

USE

In the bleaching of paper pulp and textiles, for the purification of water. Used as a sanitiser in pool operations. Sterilising disinfectant and as fungicide, microbiocide in laundry. An oxidising agent used in the manufacture of organic chemicals and as a chemical intermediate. The use of a quantity of material in an unventilated or confined space may result in increased exposure and an irritating atmosphere developing. Before starting consider control of exposure by mechanical ventilation.

PHYSICAL DESCRIPTION / PROPERTIES



APPEARANCE

Pale yellow or greenish liquid with chlorine odour; mixes with water. CORROSIVE and Oxidising Agent. Freezing point 12% approx minus 25 deg.C. Evolves very poisonous and corrosive chlorine gas on contact with acids and is mildly corrosive to most metals. Evolves oxygen and chlorine on heating. Commercial grades have 3-14% available chlorine. All grades over 5% available chlorine are Dangerous Goods, with 5-16% available chlorine as Packing Group III; and more than 16% available chlorine - packing group II. Items with 4% or less are not a scheduled poison.

Boiling Point	100-110
Melting Point	< 0
Vapour Pressure (kPa)	2.4 @ 20°C
Specific Gravity	1.15 - 1.2
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 Hypochlorite @ 136.4 gram / Litre = 11.3 % hypochlorite or as 13% available chlorine	7681-52-9	5-30
Water	7732-18-5	>60
Contains more than 5% available chlorine		

HEALTH HAZARD



ACUTE HEALTH EFFECTS

SWALLOWED

Considered an unlikely route of entry in commercial/industrial environments. The liquid is corrosive to the gastro-intestinal tract and harmful if swallowed. Ingestion may cause irritation of the mucous membranes, pain and inflammation of the mouth and stomach, vomiting, fall of blood pressure, shock, confusion, delirium, coma and, in severe cases, death. Perforation of the esophagus or stomach may occur.

EYE

The liquid is corrosive to the eyes and is capable of causing severe damage with loss of sight if contact is prolonged. The vapour is highly discomforting to the eyes. The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

SKIN

The liquid is highly discomforting to the skin and is capable of causing skin reactions which may lead to dermatitis if exposure is prolonged. Skin contact will result in rapid drying, bleaching, leading to chemical burns on prolonged contact. 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. Contact may cause severe itchiness, skin lesions and mild eczema. A few individuals may show allergic/sensitisation responses which may be minor to severe. Exposure will aggravate this pre-existing condition and those with sensitisation reactions should not be required to work where exposure may occur.

INHALED

The vapour is highly discomforting to the upper respiratory tract and lungs. The material may produce respiratory tract irritation which produces an inflammatory response involving the recruitment and activation of many cell types, mainly derived from the vascular system. Unlike most organs the lung can respond to a chemical insult or agent by first trying to remove or neutralise the irritant and then repairing the damage. The repair process, which initially developed to protect mammalian lungs from foreign matter and antigens, may however, cause further damage the lungs when activated by hazardous chemicals. The result is often the impairment of gas exchange, the primary function of the lungs. Excessive inhalation of vapours, mists or fumes may cause bronchial irritation, coughing, laboured breathing, nausea and pulmonary oedema. Additional effects have included circulatory collapse and confusion, delirium and coma. If warmed to temperatures greater than 40 deg.C or mixed with acids, toxic and irritating chlorine gas is released.

CHRONIC HEALTH EFFECTS

Principal routes of exposure are usually by skin contact / eye contact and inhalation of vapour. Prolonged or repeated skin contact may cause drying with cracking, irritation and possible dermatitis following. Necrosis and haemorrhage of the upper digestive tract, oedema and pulmonary emphysema were found on autopsy after suicidal ingestion, and methaemoglobinaemia was also reported in another fatal case.

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 this product comes in contact with the skin:

- 1: Immediately flush body and clothes with large amounts of water, using safety shower if available.
- 2: Quickly remove all contaminated clothing, including footwear.
- 3: Wash affected areas with water (and soap if available) for at least 15 minutes.
- 4: Transport to hospital, or doctor.

