



MATERIAL SAFETY DATA SHEET

| | | |
|---------------|-------------------------------------|-------------|
| Product Name | Azure Quick Dissolving Shock | |
| Product id | 2007PB-AZ | |
| Revision date | 05/12/2006 | Revision: 2 |
| Supersedes | 23/03/2006 | |

1. Identification of the substance & the company

| | |
|-------------------------|--|
| Chemical name | Sodium dichloroisocyanurate, dihydrate |
| Synonym(s) | Sodium dichlor; Sodium dichloroisocyanurate, dihydrate; Sodium dichloro-s-triazinetriene dihydrate; Troclosene sodium, dehydrate |
| Chemical formula | $\text{NaCl}_2(\text{NCO})_3 \cdot 2\text{H}_2\text{O}$ |
| 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 DICHLOORISO CYANURATE, DIHYDRATE 51580-86-0 | 99-100 | Not determined | Not determined |
| SODIUM CHLORIDE 7647-14-5 | 0-1 | Not determined | Not determined |



MATERIAL SAFETY DATA SHEET

| | | |
|---------------|-------------------------------------|-------------|
| Product Name | Azure Quick Dissolving Shock | |
| Product id | 2007PB-AZ | |
| Revision date | 05/12/2006 | Revision: 2 |
| Supersedes | 23/03/2006 | |

3. Hazards identification

| | |
|--|--|
| Emergency overview | <i>White granuls or tablet-form product</i> <i>Corrosive. Causes irreversible eye damage</i> <i>May be fatal if inhaled</i> <i>Harmful if absorbed through skin or swallowed</i> <i>Strong oxidizing agent</i> |
| 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 | Azure Quick Dissolving Shock | |
| Product id | 2007PB-AZ | |
| Revision date | 05/12/2006 | Revision: 2 |
| Supersedes | 23/03/2006 | |

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. 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. |

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 | 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. Cool containers with water spray. Fire fighters should wear full protective clothing and self-contained breathing apparatus (SCBA) in positive pressure mode |
| Unusual fire and explosion hazards | When heated to decomposition, may release poisonous and corrosive fumes of nitrogen trichloride, chlorine and CO. |



MATERIAL SAFETY DATA SHEET

| | | |
|----------------------|-------------------------------------|--------------------|
| Product Name | Azure Quick Dissolving Shock | |
| Product id | 2007PB-AZ | |
| Revision date | 05/12/2006 | Revision: 2 |
| Supersedes | 23/03/2006 | |

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.

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.

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.

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 suppressed by the use of water fog.



MATERIAL SAFETY DATA SHEET

| | | |
|----------------------|-------------------------------------|--------------------|
| Product Name | Azure Quick Dissolving Shock | |
| Product id | 2007PB-AZ | |
| Revision date | 05/12/2006 | Revision: 2 |
| Supersedes | 23/03/2006 | |

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. |

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.

| | |
|-----------------------------------|--|
| - 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 granuls or tablet-form product |
| 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 |



MATERIAL SAFETY DATA SHEET

| | | |
|----------------------|-------------------------------------|--------------------|
| Product Name | Azure Quick Dissolving Shock | |
| Product id | 2007PB-AZ | |
| Revision date | 05/12/2006 | Revision: 2 |
| Supersedes | 23/03/2006 | |

| | |
|----------------------------------|--|
| 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 |
| 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/m ³ /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. |
|-----------------------------|---|



MATERIAL SAFETY DATA SHEET

| | | |
|---------------|-------------------------------------|-------------|
| Product Name | Azure Quick Dissolving Shock | |
| Product id | 2007PB-AZ | |
| Revision date | 05/12/2006 | Revision: 2 |
| Supersedes | 23/03/2006 | |

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

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 |
|-----|---------------|



MATERIAL SAFETY DATA SHEET

| | | |
|----------------------|-------------------------------------|--------------------|
| Product Name | Azure Quick Dissolving Shock | |
| Product id | 2007PB-AZ | |
| Revision date | 05/12/2006 | Revision: 2 |
| Supersedes | 23/03/2006 | |

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. |
| - 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

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

1



MATERIAL SAFETY DATA SHEET

| | |
|----------------------|-------------------------------------|
| Product Name | Azure Quick Dissolving Shock |
| Product id | 2007PB-AZ |
| Revision date | 05/12/2006 |
| Supersedes | 23/03/2006 |

Revision: 2

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 (hereinafter "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.

