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MATERIAL SAFETY DATA SHEET

1. IDENTIFICATION

Revision Date JULY 2011

Product Name TRICHLOROISOCYANURIC ACID, DRY

Other Names TRICHLORO-S-TRIAZINETRIONE; TRICHLOR; SYMCLOSENE;

1,3,5-TRICHLORO-s-TRIAZINE-2,4,6-TRIONE; TCCA.

Uses Active ingredient in household dry bleaches, dishwashing compounds, scouring powders, detergent-sanitisers, commercial laundry bleaches, swimming pool disinfectant, bactericide, algicide, bleach and deodorant.

Contact Information

Organisation	Location	Telephone	Ask For
Price Chemicals Pty Ltd	10Pile Rd SomersbyNSW Australia	+612 43400088	Technical Officer
Poison Information Centre	Westmead NSW Australia	131126	
Chemcall 24 Hour Emergency Number	Australia New Zealand	1800-127406 0800-243622	
National Poisons Centre	New Zealand	0800-764766	

2. HAZARD IDENTIFICATION

Hazardous according to criteria of NOHSC/ASCC.

Dangerous According to the Australian Code for the Transport of Dangerous Goods.

Classified as Dangerous Goods According to NZS 5433:1999.

Purex Trichloroisocyanuric Acid

OXIDIZING HARMFUL DANGEROUS FOR THE ENVIRONMENT

Risk Phrases

- R8 Contact with combustible material may cause fire.
- R22 Harmful if swallowed.
- R31 Contact with acids liberates toxic gas.
- R36/37 Irritating to eyes and respiratory system.
- R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Phrases

- S2 Keep out of reach of children.
- S8 Keep container dry.
- S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- S41 In case of fire and/or explosion, do not breathe fumes.
- S60 This material and its container must be disposed of as hazardous waste.
- S61 Avoid release to the environment. Refer to special instructions/Material Safety Data Sheets.

ERMA New Zealand Approval Code HSR001359

HSNO Hazard Classification 5.1.1B 6.1D 6.3A 8.3A 9.1A 9.2D 9.3B

This Material Safety Data Sheet may not provide exhaustive guidance for all HSNO Controls assigned to this substance. The ERMA Web Site should be consulted for a full list of triggered controls and cited regulations.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	CAS Number	Proportions (%)
TRICHLOROISOCYANURIC ACID	[87-90-1]	> 90.0
WATER	[7732-18-5]	< 0.5

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure.

Swallowed Rinse mouth with water. Give plenty of water to drink. Do NOT induce vomiting. If vomiting occurs, maintain the head lower than the trunk in order to prevent aspiration of the product into the lungs. Seek medical attention immediately.

Eye Immediately flush eyes with water for at least 15 minutes, while holding eyelids open. Washing

eyes within several seconds is essential to achieve maximum effectiveness. Seek immediate medical attention.

Skin Remove contaminated clothing. Wash affected area with plenty of water for at least 15 minutes. Seek immediate medical attention. Wash clothing before reuse.

Inhaled Remove victim from exposure to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Do NOT use mouth to mouth method. Induce artificial respiration with the aid of a pocket mask equipped with a one way valve or other proper respiratory medical device.

Advice to Doctor Treat symptomatically based on individual reactions of patient and judgement of doctor. Probable mucosal damage may contraindicate the use of gastric lavage. Delayed effects from exposure to chlorine (decomposition product) can include shortness of breath, violent headaches, pulmonary oedema and pneumonia. Can cause corneal burns.

Aggravated medical conditions caused by exposure Target Organs: Kidneys, Liver, Respiratory System, Eyes and Skin. May cause kidney and liver damage. Long term exposure through skin contact may result in dermatitis. Long term exposure through eye contact may result in eye damage or blindness. Long term exposure through inhalation or ingestion may result in ulcers.

5. FIRE FIGHTING MEASURES

Extinguishing Media Only large quantities of water should be used as an extinguishing agent. Do NOT use dry chemicals, carbon dioxide or halogenated extinguishing agents. If excess water is not available, DO NOT attempt to extinguish the fire; use available water to prevent the spread of fire to adjacent property. A fire in the vicinity of trichloroisocyanuric acid should be extinguished in the most practical manner but avoid contaminating the material with the fire-fighting agent, including water.

