



MATERIAL SAFETY DATA SHEET

Product Name: Ram 1" and 3" Tabs

4949 Greenhouse Road Houston, TX 77084-2205 281/856-7600 - 800/456-3459 - Fax 281/856-7015

I - PRODUCT IDENTIFICATION

Product: Trichloroisocyanuric Acid
Chemical Family: Chloroisocyanurate
Formula: $C_3Cl_3N_3O_3$
CAS Number: 87-90-1
Synonyms: 1,3,5-trichloro-s-triazine-2,4,6-trione, TCCA, Trichlor, Symclosene

24 HR EMERGENCY TELEPHONE NUMBER
INFOTRAC (Transportation): (800)535-5053

II - COMPOSITION, INFORMATION ON INGREDIENTS

Chemical or Common Name:	Exposure Limits	
	OSHA PEL:	ACGIH TLV:
Trichloroisocyanuric acid – 96-100%	Not established	Not established
Dichloroisocyanuric Acid – 0-4%		

III - HEALTH HAZARD DATA

Primary Route(s) of Entry:

Ingestion: (X)
Inhalation: (X)
Skin Contact: ()
Eye Contact: ()

Carcinogenicity Listings:

OSHA: ()
NTP: ()
IARC: ()

Primary Health Hazards:

Acute: Corrosive to eyes, skin and mucous membranes. Harmful by inhalation and if swallowed.

Chronic: Prolonged exposure may cause damage to the respiratory system. Chronic inhalation exposure may cause impairment of lung function and permanent lung damage.

Signs & Symptoms of Exposure:

Ingestion: Irritation and/or burns can occur to the entire gastrointestinal tract,

including the stomach and intestines, characterized by nausea, vomiting, diarrhea, abdominal pain, bleeding and/or tissue ulceration. Ingestion causes severe damage to the gastrointestinal tract with the potential to cause perforation.

Inhalation: Irritating to the nose, mouth, throat and lungs. It may also cause burns to the respiratory tract with the production of lung edema that can result in shortness of breath, wheezing, choking, chest pain, and impairment of lung function. Inhalation of high concentrations can result in permanent lung damage from the corrosive action of the lung.

Skin Contact: Dermal exposure can cause severe irritation and /or burns characterized by redness, swelling and scab formation. Repeated skin exposure may cause tissue destruction due to the corrosive nature of the product.

Eye Contact: Severe irritation and/or burns can occur following eye exposure. Contact may cause impairment of vision and corneal damage.

This product is corrosive to all tissues contacted and upon inhalation, may cause irritation to mucous membranes and respiratory tract. There are no known or reported effects from repeated exposure. Toxicological investigation indicated it does not produce significant effects from chronic exposure

Medical Conditions Aggravated By Exposure: Asthma, respiratory and cardiovascular disease.

IV- FIRST AID MEASURES

Emergency and First Aid Procedures:

Ingestion: If swallowed, wash mouth thoroughly with plenty of water and give water to drink. Get medical attention immediately. *Note: Never give an unconscious person anything to drink.*

Inhalation: In case of dust inhalation or breathing fumes released from heated material, remove person to fresh air. Keep person quiet and warm. Apply artificial respiration if necessary and get medical attention immediately.

Skin Contact: Remove contaminated clothing. Wash skin thoroughly with mild soap and plenty of water for at least 15 minutes. Wash clothing before re-use. Get medical attention immediately.

Eye Contact: Holding the eyelids apart, flush eyes promptly with copious flowing water for at least 20 minutes. Get medical attention immediately.

NOTE TO PHYSICIAN: Corrosive. In case of ingestion do not induce vomiting. No specific antidote. Treat symptomatically and supportively.

V – FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARD DATA

Flash Point: Not applicable

Auto-Ignition Temperature: Not applicable

Flammable Limits: Not applicable.

LEL:

UEL:

Extinguishing Media: Water. Do not use dry chemical extinguisher containing ammonia compounds.

Special Fire-fighting Procedures: Fire fighters should wear full protective clothing and self-contained breathing apparatus (SCBA) in positive pressure mode. Cool containers with water spray. On small fires, use water spray or fog. On large fires, use heavy deluge or fog streams. Flooding amounts of water may be required before extinguishment can be accomplished.

Unusual Fire and Explosion Hazards: When heated to decomposition, may release poisonous and corrosive fumes of nitrogen trichloride, chlorine, nitrous oxides, cyanates, carbon monoxide and carbon dioxide.

