

Material Safety Data Sheet

Material Name: Isocyanuric Acid, Cyanuric Acid

ID: CI-205

*** Section 1 - Chemical Product and Company Identification ***

Chemical Name: Isocyanuric Acid, Technical Granular and Powder

Product Use: For Commercial Use

Synonyms: Cyanuric acid; Tricarbimide; Triacyanic acid

Supplier Information

Chem One Ltd.

8017 Pinemont Drive, Suite 100

Houston, Texas 77040-6519

Phone: (713) 896-9966

Fax: (713) 896-7540

Emergency # (800) 424-9300 or (703) 527-3887

General Comments: FOR COMMERCIAL USE ONLY; NOT TO BE USED AS A PESTICIDE.

NOTE: Emergency telephone numbers are to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure, or accident involving chemicals. All non-emergency questions should be directed to customer service.

*** Section 2 - Composition / Information on Ingredients ***

CAS #	Component	Percent
108-80-5	Isocyanuric Acid	> 98

Component Information/Information on Non-Hazardous Components

This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

*** Section 3 - Hazards Identification ***

Emergency Overview

Isocyanuric Acid is a white granular powder. Exposure to dusts may irritate eyes, skin, and respiratory tract. As a finely-divided organic compound, the accumulation of dusts of this product can create a serious hazard of air/dust explosion. When heated to decomposition, this product may emit very toxic fumes of carbon monoxide, carbon dioxide and nitrogen oxides. Use extinguishing media suitable for surrounding fire.

Hazard Statements

CAUTION! MAY BE HARMFUL IF INHALED OR INGESTED. MAY CAUSE EYE, SKIN AND RESPIRATORY IRRITATION. Avoid breathing dusts or fumes. Avoid contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Do not take internally. Wash thoroughly after handling.

Potential Health Effects: Eyes

Exposure to particulates of this Isocyanuric Acid may cause mild irritation of the eyes with symptoms such as stinging, tearing and redness.

Potential Health Effects: Skin

May cause mild skin irritation and redness. Repeated or prolonged contact may cause dermatitis (red, dry, itchy skin).

Potential Health Effects: Ingestion

Ingestion of this Isocyanuric Acid (especially in large volumes) can irritate the tissues of the mouth, esophagus, and other tissues of the digestive system. Symptoms of exposure can include vomiting, diarrhea, and nausea.

Potential Health Effects: Inhalation

Breathing dusts or particulates generated by this Isocyanuric Acid can lead to irritation of the nose, throat or respiratory system. Symptoms of severe inhalation overexposures may include burning sensation, coughing, wheezing, shortness of breath, headache, nausea and vomiting.

HMIS Ratings: Health Hazard: 2* Fire Hazard: 1 Physical Hazard: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

*** Section 4 - First Aid Measures ***

First Aid: Eyes

In case of eye contact, flush with plenty of water for 15 minutes. If irritation persists, seek medical attention.

First Aid: Skin

Remove all contaminated clothing. For skin contact, wash thoroughly with soap and water for at least 20 minutes. Seek immediate medical attention if irritation develops or persists.

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*** Section 4 - First Aid Measures (Continued)***

First Aid: Ingestion

DO NOT INDUCE VOMITING. Have victim rinse mouth, if person is conscious. Never give anything by mouth to a victim who is unconscious or having convulsions. Contact a physician or poison control center if adverse affect occurs.

First Aid: Inhalation

Remove source of contamination or move victim to fresh air. Apply artificial respiration if victim is not breathing. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Administer oxygen if breathing is difficult. Get immediate medical attention.

First Aid: Notes to Physician

Treatment is symptomatic and supportive. There is no specific antidote.

*** Section 5 - Fire Fighting Measures ***

Flash Point: Not combustible.

Method Used: Not applicable.

Upper Flammable Limit (UEL): Not applicable.

Lower Flammable Limit (LEL): Not applicable.

Auto Ignition: Not applicable.

Flammability Classification: Not applicable.

Rate of Burning: Not applicable.

General Fire Hazards

It is important to note that as with all organic solids, large dust clouds of this product have the potential to ignite explosively. When involved in a fire, this material may decompose and produce irritating vapors, acrid smoke and toxic gases.

Hazardous Combustion Products

When heated to decomposition product emits toxic fumes of Isocyanuric Acid gas, carbon monoxide, carbon dioxide and nitrogen oxides.