Hazards from Combustion Products Powerful oxidising agent. Not combustible, but will support the combustion of other material. Contact with other material may cause fire. Incompatible materials include acids, ammonia, bases, floor sweeping compounds, calcium hypochlorite, reducing agents, organic solvents and compounds, strong reducing agents, strong bases, moist air, water, combustible materials, strong oxidising agents, and sources of ignition. When involved in a fire, this product may generate hydrogen chloride, nitrogen oxides, carbon monoxide, carbon dioxide, carbon monoxide, cyanogen chloride, nitrogen trichloride, chlorine and phosgene. Decomposes violently upon heating liberating oxygen. If heated by outside source to temperatures above 240°C, this product will undergo self-sustaining decomposition with the evolution of heat and dense noxious gases, but no visible flame.

Special Protective Precautions and Equipment for Fire Fighters Fire fighters should wear a positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots and gloves). Clear fire area of all non-emergency personnel. Stay upwind. Keep out of low areas. Eliminate ignition sources. Material which appears to be undamaged except for being damp on the outside, should be opened and inspected immediately. Do NOT attempt to reseal contaminated drums. Damp material should be neutralised to a non-oxidising state. Once fire is extinguished, wash area down with excess water ensuring any

traces of spilt product is washed away. Ensure that drains are not blocked with solid material. Maintenance of excess water during clean up operation is essential.

Flammability Conditions Product is a non-flammable solid. However, product is an oxidizer and will support combustion of other material.

Additional Information

Hazchem Code 1W

6. ACCIDENTAL RELEASE MEASURES

Emergency Procedures Personnel involved in the clean up should wear full protective clothing. Prevent skin and eye contamination and inhalation of vapours; air supplied mask is recommended for large spills to avoid inhalation of toxic chlorine gas which is liberated when material is exposed to water. Evacuate all unnecessary personnel. Eliminate all sources of ignition. Increase ventilation. Avoid generating dust. Stop leak if safe to do so. Isolate the danger area. Do NOT let product reach drains or waterways. If product does enter a waterway, advise the Environmental Protection Authority or your local Waste Management. Use clean, non-sparking tools and equipment.

Methods and Materials for Containment and Clean Up Contain and sweep/shovel up spills. DO NOT add water to spilled material. DO NOT use floor sweeping compounds to clean up spills. Avoid contact with other material. DO NOT return spilled material to original container. Collect and transfer to large volume of water - DO NOT use a metal container. Do NOT attempt to reseal contaminated drums. Do NOT transport wet/damp material. Damp material should be neutralised to a non-oxidising state. Do NOT use combustible materials such as paper towels to clean up spill. Keep combustibles away from spilled material. To Neutralise: Add sodium sulphite (3.5Kg/Kg of product). If no active chlorine remains, add soda ash (2.0Kg/Kg pf product) to effect complete neutralisation. Where a spill has occurred in a confined space or an inadequately ventilated enclosure and the material is damp and evolving chlorine, the rate of chlorine evolution can be reduced by covering the thinly spread solid with soda ash.

7. HANDLING AND STORAGE

Precautions for Safe Handling This product is highly reactive. Handle with extreme care. Do NOT drop, roll or skid containers. Avoid contaminating with any other materials, including other chlorine containing pool chemicals. Scoops, containers and other implements must be clean, dry and reserved for this material only. Do NOT allow water to get inside container. If liner is present, tie after each use. Never add water to this product. Always add product to large quantities of water. Do NOT add the product to any dispensing device containing residuals of other products. Ensure an eye bath and safety shower are available and ready for use. Observe good personal hygiene practices and recommended procedures. Wash thoroughly after handling. Take precautionary measures against static discharges by bonding and grounding equipment. Avoid contact with skin, eyes and clothing. Do NOT inhale product dust/vapour. Use only in a chemical fume hood.

Conditions for Safe Storage (Including Any Incompatibles) Store in a cool, dry, well-ventilated area. Keep containers tightly closed when not in use. Inspect regularly for deficiencies such as

Purex Trichloroisocyanuric Acid

damage or leaks. Protect against physical damage. Store away from incompatible materials including acids, ammonia, bases, floor sweeping compounds, calcium hypochlorite, reducing agents, organic solvents and compounds, strong reducing agents, strong bases, moist air, water, combustible materials, strong oxidising agents, and sources of ignition. Protect from heat, fire, high humidity, sparks, direct sunlight and moisture. Product is hygroscopic (absorbs moisture from the air). Store under inert atmosphere. Store away from foodstuffs. Ensure pallets are clean and free from oil. Do NOT store in corrosives area. This product has a UN Classification of 2468 and a Dangerous Goods Class 5.1 (Oxidiser) according to The Australian Code for the Transport of Dangerous Goods by Road and Rail.

