



## PHYSICAL DESCRIPTION / PROPERTIES



### APPEARANCE

A white crystalline powder, normally in a granular or tablet form and with a chlorine odour; moderately soluble in water forming a mildly acidic solution. Soluble in chlorinated and highly polar solvents. A highly reactive oxidising and chlorinating agent; slightly hygroscopic, releasing hypochlorous acid and nitrogen trichloride on contact with water.

Boiling Point	Not applicable.
Melting Point	225-250 (dec)
Vapour Pressure (kPa)	Not available
Specific Gravity	Not available
Flash Point (deg C)	Non flammable
Lower Explosive Limit (%)	Not available
Upper Explosive Limit (%)	Not available.
Solubility in Water (g/L)	Miscible

### INGREDIENTS

NAME	CAS RN	%
Trichloroisocyanuric acid		>89
Decomposes in air and produces toxic fumes of Nitrogen trichloride	10025-85-1	
And Hypochlorous acid	7790-92-3	
Decomposes in water and produces toxic fumes of Chlorine	7782-50-5	

## HEALTH HAZARD



### ACUTE HEALTH EFFECTS

#### **SWALLOWED**

The material is highly discomforting and toxic if swallowed. Ingestion may result in nausea, abdominal irritation, pain and vomiting. Considered an unlikely route of entry in commercial/industrial environments.

#### **EYE**

The dust may be highly discomforting to the eyes and is capable of causing pain and severe conjunctivitis. Corneal injury may develop, with possible permanent impairment of vision, if not promptly and adequately treated. The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

#### **SKIN**

The material is moderately discomforting to the skin and is capable of causing skin reactions which may lead to dermatitis. Open cuts, abraded or irritated skin should not be exposed to this material. The material may accentuate any pre-existing skin condition. Solution of material in moisture on the skin, or perspiration, may markedly increase skin corrosion and accelerate tissue destruction. The material may cause 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.

#### **INHALED**

Not normally a hazard due to non-volatile nature of product. The dust may be highly discomforting to the upper respiratory tract and lungs. The vapour from material that has become wet or damp is highly irritating.

## **CHRONIC HEALTH EFFECTS**

Primary route of exposure is usually by skin contact / eye contact, inhalation of generated dust and inhalation of vapour given off by material that has become wet or damp. Acute effects from inhalation of high vapour concentrations may be chest and nasal irritation with coughing, sneezing, headache and even nausea. Prolonged or continuous skin contact with the liquid may cause defatting with drying, cracking, irritation and dermatitis following. Toxicity symptoms include emaciation, lethargy, weakness.

## **FIRST AID**

### **SWALLOWED**

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.

### **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**

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**

If dust is inhaled, remove to fresh air.

- 1: Encourage patient to blow nose to ensure clear breathing passages.
- 2: Rinse mouth with water. Consider drinking water to remove dust from throat.
- 3: If irritation or discomfort persists seek medical attention.

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

- 1: Lay patient down. Keep warm and rested.
- 2: 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.
- 3: Transport to hospital, or doctor.

### **ADVISE TO THE DOCTOR**

Treat symptomatically as for exposure to strong oxidisers.

## PRECAUTIONS FOR USE



### EXPOSURE STANDARDS

None assigned.

Evolves chlorine in presence of moisture/water.

**chlorine:**

TLV TWA: 0.5 ppm, 1.5 mg/m<sup>3</sup>; STEL: 1 ppm, 2.9 mg/m<sup>3</sup>

ES Peak: 1 ppm, 3 mg/m<sup>3</sup>

**CHLORINE**

TLV TWA: 0.5 ppm, 1.5 mg/m<sup>3</sup>; STEL: 1 ppm, 2.9 mg/m<sup>3</sup> A4

NOTE: This substance has been classified by the ACGIH as A4

NOT classifiable as causing Cancer in humans.

ES Peak: 1 ppm, 3 mg/m<sup>3</sup>

OES TWA: 0.5 ppm, 1.5 mg/m<sup>3</sup>; STEL: 1 ppm, 2.9 mg/m<sup>3</sup>

MAK value: 0.5 ppm, 1.5 mg/m<sup>3</sup>

MAK Category I Peak Limitation: For local irritants

Allows excursions of twice the MAK value for 5 minutes at a time, 8 times per shift.