Extinguishing Media

Use any method suitable for the surrounding fire and other materials involved in the fire.

Fire Fighting Equipment/Instructions

Firefighters should wear full protective clothing including self-contained breathing apparatus.

NFPA Ratings: Health: 2 Fire: 1 Reactivity: 0 Other:

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

*** Section 6 - Accidental Release Measures ***

Containment Procedures

Stop the flow of material, if this can be done without risk. Contain the discharged material. . If sweeping of a contaminated area is necessary use a dust suppressant agent, which does not react with product (see Section 10 for incompatibility information).

Clean-Up Procedures

Small releases can be cleaned-up in gloves, goggles and suitable body protection. Shovel the material into waste container. Thoroughly wash the area after a spill or leak clean-up. In case of a large spill (in which excessive dusts can be generated), clear the affected area, protect people, and respond with trained personnel. Place all spill residues in an appropriate container and seal. Thoroughly wash the area after a spill or leak clean-up.

Evacuation Procedures

Evacuate the area promptly and keep upwind of the spilled material. Isolate the spill area to prevent people from entering. Keep materials which burn away from spilled material. In case of large spills, follow all facility emergency response procedures.

Special Procedures

Remove soiled clothing and launder before reuse. Avoid all skin contact with the spilled material. Have emergency equipment readily available.

*** Section 7 - Handling and Storage ***

Handling Procedures

Do not breathe dust. Avoid all contact with skin and eyes. Wherever dust clouds may be generated, eliminate sparks, flames and other ignition sources. Use this product only with adequate ventilation. Wash thoroughly after handling. Care should be taken to avoid the accumulation of dusts, which can create a serious dust-explosion hazard. All equipment used in the handling of this material should be electrically grounded.

Storage Procedures

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Keep container tightly closed when not in use. Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Material should be stored in secondary containers or in a diked area, as appropriate. Keep this product in an air-tight container. (continued on following page)

Storage Procedures

Store containers away from incompatible chemicals (see Section 10, Stability and Reactivity). Storage areas should be made of fire-resistant materials. Post warning and "NO SMOKING" signs in storage and use areas, as appropriate.

Use corrosion-resistant structural materials, lighting, and ventilation systems in the storage area. Floors should be sealed to prevent absorption of this material. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged. Have appropriate extinguishing equipment in the storage area (i.e., sprinkler system, portable fire extinguishers).

Empty containers may contain residual particulates; therefore, empty containers should be handled with care. Never store food, feed, or drinking water in containers that held this product. Keep this material away from food, drink and animal feed. Do not store this material in open or unlabeled containers. Limit quantity of material stored.

*** Section 8 - Exposure Controls / Personal Protection ***

Exposure Guidelines

A: General Product Information

No ACGIH, NIOSH or OSHA guidelines listed for this product.

B: Component Exposure Limits

There are no ACGIH, NIOSH or OSHA guidelines listed for this product's components. **The exposure limits given are for Particulates Not Otherwise Classified (PNOC).**

OSHA: 15 mg/m³ TWA (Total dust)
5 mg/m³ TWA (Respirable fraction)

DFG MAKs 4 mg/m³ TWA (Inhalable fraction)
1.5 mg/m³ TWA (Respirable fraction)

Engineering Controls

Use mechanical ventilation such as dilution and local exhaust. Use a corrosion-resistant ventilation system and exhaust directly to the outside. Supply ample air replacement. Provide dust collectors with explosion vents.

PERSONAL PROTECTIVE EQUIPMENT

The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132). Please reference applicable regulations and standards for relevant details.

Personal Protective Equipment: Eyes/Face

Wear safety glasses with side shields or chemical goggles. If necessary, refer to U.S. OSHA 29 CFR 1910.133.

Personal Protective Equipment: Skin

Wear appropriate work gloves for type of operation. Gloves should be tested to determine their suitability for prolonged contact with this material. If necessary, refer to U.S. OSHA 29 CFR 1910.138.

Personal Protective Equipment: Respiratory

None required where adequate ventilation conditions exist. No specific guidelines are available. If airborne concentrations are above the applicable exposure limits, use NIOSH-approved respiratory protection. An approved dust and mist air-purifying respirator may be adequate. If respiratory protection is needed, use only protection authorized in the U.S. Federal OSHA Standard (29 CFR 1910.134), applicable U.S. State regulations. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (1910.134-1998). Personal Protective Equipment: General Have an eyewash fountain and safety shower available in the work area. Use good hygiene practices when handling this material including changing and laundering work clothing after use.