VI – ACCIDENTAL RELEASE MEASURES

Steps To Be Taken In Case Material Is Spilled Or Released:

Personal Precautions: For small spills in a well-ventilated area, wear a NIOSH approved half-face or full face tight fitting respirator or a loose fitting powered air-purifying respirator equipped with chlorine cartridges.

After Spillage/Leakage: Hazardous concentrations in air may be found in local spill area and immediately downwind. If spill material is still dry, do not put water on this product as a gas evolution may occur.

On Soil: Do not contaminate spill material with any organic materials, ammonia, ammonium salts or urea.

On water: This material is heavier than and soluble in water. Stop flow of material into water as soon as possible. Begin monitoring for available chlorine and pH immediately.

In air: Vapors may be suppressed by the use of water fog.

VII – HANDLING AND STORAGE

Precautions to Be Taken in Handling and Storage:

Handling: Avoid bodily contact. Do not take internally. Upon contact with skin and eyes, wash off with water.

Storage: Store in a dry, cool, well-ventilated area away from incompatible materials. Product has an indefinite shelf-life limitation. Do not store at temperatures above 60°C/140°F. Available chlorine loss can be as little as 0.1% per year at ambient temperatures.

Other Precautions: This information in this Material Safety Data Sheet should be provided to all who will use, handle, store, transport, or otherwise be exposed to this product. This information has been prepared for the guidance of plant engineering, operations and management, and for persons working with or handling this product.

Type of product and use: For formulation into end-use products intended for disinfectants, sanitizers, fungicides, bactericides and algacides for pools, spas, hot tubs, industrial recirculating water cooling towers, air washers and evaporative condensers, sewage treatments, food contact surfaces, laundry and egg sanitizing.

VIII – EXPOSURE CONTROLS/PERSONAL PROTECTION

Respiratory Protection: When dusty conditions are encountered, wear a NIOSH/OSHA full-respirator with chlorine cartridges for protection against chlorine gas and dust/mist pre-filter. A respiratory protection program meeting OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use.

Ventilation:

Local Exhaust: Use local exhaust ventilation to minimize dust and chlorine levels where industrial use occurs. Otherwise, ensure good general ventilation.

Mechanical Exhaust:

Other Protective Clothing or Equipment: Use Neoprene gloves, Use chemical safety glasses to avoid eye contact. Where industrial use occurs, chemical goggles may be required. Use body covering clothes and boots.

Work/ Hygienic Practices: Avoid contact with skin, eyes and clothing.

IX - PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point: Not applicable

Vapor Pressure (mm Hg): Not applicable under standard conditions.

Vapor Density (Air=1): Not applicable under standard conditions.

Solubility in Water: 1.2g/100ml at 25°C

Appearance and odor: White granular solid or tablet form, sharp, chlorine-like, bleach odor.

Specific Gravity: >1

Percent volatile by volume:

Melting Point: Not applicable

Evaporation Rate: Not applicable under standard conditions.

Molecular Weight: 232.5

Bulk Density: Tablets – 1.16-1.9 g/cc, Granular – 0.89-1.1 g/cc.

pH: 2.7-2.9 (1% solution)

Thermal decomposition: 225°C (437°F)

X – STABILITY AND REACTIVITY

Stability: Unstable Stable under normal conditions

Conditions to Avoid: Do not package in paper or cardboard. Note: Contact with small amounts of water may result in an exothermic reaction with the liberation to toxic fumes.

Heating above 225°C.

Incompatibility: Organic materials, reducing agents, nitrogen containing materials, other oxidizers, acids, bases, oils, grease, sawdust, dry fire extinguishers containing monoammonium compounds.

Hazardous Decomposition or By-Products: Nitrogen trichloride, chlorine, nitrous oxides, cyanates, carbon monoxide, carbon dioxide.

Hazardous Polymerization: May Occur Will Not Occur

XI- TOXICOLOGICAL INFORMATION

Acute Toxicity:

Rat oral LD50: 490 mg/kg

Rabbit dermal LD50: >2000 mg/kg

Rat inhalation LC50: Approx.0.68 mg/1/4 hour – (nose only)

Eye irritation (rabbit): Corrosive

Dermal irritation (rabbit): Corrosive

Target Organ Toxicity:

Reproductive and Development Toxicity: There are no known effects on reproductive function or fetal development. Toxicological investigation indicated it does not affect

reproductive function of fetal development.