Container Type Packaging must comply with requirements of Hazardous Substances (Packaging) Regulations 2001. Store in original packaging as approved by manufacturer.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

National Exposure Standards Chlorine may be found in slight amounts in the head space of containers of this product. TRICHLORO-S-TRIAZINETRIONE: 0.5mg/m³ recommended TWA 8 hour(s) (ACL Salts)(Internal Occupational Exposure Limit); 1.5mg/m³ recommended STEL 15 minute(s) (ACL Salts)(Internal Occupational Exposure Limit) CHLORINE: 1ppm (3mg/m³) OSHA ceiling 0.5ppm (1.5mg/m³) OSHA TWA (vacated by 58 FR 35338, June 30, 1993) 1ppm (3mg/m³) OSHA STEL (vacated by 58 FR 35338, June 30, 1993) 0.5ppm ACGIH TWA 1ppm ACGIH STEL 1ppm (3mg/m³) MEXICO TWA 3ppm (9mg/m³) MEXICO STEL

Biological Limit Values No information available on biological limits for this product.

Engineering Controls A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.

Personal Protection RESPIRATOR: Wear an approved N95 dust/fume/mist respirator if vapours are generated and engineering controls are inadequate (AS1715/1716). EYES: Chemical safety goggles (AS1336/1337). HANDS: Butyl rubber gloves (AS2161). CLOTHING: Chemical-resistant coveralls, rubber apron and safety footwear (AS3765/2210).

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance White Crystalline powder, granules, or tablets.

Formula C₃Cl₃N₃O₃

Odour Chlorine odour

Vapour Pressure Not applicable.

Vapour Density Not applicable.

Boiling Point Not applicable.

Melting Point 225-251°C deg C

Solubility in Water 12g/L

Specific Gravity 2.07 (20°C) (Water = 1)

Flash Point Test Unknown 225

pH 2.8-3.5 ()

Lower Explosion Limit Not applicable.

Upper Explosion Limit Not applicable.

Ignition Temperature Not applicable.

Specific Heat Value Not applicable.

Particle Size Not applicable.

Volatile Organic Compounds (VOC) Content Not applicable.

Evaporation Rate Not applicable.

Viscosity Not applicable.

Percent Volatile Not applicable.

Octanol/Water partition coefficient Not applicable.

Saturated Vapour Concentration Not applicable.

Additional Characteristics Not applicable.

Flame Propagation/Burning Rate of Solid Materials Not applicable.

Properties of Materials That May Initiate or Contribute to Fire Intensity Not applicable.

Potential for Dust Explosion Not applicable.

Reactions that Release Flammable Gases Contact with nitrogen compounds produce flammable nitrogen trichloride fumes.

Fast of Intensely Burning Characteristics Not applicable.

Non-flammables That Could Contribute Unusual Hazards to a Fire No data available.

Release of Invisible Flammable Vapours and Gases If heated to >240°C, generates heat and noxious gases with no visible flame.

Decomposition Temperature 225-230°C

Additional Information Molecular Weight: 232.41g/mol Bulk Density : 63-66 lbs/ft³ (loose)

10. STABILITY AND REACTIVITY

Chemical Stability Product is stable under directed conditions of use, storage and temperature.

Purex Trichloroisocyanuric Acid

Strong Oxidising agent. Hygroscopic (absorbs moisture from the air).

Conditions to Avoid Avoid excessive heat, generating dust, direct sunlight, moisture and high temperatures.

Incompatible Materials Incompatible materials include acids, ammonia, bases, floor sweeping compounds, calcium hypochlorite, reducing agents, organic solvents and compounds, strong reducing agents, strong bases, moist air, water, combustible materials, strong oxidising agents, and sources of ignition.

Hazardous Decomposition Products When involved in a fire, this product may generate hydrogen chloride, nitrogen oxides, carbon monoxide, carbon dioxide, carbon monoxide, cyanogen chloride, nitrogen trichloride, chlorine and phosgene. Decomposes violently upon heating liberating oxygen. If heated by outside source to temperatures above 240°C, this product will undergo self-sustaining decomposition with the evolution of heat and dense noxious gases, but no visible flame.