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*** Section 9 - Physical & Chemical Properties ***

Physical Properties: Additional Information

The data provided in this section are to be used for product safety handling purposes. Please refer to Product Data Sheets, Certificates of Conformity or Certificates of Analysis for chemical and physical data for determinations of quality and for formulation purposes.

Appearance: White granular powder	Odor: Odorless
Physical State: Solid	pH: 4.8 (saturated aqueous solutions)
Vapor Pressure: Negligible.	Vapor Density: Not applicable
Boiling Point: Sublimes at > 329.12 deg C (625 deg F)	Melting Point: 360 deg C (680 deg F)
Solubility (H2O): 0.3 g/100 mL at 25 deg C	Specific Gravity: 1.768 (water = 1)
Freezing Point: Not applicable	Particle Size: Not available
Softening Point: Not applicable	Evaporation Rate: Not applicable
Bulk Density: 0.73-0.83 g/cc	Molecular Weight: 129.09
Percent Volatile: Not available	Chemical Formula: C3H3N3O3

*** Section 10 - Chemical Stability & Reactivity Information ***

Chemical Stability

Isocyanuric Acid is normally stable. Isocyanuric Acid is hygroscopic; it absorbs moisture from air.

Chemical Stability: Conditions to Avoid

Moisture, heat and incompatible materials.

Incompatibility:

Incompatible with strong oxidizing agents. Isocyanuric Acid, Ammonia-chlorine mixtures are explosive if warmed or if chlorine is in excess, owing to formation of nitrogen trichloride. Hydrazine, hydroxylamine and calcium nitride ignite in chlorines such as Isocyanuric Acid, and nitrogen triiodide may explode on contact with chlorines. During chlorination of impure biuret in water at 20 degrees C, a violent explosion occurred. This was attributed to conversion of the cyanuric acid impurity (3%) to nitrogen trichloride and spontaneous explosion of the latter. During chlorination of 2,4,6-triketo-hexahydro-1,3,5-triazine (cyanuric acid), presence of the diaminoketo and aminodiketo analogues as impurities, or of an unusually low pH value, may lead to formation of nitrogen trichloride.

Hazardous Decomposition

When heated to decomposition, product emits toxic fumes of Isocyanuric acid gas, nitrogen oxides, carbon oxides.

Hazardous Polymerization

Will not occur.

*** Section 11 - Toxicological Information ***

Acute and Chronic Toxicity

A: General Product Information

Standard Draize Test (Skin-Rabbit) 500 mg/24 hours: Mild; Rinsed with Water (Eye-Rabbit) 20 mg/24 hours: Mild

May cause eye, skin, nose, throat and respiratory tract irritation.

Chronic: Long term skin overexposure to this product may lead to dermatitis (red, itchy skin).

B: Component Analysis - LD50/LC50

Isocyanuric Acid (108-80-5):

LD₅₀ (Oral-Rat) 7700 mg/kg; LD₅₀ (Oral-Mouse) 3400 mg/kg; LD₅₀ (Oral-Mammal-species unspecified) > 5 gm/kg; LD₅₀ (Intravenous-Rat) > 100 mg/kg; LD₅₀ (Intravenous-Mouse) > 500 mg/kg; LD₅₀ (Skin-Rabbit) > 5 gm/kg

B: Component Analysis - TDLo/TCLo/LD/LDLo

Isocyanuric Acid (108-80-5):

TDLo (oral, rat) = 55 g/kg/ 82 weeks/ intermittent; equivocal tumorigenic agent; TDLo (subcutaneous, rat) = 27 g/kg/ 2 years/ intermittent; equivocal tumorigenic agent; TDLo (oral, mouse) = 130 g/kg/ 2 years/ intermittent; equivocal tumorigenic agent; TDLo (skin, mouse) = 2400 mg/kg; equivocal tumorigenic agent; TDLo (skin, mouse) = 138 g/kg/ 2 years/ intermittent; equivocal tumorigenic agent; TD (oral, rat) = 60,750 mg/kg/ 81 weeks/ intermittent; equivocal tumorigenic agent; TD (subcutaneous, rat) = 36 g/kg/ 2 years/ intermittent; equivocal tumorigenic agent.