INHALED

- 1: If fumes or combustion products are inhaled: Remove to fresh air.
- 2: Lay patient down. Keep warm and rested.
- 3: Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures
- 4: If available, administer medical oxygen by trained personnel.
- 5: 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.
- 6: Transport to hospital, or doctor, without delay.

ADVISE TO THE DOCTOR

For acute or repeated exposures to hypochlorite solutions:

1. Release of small amounts of hypochlorous acid and acid gases from the stomach following ingestion, is usually too low to cause damage but may be irritating to mucous membranes. Buffering with antacid may be helpful if discomfort is evident.
2. Evaluate as potential caustic exposure.
3. Decontaminate skin and eyes with copious saline irrigation. Check exposed eyes for corneal abrasions with fluorescein staining.
4. Emesis or lavage and catharsis may be indicated for mild caustic exposure.
5. Chlorine exposures require evaluation of acid/base and respiratory status.
6. Inhalation of vapours or mists may result in pulmonary oedema.

ELLENHORN and BARCELOUX: Medical Toxicology.

PRECAUTIONS FOR USE



EXPOSURE STANDARDS

available chlorine, as chlorine gas:

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

ES Peak: 1 ppm, 3 mg/m³ (Under review)

INGREDIENT DATA

SODIUM HYPOCHLORITE:

available chlorine, as chlorine

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

ES Peak: 1 ppm, 3 mg/m³ (Under review)

CEL TWA: 2 mg/m³ (compare WEEL TWA)

The odour threshold is likely to be similar to that of chlorine, 0.3 ppm. Acute, subchronic, and chronic toxicity studies have shown no significant treatment related effects. High concentrations may produce moderate to severe eye irritation, but not permanent injury. High doses also appear to be embryotoxic. Since nearly all sodium hypochlorite is handled as aqueous solution, airborne exposure is likely to be as an aerosol, or mist. Sodium hypochlorite dissociates in water to form free hypochlorous acid in equilibrium. The toxic effects are likely to be similar to those of chlorine or sodium hydroxide.

WATER:

No exposure limits set by NOHSC or ACGIH.

ENGINEERING CONTROLS

CARE: Use of a quantity of this material in confined space or poorly ventilated area, where rapid build up of concentrated atmosphere may occur, could require increased ventilation and/or protective gear. Use in a well-ventilated area. General exhaust is adequate under normal operating conditions. Local exhaust ventilation may be required in specific circumstances. If risk of overexposure exists, wear approved respirator. Correct fit is essential to obtain adequate protection. Provide adequate ventilation in warehouse or closed storage areas. Avoid contact with eyes.

PERSONAL PROTECTION

EYES

Chemical goggles.

Full face shield.

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

HANDS / FEET

Wear chemical protective gloves. eg. PVC gloves with barrier cream

Wear safety footwear.

or PVC safety gumboots.

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

Where the concentration of gas/particulates in the breathing zone, approaches or exceeds the "Exposure Standard" (or ES), respiratory protection is required. Degree of protection varies with both face-piece and Class of filter; the nature of protection varies with Type of filter.

Protection Factor	Half Face Respirator	Full Face Respirator	Powered Air Respirator
10 x ES	B -AUS P	-	B -PAPR-AUS P
50 x ES	-	B -AUS P	-
100 x ES	-	B -2 P	B -PAPR-2 P ^

^ - Full-face.

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 and Container to have vented cap.

Polyethylene or polypropylene container.

Plastic carboy

Plastic drum

Polyliner drum

Packing as recommended by manufacturer

Check all containers are clearly labelled and free from leaks.

Not to be transported in unlined metal drums. Inner packagings shall be fitted with vented closures and plastics drums and carboys shall have vented closures or be performance tested to a minimum of 250 kPa. All non-vented packaging shall be filled so that the ullage is at least 10% at 21-25 deg.C. Vented packages may be filled to an ullage not less than 5% at 21-25 deg.C, provided that this ullage does not result in leakage from, nor distortion of, the packaging. [ADG Code]

STORAGE INCOMPATIBILITY

Avoid storage with reducing agents., amines, methanol, acids, copper, peroxides, ammonium salts and combustible materials.

Contact with acids liberates toxic gases i.e. chlorine.