Hazardous Reactions Hazardous polymerization has not been reported. Mixture with combustible materials (eg, wood, straw, cotton, paper, sugar or oil) are readily ignited and may burn fiercely. On contact with alkaline materials or with nitrogen compounds, nitrogen trichloride fumes can form, which are very explosive. Wet material may also generate nitrogen trichloride. Reaction with water may lead to drum rupture. Reacts with water and acids to form toxic chlorine gas. This product may form explosive mixtures with calcium hypochlorite. Decomposes violently upon heating liberating oxygen.

11. TOXICOLOGICAL INFORMATION

Toxicity Data Oral LD50 Rat : 406mg/Kg Oral LD50 Rat : 809mg/Kg Dermal LD50 Rabbit : 7600mg/Kg Draize test, rabbit, eye : 500mg Severe; Draize test, rabbit, skin: 500mg/24hr Moderate Primary Skin Irritation : Slightly corrosive (rabbit/24hr) Primary Eye Irritation : Corrosive (rabbit/24hr) DOT Skin Corrosion : Not corrosive (rabbit/24hr) Metabolic Studies (mice) : No tendency to accumulate in tissue, organs or glands. Carcinogenicity Studies : Not tumorigenic or carcinogenic under the conditions expected in sanitising swimming pools. Mutagenicity Studies : Non-mutagenic. Teratogenicity tests with the aqueous sodium salt (sodium cyanurate) on rats and rabbits were negative.

Health Effects - Acute

Swallowed Harmful if swallowed. Ingestion may cause immediate pain and severe burns of the mucous membranes. There may be discolouration of the tissues. Swallowing and speech may be difficult at first and then almost impossible. The effects on the esophagus and gastrointestinal tract may range from irritation to severe corrosion. Edema of the epiglottis and shock may occur.

Eye Irritating to eyes. Direct eye contact may result in severe irritation, pain and burns, possibly severe, and permanent damage including blindness. The degree of injury depends on the concentration and duration of the contact. Repeated or prolonged contact may result in conjunctivitis.

Skin Direct skin contact with wet material or moist skin may cause severe irritation, pain and

possibly burns. This material is not considered to be a skin sensitiser, based on studies with guinea pigs. Repeated or prolonged contact may result in dermatitis.

Inhaled Irritating to the respiratory system. This material in the form as sold is not expected to produce respiratory effects. If ground or otherwise in a powdered form, effects similar to a corrosive substance may occur. May cause severe irritation of the respiratory tract with coughing, choking, pain, and possibly burns of the mucous membranes. In some cases, pulmonary edema may develop, either immediately or more often within a period of 5-72 hrs. The symptoms may include tightness in the chest, dyspnea, frothy sputum, cyanosis and dizziness. Physical findings may include moist rales, low blood pressure and high pulse pressure. Severe cases may be fatal. Repeated or prolonged exposure may cause inflammatory and ulcerative changes in the upper respiratory tract.

12. ECOLOGICAL INFORMATION

Ecotoxicity This material is believed to be highly toxic to aquatic life: Bluegill Sunfish LC50/96hr : 0.20-0.40mg/L Rainbow Trout LC50/96hr : 0.08-0.37mg/L Water Flea LC50/48hr : 0.17-0.80mg/L Green Algae LC50/3hr : < 0.5mg/L

Persistence and Degradability This material is subject to hydrolysis. Cyanuric acid produced by hydrolysis is biodegradable. This material is believed not to persist in the environment. Hydrolysis reaction occurs in minutes. None of the hydrolysis products are bioaccumulative or persistent. Photoreactivity of free available chlorine is 30 minutes at 30°C (pH7). Half-life increases to as much as 8 hours in the presence of cyanuric acid.

Mobility No information available on mobility for this product.

Environmental Fate (Exposure) Do NOT let product reach waterways, drains and sewers. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Bioaccumulative Potential This material is believed not to bioaccumulate.

13. DISPOSAL CONSIDERATIONS

Disposal Use or reuse if possible. This material is a registered pesticide. Dispose of in accordance with all local, state and federal regulations. All empty packaging should be disposed of in accordance with Local, State, and Federal Regulations or recycled/reconditioned at an approved facility. Do NOT put product, spilled product, or filled or partially filled containers into the trash or waste compactor. Contact with incompatible materials could cause a reaction and fire. Do NOT transport wet or damp material. Damp material should be neutralised to a non-oxidising state.

Special Precautions for Land Fill or Incineration Contact a specialist disposal company or the local waste regulator for advice. This should be done in accordance with 'The Hazardous Waste Act'.