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*** Section 11 - Toxicological Information (Continued) ***

Carcinogenicity

A: General Product Information

150-300 mg/kg Isocyanuric Acid was fed to rats, cysticerian sarcomas were observed between 19-25 months. Fibroadenoma of mammary glands noted in 2 females. In mice fed 280-310 mg/kg, myeloid leukosis observed in 2/14 mice that had survived 23 months. Feeding studies in rats and mice suggest lower tumorigenic potential. Studies of subcutaneous application in mice at an application rate of 550 to 620 mg/kg show no tumor induction. Dermal application of two drops of 20% Isocyanuric Acid in benzene 3 times/week to mice is reported in which two animals developed liver tumors after 22 months.

B: Component Carcinogenicity

No information available.

Epidemiology

No information available.

Neurotoxicity

No information available.

Mutagenicity

No information available.

Teratogenicity

Studies of the teratogenic and reproductive effects of Isocyanuric Acid in mice and rats examined show no dominant lethal response nor any significant difference in reproductive parameters between the experimental and control groups.

Other Toxicological Information

No information available.

*** Section 12 - Ecological Information ***

Ecotoxicity

A: General Product Information

No information available.

B: Ecotoxicity

No ecotoxicity data are currently available for Isocyanuric Acid.

Environmental Fate

If released to the soil, Isocyanuric Acid is expected to be highly mobile. If released to water, it will be essentially nonvolatile. Isocyanuric acid biodegrades readily under a wide variety of natural conditions. If released to the atmosphere, it will exist in both the vapor and particulate phases. In the vapor phase, Isocyanuric Acid will degrade in the ambient atmosphere by reaction with photochemically produced hydroxyl radicals with an estimated half-life of 102 days. Physical removal of particulate Isocyanuric Acid from air is likely to occur through wet and dry deposition. Isocyanuric Acid is highly toxic to certain strains of barley and radishes.

*** Section 13 - Disposal Considerations ***

US EPA Waste Number & Descriptions

A: General Product Information

Waste, if discarded, is not expected to be a characteristic hazardous waste under RCRA.

B: Component Waste Numbers

No EPA Waste Numbers are applicable for this product's components.

Disposal Instructions

Review federal, provincial, and local government requirements prior to disposal. Disposal by controlled incineration or secure landfill may be acceptable.

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*** Section 14 - Transportation Information ***

NOTE: The shipping classification information in this section (Section 14) is meant as a guide to the overall classification of the product. However, transportation classifications may be subject to change with changes in package size. Consult shipper requirements under I.M.O., I.C.A.O. (I.A.T.A.) and 49 CFR to assure regulatory compliance.

US DOT Information

Shipping Name: Non-regulated.
Hazard Class: Not Applicable
UN/NA #: Not Applicable
Packing Group: Not Applicable
Required Label(s): None
Additional Info.: None.

International Air Transport Association (IATA)

For Shipments by Air transport: We classify this product as hazardous (Class 9) when shipped by air because 49 CFR 173.140 (a). "For the purposes of this subchapter, miscellaneous hazardous material (Class 9) means a material which presents a hazard during transportation, but which does not meet the definition of any other hazard class. This class includes: (a) Any material which has an anesthetic, noxious, or other similar property which could cause extreme annoyance or discomfort to a flight crew member so as to prevent the correct performance of assigned duties."

UN: UN 3077

Proper Shipping Name: Environmentally hazardous substance, solid, n.o.s. (isocyanuric acid)

Hazard Class: 9

Packing Group: III

Passenger & Cargo Aircraft Packing Instruction: 911

Passenger & Cargo Aircraft Maximum Net Quantity: No Limit

Limited Quantity Packing Instruction (Passenger & Cargo Aircraft): Y911

Limited Quantity Maximum Net Quantity (Passenger & Cargo Aircraft): 30 kg

Special Provisions: A97

ERG Code: 9L

International Maritime Organization (I.M.O.) Classification

Isocyanuric Acid is not regulated under I.M.O.

*** Section 15 - Regulatory Information ***

US Federal Regulations

A: General Product Information

No additional information.