Carcinogenicity: Not known to be a carcinogen. Not included in NTP 8th Report on Carcinogens. Not classified by IARC, OSHA, and EPA.

Mutagenicity: Not mutagenic in five Salmonella strains and one E.coli strain with or without mammalian microsomal activation.

Chronic Toxicity: Prolonged exposure may cause damage to the respiratory system. Chronic inhalation exposure may cause impairment of lung function and permanent lung damage.

XII – ECOLOGICAL INFORMATION

Aquatic Toxicity:

96 Hour LC50 Fish: 0.32 mg/l (Rainbow trout)
0.30 mg/l (bluegill sunfish)

48 hour LC50, Daphnia magna: 0.21 mg/l

Avian Toxicity:

Mallard Duck, acute oral LD50: 1600 mg/kg

Mallard Duck, dietary LC50: >10,000 ppm

Bobwhite Quail, dietary LC: 7422 ppm

ENVIRONMENTAL HAZARDS (PR Notice 93-10)

This product is toxic to fish and aquatic organisms. Do not contaminate water by cleaning of equipment or disposal of wastes. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans, or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance, contact your State Water board or Regional Office of the EPA.

XIII – DISPOSAL CONSIDERATIONS

Waste Disposal Method:

Observe all federal, state and local environmental regulations when disposing of this material. If this product becomes waste, it will be a hazardous waste that is subject to the Land Disposal Restrictions under 40 CFR 268 and must be managed accordingly. Care must be taken to prevent environmental contamination from the use of this material.

XIV - TRANSPORTATION DATA

U.S. Department of Transportation - 49 CFR

Proper Shipping Name: Trichloroisocyanuric Acid Dry

Hazard Class/Division Number: 5.1 – Oxidizing substances

ID Number: UN2468

Packing Group: II

Label Required: OXIDIZER (5.1)

Placard Required:

Marine Pollutant:

Emergency Guide No.141

International Maritime Organization - IMDG

Proper Shipping Name: Trichloroisocyanuric Acid Dry
Hazard Class/Division Number: 5.1 – Oxidizing substances
ID Number: UN2468
Packing Group: II
Label Required: OXIDIZING AGENT (5.1)
Placard Required:
Marine Pollutant:
(IMDG CODE – page 5190, amdt. 29-98)

ICAO/IATA

Label: OXIDIZER (5.1)
Class: 5.1
Packing group: II

XV - REGULATORY INFORMATION

This chemical appears on the following lists:

- (X) SARA: Section 311/312 Categorization (40CFR 370.2) this product is categorized as an immediate health hazard, and fire and reactivity physical hazard.
Section 313 information (40 CFR 372) this product does not contain a chemical listed at or above de minimis concentrations.
- (X) TSCA
- (X) EPA
- (X) OSHA: This product is considered hazardous under the OSHA Hazard Communication Standard (29CFR 1910.1200).

Waste Classifications: If this product becomes a waste, it meets the criteria of a hazardous waste as defined under 40 CFR 261 and would have the following EPA hazardous waster number: D001.

Hazardous Per 29 CFR 1910.1200: Yes

NFPA Ratings (Scale 0-4): Health=3, Fire=0, Reactivity=2.

Special Hazard Warning: OXIDIZER

HMIS Ratings (Scale 0-4): Health=3, Fire=0, Reactivity=2.

XVI - ADDITIONAL INFORMATION

This MSDS replaces the 12/12/2002 version. Any changes in information are as follows:
In Section I - 24 hr emergency telephone number

ALWAYS COMPLY WITH ALL APPLICABLE INTERNATIONAL, FEDERAL, STATE AND LOCAL REGULATIONS REGARDING THE TRANSPORTATION, STORAGE, USE AND DISPOSAL OF THIS CHEMICAL.

Due to the changing nature of regulatory requirements, the REGULATORY INFORMATION

listed in Section XV of this document should NOT be considered all-inclusive or authoritative. International, Federal, State and Local regulations should be consulted to determine compliance with all required reporting requirements.

The information in this MSDS was obtained from sources, which we believe are reliable. **HOWEVER, THE INFORMATION IS PROVIDED WITHOUT ANY WARRANTY, EXPRESS OR IMPLIED, REGARDING ITS CORRECTNESS.** The conditions or methods of handling, storage, use, and disposal of the product are beyond our control and may be beyond our knowledge. **FOR THIS AND OTHER REASONS, WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE OR DISPOSAL OF THE PRODUCT.** This MSDS was prepared and is to be used only for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

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