



MATERIAL SAFETY DATA SHEET

Product Name: Ram Sticks

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

1. Identification of the substance & the company

Chemical name	Trichloro-s-triazinetriene
Synonym(s)	Trichloroisocyanuric Acid; TCCA; Trichlor; Trichloro-s-triazinetriene; Symclosene
Chemical formula	$C_3Cl_3N_3O_3$
Chemical family	Chloroisocyanurate
Molecular weight	232.5
Type of product and use	For disinfectant, sanitizers, fungicides, bactericides and algaecides for pools, spas and hot tubs
Supplier	NAVA Water Products 95 MacCorkle Ave. SW, South Charleston, WV 25303 , USA Tel: (304) 746-3000
Emergency Telephone	Chemtrec (800)424-9300 Medical 1-800-420-9236

2. Composition / information on ingredients

Components CAS	Weight %	ACGIH-TLV Data	OSHA (PEL) Data
Trichloroisocyanuric Acid 87-90-1	96-100	Not determined	Not determined
Dichloroisocyanuric Acid 2782-57-2	0-4	Not determined	Not determined

3. Hazards identification

Emergency overview	<i>White granuls or tablet-form product Oxidizer Corrosive to eyes, skin and mucous membranes. Harmful by inhalation and if swallowed.</i>
Potential Health Effects: - Eye Contact	Severe irritation and/or burns can occur following eye exposure. Contact may cause impairment of vision and corneal damage.

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- 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.

- 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.

- 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.

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.

4. First-aid measures

Eye contact Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advise.

Skin contact Take off contaminated clothing.
Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advise.

Inhalation Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advise.

Ingestion Call poison control center, or doctor immediately for treatment advise.
Have person sip a glass of water if able to swallow.
Do not induce vomiting unless told to do so by the poison control center or doctor.
Do not give anything by mouth to an unconscious person.

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5. Fire - fighting measures

Flash point Not applicable
Auto-ignition temperature Not applicable
Suitable extinguishing media Water
Extinguishing media not to be used Do not use dry chemical extinguisher containing ammonia compounds.
Fire fighting procedure 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.

6. Accidental release measures

Personal precautions For small spills in a well-ventilated areas, wear a NIOSH approved half-face or full face tight fitting respirator or a loose fitting powered air purifying respirator equipped with chlorine cartridges. Chemical goggles should be worn when using a half-face respirator. In addition to respiratory protection, wear coveralls; chemical resistant gloves; chemical resistant footwear; and chemical resistant headgear for overhead exposure.
For clean-up of large spills, or small dry spills in confined areas, wear full-face respirator with chlorine cartridges or a positive pressure supplied air respirator. Additionally, body protection should be impervious clothing covering entire body to prevent personal contact with material.
CAUTION - Protection concerns must also address the following: If this material becomes damp/wet or contaminated in a container, the formation of nitrogen trichloride gas may occur and an explosive condition may exist.

Methods for cleaning up Hazardous concentrations in air may be found in local spill area and immediately downwind. If spill material is still dry, do not put water directly on this product as a gas evolution may occur.

- **Soil** Do not contaminate spill material with any organic materials, ammonia, ammonium salts or urea.
Clean up all spill material with clean, dry dedicated equipment and place in a clean dry container.

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- **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.

7. Handling and storage

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

Storage Store in a dry, cool, well-ventilated area away from incompatible materials (see "materials to avoid").
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.

8. Exposure controls / personal protection

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

Personal protective equipment:

- **Respiratory protection** When dusty conditions are encountered, wear a NIOSH/OSHA full-face respirator with chlorine cartridges for protection against chlorine gas and dust/mist pre-filter.
 - **Hand protection** Neoprene gloves
 - **Eye protection** Use chemical safety glasses to avoid eye contact.
Where industrial use occurs, chemical goggles may be required.
 - **Skin and body protection** Body covering clothes and boots
- Hygiene measures** Avoid contact with skin, eyes and clothing.

9. Physical and chemical properties

Appearance White granules or tablet-form product
Odor Sharp, chlorine-like, bleach odor
Melting point/range Not applicable
Boiling point/range Not applicable
Vapour pressure Not applicable under standard conditions
Vapor density Not applicable under standard conditions
Evaporation rate (ether=1) Not applicable under standard conditions

Solubility:
- **Solubility in water** 1.2 g/100ml at 25°C

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Bulk density Granular-0.89-1.1 g/cc
Tablets - 1.16-1.9 g/cc
Specific gravity >1
pH 2.7-2.9 (1% solution)
Decomposition temperature 225 °C (437°F)

10. Stability and reactivity

Stability Stable under normal conditions Do not package in paper or cardboard.
NOTE:Contact with small amounts of water may result in an exothermic reaction with the liberation of toxic fumes.

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

Conditions to avoid Heating above decomposition temperature

Hazardous decomposition products Nitrogen trichloride, chlorine, nitrous oxides, cyanates, carbon monoxide, carbon dioxide.

Hazardous polymerization Will not occur

11. Toxicological information

Acute toxicity:

- Rat oral LD50 490 mg/kg
- Rabbit dermal LD50 >2000 mg/kg
- Rat inhalation LC50 Approx.0.68 mg/l/4 hour - (nose only)
- Eye irritation (rabbit) Corrosive
- Dermal irritation (rabbit) Corrosive

Target organ effects 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 indicates it does not produce significant effects from chronic exposure.

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

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

Carcinogenicity Not classified by IARC, OSHA, EPA.
Not included in NTP 11th Report on Carcinogens.

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Reproductive toxicity There are no known or reported effects on reproductive function or fetal development.
Toxicological investigation indicates it does not effect reproductive function of fetal development.

12. 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:
- Oral LD50, Mallard duck 1600 mg/kg
- Dietary LC50, Mallard duck >10,000 ppm
- Dietary LC50, Bobwhite quail 7422 ppm

13. Disposal considerations

Waste disposal 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.

14. Transportation information

UN No. 2468

DOT Proper shipping name: Trichloroisocyanuric Acid Dry
Class: 5.1 - Oxidizing substances
Label: OXIDIZER (5.1)
Packing Group: II
Emergency Guide No.140

IMO Proper shipping name: Trichloroisocyanuric Acid Dry
Class: 5.1 - Oxidizing substances
Label: OXIDIZING AGENT (5.1)
Packing Group: II

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ICAO/IATA Proper shipping name: Trichloroisocyanuric Acid Dry
Label: OXIDIZER (5.1)
Class: 5.1
Packing group: II

15. Regulatory information

USA Reported in the EPA TSCA Inventory

Sara 313 Not listed
Sara (311, 312) hazard class This product is categorized as an immediate health hazard, and fire and reactivity physical hazard

- 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 waste number: D001.

- Workplace Classification This product is considered hazardous under the OSHA Hazard Communication Standard (29CFR 1910.1200).

EU Reported in EINECS

Australia Listed in AICS

China inventory Listed

Korea KE-34101

Philippines Listed in PICCS

16. Other information

This data sheet contains changes from the previous version in section(s)

Product name, 1

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End of safety data sheet