Avoid storage with metal salts, solvents, greases and wood, particularly sawdust.

STORAGE REQUIREMENTS

Store in original containers and Store in an upright position.

Store away from incompatible materials.

DO NOT store near acids.

DO NOT store on wooden floors.

Store in a well-ventilated area.

Keep containers securely sealed.

Protect from light. Protect containers against physical damage.

Check regularly for spills and leaks.

Observe manufacturer's storing and handling recommendations.

TRANSPORTATION

Class 8 - Corrosives shall not be loaded in the same vehicle or packed in the same freight container with:
Class 1 - Explosives;
Class 4.3 - Dangerous when wet substances;
Class 5.1 - Oxidising agents;
Class 5.2 - Organic peroxides;
Class 7 - Radioactive substances;
Class 8 - Acids only;
Food and food packaging in any quantity.

SPILLS AND DISPOSAL

MINOR SPILLS

DO NOT touch the spill material.
Clean up all spills immediately.
Avoid breathing vapours and contact with skin and eyes.
Wear protective clothing, impervious gloves and safety glasses.
Neutralise with sodium metabisulfite or sodium thiosulfate.
Wipe up and absorb small quantities with vermiculite or other absorbent material. Place in suitable containers for disposal.
Wash spill area with large quantities of water.

MAJOR SPILLS

Clear area of personnel and move upwind. DO NOT touch the spill material.
Alert Fire Brigade and tell them location and nature of hazard.
1: Wear full body protective clothing with breathing apparatus.
2: Prevent, by any means available, spillage from entering drains or watercourses.
Increase ventilation.
Stop leak if safe to do so.
Contain spill with sand, earth or vermiculite.
Collect recoverable product into labelled containers for recycling.
Neutralise with sodium metabisulfite or sodium thiosulfate.
Absorb remaining product with sand, earth or vermiculite.
Collect residues and seal in labelled drums for disposal.
Wash spill area with large quantities of water.
If contamination of drains or waterways occurs, advise emergency services.
After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using.

DISPOSAL

Recycle wherever possible. Consult manufacturer for recycling options.
Consult State Land Waste Management Authority for disposal.
Treat and neutralise at an effluent treatment plant.
Bury residue in an authorised landfill.
Puncture containers to prevent re-use.

WASTE DISPOSAL PROCEDURES

Collect and package recoverable quantities of sodium hypochlorite solution in a labelled container for recycling or disposal. "For small quantities of sodium hypochlorite solution wear eye protection, protective clothing and nitrile rubber gloves. Work in a well ventilated area." Add the contents to a large volume of cold water. Empty the liquid into the drain with water [Armour 1996].
"Collect and package recoverable quantities of sodium methoxide in labelled containers for recycling or incineration. For small quantities of sodium methoxide wear eye protection, protective clothing and butyl rubber gloves. Work in a well ventilated area."
Add the sodium methoxide to a container of cold water. Neutralise with 6M hydrochloric acid (add a volume of concentrated acid to an equal volume of cold water). Wash the solution into the drain with water [Armour 1996].

SPILLAGE DISPOSAL

"Wear eye protection, protective clothing and nitrile rubber gloves to control personal contact from sodium hypochlorite solution. "

Wash the area with plenty of water and empty into the drain with at least 50 times its volume of water [Armour 1996].

"Shut off all ignition sources. Wear a face shield, goggles, protective clothing and butyl rubber gloves to control personal contact from sodium methoxide. "

"Cover and contain the spill with a 1:1:1 mixture by weight of sodium carbonate or calcium carbonate, bentonite and sand. Scoop the absorbed contents into a container of cold water, work in a well ventilated area."

Neutralise with 6M hydrochloric acid (add concentrated acid to an equal volume of cold water). Empty the liquid into the drain with copious amounts of water.

Discard the recoverable solid with normal refuse. Ventilate the area of the spill to dispel all vapours and evaporate all liquid [Armour 1996].

FIRE/EXPLOSION HAZARD

Non combustible liquid

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

Decomposes on heating and produces toxic fumes of chlorine caustic compounds.

CONTACT POINT



In the event of a chemical event of 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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