14. TRANSPORT INFORMATION

Land Transport (Australia)

Regulation Name ADG Code

UN Number 2468

Shipping Name TRICHLOROISOCYANURIC ACID, DRY

Dangerous Goods Class 5.1 Oxidising Agent (not an organic peroxide)

Subsidiary Risk Not applicable.

Pack Group II

Precaution for User OXIDIZING HARMFUL DANGEROUS FOR THE ENVIRONMENT

Hazchem Code 1W

EPG 31 OXIDIZING SUBSTANCES

Special Provision

Not applicable.



Land Transport (New Zealand)

Regulation Name NZS5433

UN Number 2468

Shipping Name TRICHLOROISOCYANURIC ACID, DRY

Dangerous Goods Class 5.1 Oxidising Agent (not an organic peroxide)

Subsidiary Risk Not applicable.

Pack Group II

Purex Trichloroisocyanuric Acid

Precaution for User OXIDIZING HARMFUL DANGEROUS FOR THE ENVIRONMENT

Hazchem Code 1W

EPG 31 OXIDIZING SUBSTANCES

Special Provision

Not applicable.



Sea Transport

Regulation Name IMDG Code

UN Number 2468

Shipping Name TRICHLOROISOCYANURIC ACID, DRY

Dangerous Goods Class 5.1 Oxidising Agent (not an organic peroxide)

Subsidiary Risk Not applicable.

Pack Group II

Precaution for User OXIDIZING HARMFUL DANGEROUS FOR THE ENVIRONMENT

Hazchem Code No data available.

EPG 31 OXIDIZING SUBSTANCES



Special Provision Not applicable.

15. REGULATORY INFORMATION

Classified as hazardous according to The Australian Safety and Compensation Council (ASCC) and Annex I European Directive 67/548/EEC. EINECS No: 201-782-8 Symclosene

Poisons Schedule 5

EPG 31

AICS Name 1,3,5-TRIAZINE-2,4,6(1H,3H,5H)-TRIONE,1,3,5-TRICHLORO-

NZ Toxic Substance 4

HSNO Hazard Classification 5.1.1B 6.1D 6.3A 8.3A 9.1A 9.2D 9.3B

ERMA Approval Code HSR001359

16. OTHER INFORMATION

Literature References No data available.

Sources for Data No data available.

Legend to Abbreviations and Acronyms

< less than

> greater than

ADG Australian Dangerous Goods Code

AICS Australian Inventory of Chemical Substances

CAS Chemical Abstracts Service (Registry Number)

cm² square centimetres

CO₂ Carbon Dioxide

Purex Trichloroisocyanuric Acid

COD Chemical Oxygen Demand

deg C (°C) degrees Celsius

ERMA Environmental Risk Management Authority

g gram

g/cm³ grams per cubic centimetre

g/l grams per litre

HSNO Hazardous Substance and New Organism

IATA International Air Transport Association Dangerous Goods Regulations

IDLH Immediately Dangerous to Life and Health

IMDG International Maritime Dangerous Goods Code

immiscible liquids are insoluble in each other

kg kilogram

kg/m³ kilograms per cubic metre

LC50 LC stands for lethal concentration. LC50 is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.

LD50 LD stands for Lethal Dose. LD50 is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals

ltr Litre

m³ cubic metre

mbar millibar

mg milligram

mg/24H milligrams per 24 hours

mg/kg milligrams per kilogram

mg/m³ milligrams per cubic metre

Misc miscible

miscible liquids form one homogeneous liquid phase regardless of the amount of either component present

mm millimetre

mPa.s milli Pascal per second

N/A Not Applicable

NOHSC National Occupational Health and Safety Commission

OECD Organization for Economic Co-operation and Development

PEL Permissible Exposure Limit

ppb parts per billion

ppm parts per million

ppm/2h parts per million per 2 hours

ppm/6h parts per million per 6 hours

RCP Reciprocal Calculation Procedure

STEL Short Term Exposure Limit

TLV Threshold Limit Value

tne tonne

TWA Time Weighted Average

ug/24H micrograms per 24 hours

UN United Nations (number)

wt weight

This MSDS summarises Price Chemicals Pty Ltd best knowledge of the health and safety hazard information of the selected substance and how to safely handle the selected substance in the workplace however Price Chemicals Pty Ltd expressly disclaims that the MSDS is a representation or guarantee of the chemical specifications for the substance.

Each user should read the MSDS and consider the information in the context of how the selected substance will be handled and used in the workplace including its use in conjunction with other substances.

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