B: Component Analysis

This material contains no chemical required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4):

Isocyanuric Acid (108-80-5)

SARA 302 (EHS TPQ) There are no specific Threshold Planning Quantities for Isocyanuric Acid. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lbs. (4,540 kg) therefore applies, per 40 CFR 370.20.

C: Sara 311/312 Tier II Hazard Ratings:

Component	CAS #	Fire Hazard	Reactivity Hazard	Pressure Hazard	Immediate Health Hazard	Chronic Health Hazard
Isocyanuric Acid	108-80-5	No	No	No	Yes	Yes

State Regulations

A: General Product Information

Other state regulations may apply.

B: Component Analysis - State

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS #	CA	FL	MA	MN	NJ	PA
Isocyanuric Acid	108-80-5	No	No	No	No	No	No

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*** Section 15 - Regulatory Information (Continued) ***

Other Regulations

A: General Product Information

Not applicable.

B: Component Analysis - Inventory

Component	CAS #	TSCA	DSL	EINECS
Isocyanuric Acid	108-80-5	Yes	Yes	Yes

C: Component Analysis - WHMIS IDL

Isocyanuric Acid is not on the Canadian Hazardous Products Act Ingredient Disclosure List

ANSI Labeling (Z129.1):

CAUTION! MAY CAUSE EYE IRRITATION. MAY CAUSE RESPIRATORY TRACT IRRITATION. PROLONGED OR REPEATED CONTACT MAY CAUSE SKIN IRRITATION. Avoid breathing dusts and mists. Do not breathe dust. Do not taste or swallow. Do not get on skin or in eyes. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Wear gloves, goggles, faceshields, suitable body protection, and NIOSH/MSHA-approved respiratory protection, as appropriate. **FIRST-AID:** In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. If inhaled, remove to fresh air. If ingested, do not induce vomiting. Get medical attention. **IN CASE OF FIRE:** Use water fog, dry chemical, CO₂, or "alcohol" foam. **IN CASE OF SPILL:** Absorb spill with inert material. Place residue in suitable container. Consult Material Safety Data Sheet for additional information.

*** Section 16 - Other Information ***

Other Information

Chem One Ltd. ("Chem One") shall not be responsible for the use of any information, product, method, or apparatus herein presented ("Information"), and you must make your own determination as to its suitability and completeness for your own use, for the protection of the environment, and for health and safety purposes. You assume the entire risk of relying on this Information. In no event shall Chem One be responsible for damages of any nature whatsoever resulting from the use of this product or products, or reliance upon this Information. By providing this Information, Chem One neither can nor intends to control the method or manner by which you use, handle, store, or transport Chem One products. If any materials are mentioned that are not Chem One products, appropriate industrial hygiene and other safety precautions recommended by their manufacturers should be observed. Chem One makes no representations or warranties, either express or implied of merchantability, fitness for a particular purpose or of any other nature regarding this information, and nothing herein waives any of Chem One's conditions of sale. This information could include technical inaccuracies or typographical errors. Chem One may make improvements and/or changes in the product (s) and/or the program (s) described in this information at any time. If you have any questions, please contact us at Tel. 713-896-9966 or E-mail us at Safety@chemone.com.

Key/Legend

EPA = Environmental Protection Agency; TSCA = Toxic Substance Control Act; ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration

Contact: Sue Palmer-Koleman, PhD

Contact Phone: (713)-896-9966

Revision log

08/04/00 3:50 PM SEP Changed company name, Sect 1 and 16, from Corporation to Ltd.

05/30/01 9:31 AM HDF Checked exposure limits; made changes to Sect 9; overall review, add SARA 311/312 Haz Ratings.

08/20/01 12:40 PM CLJ Add Shipments by Air information to Section 14, Changed contact to Sue, non-800 Chemtrec Num.

02/15/02 11:01 AM HDF Addition of SARA Chronic Hazard Ratings .

09/16/03 9:45 AM HDF General review of entire MSDS. Up-graded Section 3 Health Hazard information, HMIS categories. Up-graded text in Section 4, First Aid Information; Added PNOC exposure limits and references to OSHA PPE CFRs in Section 8; Addition of currently available toxicity data to Section 11. Addition of Atmospheric Fate data to Section 12. Up-Dated Section 14 Transportation Information.

06/22/05 3:03pm SEP Update IATA Section 14

This is the end of MSDS # CI-205