use organic absorbents such as sawdust, paper, cloth; as fire may result.
 - 11: Avoid any contamination by organic matter.
 - 12: Use spark-free and explosion-proof equipment.
 - 13: Collect any recoverable product into labelled containers for possible recycling.
 - 14: DO NOT mix fresh with recovered material.
 - 15: Collect residues and seal in labelled drums for disposal.
 - 16: Wash area and prevent runoff into drains.
 - 17: Decontaminate equipment and launder all protective clothing before storage and re-use.
 - 18: If contamination of drains or waterways occurs advise emergency services.
- DO NOT use unlined steel containers.

DISPOSAL

- 1: Recycle wherever possible. Special hazard may exist - specialist advice may be required.
- 2: Consult manufacturer for recycling options.
- 3: Consult State Land Waste Management Authority for disposal.
- 4: Treat and neutralise residue at an approved site.
- 5: Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.
- 6: Puncture containers to prevent re-use and bury at an authorised landfill.

FIRE/EXPLOSION HAZARD

1: Will not burn but increases intensity of fire.

2: Heating may cause expansion or decomposition leading to violent rupture of containers.

3: Heat affected containers remain hazardous.

4: Contact with combustibles such as wood, paper, oil or finely divided metal may cause ignition, combustion or violent decomposition.

5: May emit irritating, poisonous or corrosive fumes.

Decomposition may produce toxic fumes of chlorine and phosgene.

CONTACT POINT



In the event of a chemical event or a chemical incident phone **0800 243 622** for immediate assistance.

AUSTRALIAN POISONS INFORMATION CENTRE

24 HOUR SERVICE: 13 11 26

POLICE, FIRE BRIGADE OR AMBULANCE: 000

NEW ZEALAND POISONS INFORMATION CENTRE

24 HOUR SERVICE: 0800 POISON or +643 353 0199

NZ EMERGENCY SERVICES: 111

End of Report

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