MAK Group C: There is no reason to fear risk of damage to the developing embryo when MAK and BAT values are observed.

MAK values, and categories and groups are those recommended within the Federal Republic of Germany.

IDLH Level: 10 ppm

Odour Threshold Value: 0.08 ppm (detection) - olfactory fatigue may develop

NOTE: Detector tubes for chlorine, measuring in excess of 0.2 ppm, are commercially available. Long-term measurements (8 hrs) may be conducted to detect concentrations exceeding 0.13 ppm. Smell is not a good indicator of severity of exposure in the range 0.5 to 2 ppm. In this range subjects found exposure unpleasant with itching and burning of the throat reported and occasionally an urge to cough. Significant differences in the responses of males and females were also recorded with females often reporting headache and drowsiness. Exposure at 1 ppm chlorine for 8 hours produced significant changes in pulmonary function and increased subjective irritation. Similar 8 hour exposures at 0.5 ppm produced no significant pulmonary function changes and less severe subjective irritation. Exposures for 2 hours at 2 ppm chlorine produced no significant changes in pulmonary irritation. An 8 hour exposure at 1.5 ppm produced increased mucous secretion from the nose and increased mucous in the hypopharynx. Exposure at or below the TLV-TWA and STEL is thought to protect the worker against annoying symptoms in nose, throat and conjunctiva and declines in pulmonary function.

**FOR EACH OF THE FOLLOWING**

**NITROGEN TRICHLORIDE**

**HYPOCHLOROUS ACID**

No exposure limits set by NOHSC or ACGIH.

:

**ODOUR SAFETY FACTOR (OSF)**

OSF=0.011

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

1: Local exhaust ventilation is required where solids are handled as powders or crystals; even when particulates are relatively large, a certain proportion will be powdered by mutual friction.

2: Exhaust ventilation should be designed to prevent accumulation and recirculation of particulates in the workplace.

3: If in spite of local exhaust an adverse concentration of the substance in air could occur, respiratory protection should be considered. Such protection might consist of:

(a): particle dust respirators, if necessary, combined with an absorption cartridge;

(b): filter respirators with absorption cartridge or canister of the right type;

(c): fresh-air hoods or masks

3: Build-up of electrostatic charge on the dust particle, may be prevented by bonding and grounding.

4: Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explosion venting.

## **PERSONAL PROTECTION**

### **EYES**

Safety glasses with side shields Chemical goggles. Full face shield.

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

### **HANDS / FEET**

Rubber gloves Impervious gloves.

Safety footwear.

### **OTHER**

1: Overalls.

2: Eyewash unit.

### **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	Air-line**	B P2	B PAPR-P2
100 x ES	-	B P3 Air-line*	-
100+ x ES	-	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.
- Plastic container or Plastic drum.
- Metal can or Metal drum.
- Check that containers are clearly labelled.

#### **STORAGE INCOMPATIBILITY**

- Keep dry .
- Material is hygroscopic, i.e. absorbs moisture from the air. Keep containers well sealed in storage.
- Segregate from acids, finely divided combustible materials, amines and reducing agents.
- Avoid any contamination of this material as it is very reactive and any contamination is potentially hazardous.

#### **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. Wear impervious gloves and safety glasses.
3. Use dry clean up procedures and avoid generating dust.
4. Place spilled material in clean, dry, sealable, labelled container.

## MAJOR SPILLS

Pollutant

- 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 or cloth.
- 11: Use spark-free and explosion-proof equipment.
- 12: Collect residues and seal in labelled drums for disposal.
- 13: Wash area and prevent runoff into drains.
- 14: Decontaminate equipment and launder all protective clothing before storage and re-use.
- 15: If contamination of drains or waterways occurs advise emergency services.

## DISPOSAL

Consult manufacturer for recycling options.

Ensure damaged or non-returnable drums are gas-free before disposal.

Rinse THOROUGHLY, but do not re-use plastic containers.

Return empty containers to supplier or bury empty containers 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.

Decomposes on heating and produces acrid and toxic fumes of chlorine, cyanides and nitrogen oxides (NOx).

## 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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