Information is supplied upon the condition that the persons receiving same will make their own determination as to its safety and suitability for their purposes prior to use.

In no event will NAVA Water Products be responsible for damages of any nature whatsoever resulting from the use of or reliance upon information.

NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESSED OR IMPLIED, OF MERCHANT ABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE, ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH THE INFORMATION REFERS.

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



MATERIAL SAFETY DATA SHEET

Product Name Azure Stain & Scale Remover
Product id 8675-AZ
Revision date 17/09/2007

Revision: 1

1. Identification of the substance & the company

Chemical name This product is a formulation. The active Ingredients calculated as Tetrasodium Ethylenediaminetetraacetate 39%

Type of product and use Chelating agent

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 |
|--|----------|-----------------------------|-----------------------------|
| Tetrasodium salt of Ethylenediaminetetraacetic Acid 64-02-8 | 37 | Not determined | Not determined |
| Disodium Ethylenediaminediacetate 38011-25-5 | 1 | Not determined | Not determined |
| Trisodium Ethylenediaminetriacetate 19019-43-3 | 1 | Not determined | Not determined |
| Trisodium Nitrilotriacetate 5064-31-3 | 1 | Not determined | Not determined |
| Sodium Hydroxide 1310-73-2 | 1 | 2 mg/m ³ ceiling | 2 mg/m ³ ceiling |
| Sodium Glycolate 2836-32-0 | 3 | Not determined | Not determined |
| Water 7732-18-5 | 56 | Not determined | Not determined |



MATERIAL SAFETY DATA SHEET

Product Name **Azure Stain & Scale Remover**
Product id 8675-AZ
Revision date 17/09/2007

Revision: 1

3. Hazards identification

Emergency overview

*Light yellow liquid with Amine odor
Causes severe burns to eyes, mouth and throat
Irritant to skin
May cause lungs damage*

Potential Health Effects:

- Eye Contact

May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur. Mist may cause eye irritation

- Skin contact

Prolonged contact may cause slight skin irritation with local redness. Repeated contact may cause skin burns. Symptoms may include pain, severe local redness, swelling and tissue damage. Mist may cause skin irritation.

- Ingestion

May result in gastrointestinal irritation or ulceration or in burns of the mouth and throat. Aspiration into the lungs may occur during ingestion or vomiting, causing tissue damage or lung injury

NFPA Ratings (Scale 0-4)

Health = 3, Fire = 0, Reactivity = 0

4. First-aid measures

Eye contact

Holding the eyelids apart, flush eyes promptly with copious flowing water for at least 20 minutes. 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 if irritation occurs and persists.

Inhalation

In case of inhalation, remove person to fresh air.
Keep him quiet and warm. Apply artificial respiration if necessary and get medical attention immediately.

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.



MATERIAL SAFETY DATA SHEET

| | | |
|----------------------|--|--------------------|
| Product Name | Azure Stain & Scale Remover | |
| Product id | 8675-AZ | |
| Revision date | 17/09/2007 | Revision: 1 |

| | |
|--------------------------|--|
| Note to physician | Corrosive. No specific antidote. In case of ingestion DO NOT induce vomiting. Treat symptomatically and supportively. |
|--------------------------|--|

5. Fire - fighting measures

| | |
|---|---|
| Note: | The material will not burn until the water has evaporated. Residue can burn |
| Flash point | Not applicable |
| Flammable/Explosion limits | Not applicable |
| Auto-ignition temperature | Not applicable |
| Suitable extinguishing media | Carbon dioxide, foam, Water spray and dry chemical powder |
| Fire fighting procedure | In closed stores, provide fire-fighters with self-contained breathing apparatus in positive pressure mode |
| Unusual fire and explosion hazards | None known |

6. Accidental release measures

| | |
|----------------------------------|--|
| Personal precautions | Evacuate area. Keep upwind. Wear appropriate safety clothing and eye/face protection (see Section 8) |
| Methods for cleaning up | Absorb or contain liquid with sand, earth or spill control material. Shovel up and place in labelled, sealable container for subsequent safe disposal. |
| Environmental precautions | Prevent from entering into soil, ditches, sewers waterways and/or groundwater. |

7. Handling and storage

| | |
|-----------------|--|
| Handling | Keep containers tightly closed. Avoid eye contact Avoid breathing mist and any other bodily contact. Use only in area provided with appropriate exhaust ventilation. |
| Storage | Do not store in: Zinc, Aluminum, Carbon steel, Copper, Copper alloys, Galvanized containers, Nickel. Storage temperature 0-120°F (-17.8-48.9°C) |



MATERIAL SAFETY DATA SHEET

Product Name **Azure Stain & Scale Remover**
Product id 8675-AZ
Revision date 17/09/2007

Revision: 1

8. Exposure controls / personal protection

Ventilation requirements Good general ventilation.

