MATERIAL SAFETY DATA SHEET

Product Name **Nava Multi-Functional Chlorinating Granules**
Product id 2007MN
Revision date 28/01/2007 **Revision:** 1

1. Identification of the substance & the company

Chemical name Sodium dichloroisocyanurate,dihydrate

Synonym(s) Sodium dichlor; Sodium dichloroisocyanurate,dihydrate; Sodium dichloro-s-triazinetrione dihydrate; CDB Clearon; Troclosene sodium, dehydrate

Chemical formula $NaCl_2(NCO)_3x2H_2O$

Chemical family Chloroisocyanurate

Molecular weight 256

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
SODIUM DICHLOROISO CYANURATE, DIHYDRATE 51580-86-0	99-100	Not determined	Not determined
SODIUM CHLORIDE 7647-14-5	0-1	Not determined	Not determined

3. Hazards identification

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Revision date	28/01/2007 **Revision:** 1

3. Hazards identification

Emergency overview

White granules
Corrosive. May be fatal if inhaled
Causes irreversible eye damage
Harmful if absorbed through skin or swallowed
Strong oxidizing agent

Potential environmental effects

The product is toxic to fish and aquatic organisms

Potential Health Effects:

- Eye Contact

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

- Skin contact

Dermal exposure can cause severe irritation and/or burns characterized by redness, swelling and scab formation.
Prolonged skin exposure may cause permanent damage.

- 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 = 2, Fire = 0, Reactivity = 1.
Special Hazard Warning: OXIDIZER

HMIS Ratings (Scale 0-4)

Health = 3, Fire = 0, Reactivity = 1.

MATERIAL SAFETY DATA SHEET

Product Name	**Nava Multi-Functional Chlorinating Granules**
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Revision date	28/01/2007 **Revision:** 1

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.
Note to physician	Probable mucosal damage may contraindicate the use of gastric lavage.
Medical conditions aggravated by exposure	Asthma, respiratory and cardiovascular diseases.

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 and CO.

6. Accidental release measures

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Revision date 28/01/2007 **Revision:** 1

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.

- **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 suppresed by the use of water fog.

7. Handling and storage

Handling

Do not take internally.
Avoid contact with skin, eyes, and clothing.
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").
Do not store at temperatures above 60°C/140°F.
Product has an indefinite shelf-life limitation.

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Revision date	28/01/2007 **Revision:** 1

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:
A respiratory protection program meeting OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use.

- Respiratory protection	When dusty conditions are encountered, wear a NIOSH/OSHA full-face respirator with chlorine cartridges for protection againts 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	Impervious body covering clothes, boots and neoprene apron

Hygiene measures Safety shower and eye bath should be provided. Do not eat, drink or smoke until after-work showering and changing clothes.

9. Physical and chemical properties

Appearance	White granules
Odor	Mild chlorine-like
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	25 g/100ml at 30°C
Bulk density	0.9-0.95 g/cc
Specific gravity	0.96
pH	6-6.5 (1% solution)
Decomposition temperature	Begins to lose 1 mole water at approximately 50°C; second mole water at 95°C; Decomposes at 240-250°C

10. Stability and reactivity

Stability	Stable under normal conditions Do not package in paper or cardboard. Begins to lose one mole of water at approximately 50°C
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

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Product Name	**Nava Multi-Functional Chlorinating Granules**
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10. Stability and reactivity

Hazardous decomposition products	Nitrogen trichloride, chlorine, carbon monoxide
Hazardous polymerization	Will not occur
Summary of Reactivity:	Oxidizer: Yes Organic Peroxide: No Pyroforic: No Water Reactive: No

11. Toxicological information

Acute toxicity:	
- Rat oral LD50	735 mg/kg
- Rabbit dermal LD50	>2000 mg/kg
- Rat inhalation LC50	>50 mg/m³/1 hour
- Eye irritation (rabbit)	Corrosive
- Dermal irritation (rabbit)	Corrosive
- Dermal sensitization	Not a sensitizer
Immediately Dangerous to Life or Health (IDLH)	No level has been established for the components or the product itself.
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	Chronic inhalation exposure may cause impairment of lung function and permanent lung damage.
Mutagenicity	Not mutagenic in five Salmonella strains with or without metabolic activation.
Carcinogenicity	Not classified by IARC, OSHA, EPA. Not included in NTP 11th Report on Carcinogens.
Reproductive toxicity	Sodium dichloroisocyanuric acid when given orally to pregnant mice from day 6 to day 15 of gestation, did not induce any significant teratogenic effects.

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12. Ecological information

Aquatic toxicity :

- 96 Hour-LC50, Fish	0.22 mg/l (Rainbow trout) 0.28 mg/l (bluegill sunfish)
- 48 Hour-LC50, Daphnia magna	0.2 mg/l

Avian toxicity:

- Oral LD50, Bobwhite quail	730 mg/kg
- Oral LD50, Mallard duck	3300 mg/kg
- Dietary LC50, Mallard duck	>10,000 ppm
- Dietary LC50, Bobwhite quail	>10,000 ppm

13. Disposal considerations

Waste disposal

Care must be taken to prevent environmental contamination from the use of this material.
Observe all federal, state and local environmental regulations when disposing of this material.

14. Transportation information

DOT Not regulated

15. Regulatory information

USA Reported in the EPA TSCA Inventory

Sara (311, 312) hazard class This product is categorized as an immediate health hazard, and fire and reactivity physical hazard

- Massachusetts right-to-know list Listed

- Pennsylvania right to know list Listed

- WASTE CLASSIFICATIONS If this product becomes a waste, it does not meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D.

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Revision date	28/01/2007 **Revision:** 1

- Workplace Classification	This product is considered hazardous under the OSHA Hazard Communication Standard (29CFR 1910.1200).
EEC No.	220-767-7; 231-598-3
Japanese METI	ENCS Nos: 5-1043X, 1-236
Australia	Listed in AICS
Philippines	Listed in PICCS

16. Other information

The 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.
Additionally, if this Material Safety Data Sheet is more than three years old, you should contact NAVA Water products at the phone number listed below to make certain that this sheet is current.

Although the information and recommendations set forth herein (herinafter "information") are presented in good faith and believed to be correct as of the date hereof, NAVA Water Products makes no representations as to the completeness or accuracy thereof.
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In an event of discrepancy between the contents of this MSDS and the English version of it, the English version shall prevail.

End of safety data sheet