Personal protective equipment:

- Respiratory protection Approved respirator
- Hand protection Protective gloves
- Eye protection Chemical safety goggles
- Skin and body protection Body covering clothes and boots

Hygiene measures Safety shower and eye bath should be provided. Do not eat, smoke or drink where material is handled, processed or stored. Wash hands carefully before eating or smoking.

9. Physical and chemical properties

Appearance Light yellow liquid
Freezing point/range -25°C (-13°F)
Boiling point/range 106°C (223 °F)
Vapour pressure Water
Vapor density Same as water
Solubility:
- Solubility in water Soluble
Specific gravity 1.31(25°C)
Partition coefficient
(n-octanol/water) Log Pow - <3

10. Stability and reactivity

Stability Stable under recommended storage conditions.

Materials to avoid Strong oxidizers, Zinc, Aluminum, Carbon steel, Copper, Copper alloys, Galvanized containers, Nickel. Flammable Hydrogen may be generated from contact with metals such as Aluminum

Decomposition Decomposes when heated or dampened, releasing oxygen and heat

Conditions to avoid High temperatures

Hazardous decomposition products NOx, CO, CO2, Ammonia



MATERIAL SAFETY DATA SHEET

| | | |
|---------------|--|--------------------|
| Product Name | Azure Stain & Scale Remover | |
| Product id | 8675-AZ | |
| Revision date | 17/09/2007 | Revision: 1 |

Hazardous polymerization Will not occur

11. Toxicological information

Acute toxicity:

| | |
|----------------------|-------------------|
| - Rat oral LD50 | 3030 mg/kg (male) |
| - Rabbit dermal LD50 | > 5000 mg/kg |

Mutagenicity Minimal effects reported are likely due to trace metal deficiencies resulting from chelation by EDTA

Carcinogenicity Not included in NTP 11th Report on Carcinogens
IARC Group 2B (animal sufficient evidence, human limited evidence)
Listed as a potential carcinogen for hazard communication purposes under OSHA standard 20 CFR 1910.1200

Teratogenicity Birth defects in laboratory animals were observed at doses that were toxic to the mother. These effects are likely associated with zinc deficiency due to chelation

12. Ecological information

Aquatic toxicity :

| | |
|--------------|--|
| - LC50, fish | >100 mg/l (Fathead minnow) 1030 mg/l (Bluegill) |
|--------------|--|

Biodegradation Not biodegradable under aerobic conditions (ThOD<2.5%)

Bioaccumulative potential BCF<100

13. Disposal considerations

Waste disposal Observe all federal, state and local environmental regulations when disposing of this material
Do not dump into sewers, on the ground, or into any body of water

14. Transportation information

DOT Not regulated



MATERIAL SAFETY DATA SHEET

| | | |
|---------------|--|--------------------|
| Product Name | Azure Stain & Scale Remover | |
| Product id | 8675-AZ | |
| Revision date | 17/09/2007 | Revision: 1 |

15. Regulatory information

USA All the ingredients in this preparation are listed in the EPA TSCA Inventory.

- Pennsylvania right to know list Some of the ingredients are listed

Canada CPR statement: this product has been classified in accordance with the hazard criteria of the Canadian controlled products regulations (CPR) and the MSDS contains all the information required by the CPR

- WHMIS hazard class
D2A very toxic materials
D2B toxic materials
E corrosive material

16. Other information

Although the information and recommendations set forth herein (hereinafter "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.

Information is supplied upon the condition that the persons receiving same will make their own determination as to its safety and suitability for their purposes prior to use.

In no event will NAVA Water Products be responsible for damages of any nature whatsoever resulting from the use of or reliance upon information.

NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESSED OR IMPLIED, OF MERCHANT ABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE, ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH THE INFORMATION REFERS.

In an event of discrepancy between the contents of this MSDS and the English version of it, the English version shall prevail.

Prepared for
NAVA Water Products
95 MacCorkle Ave. SW,
South Charleston, WV 25303 , USA
Tel: (304) 746-3000

End of safety data sheet