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First Issue: November 29, 2001

Revised (Revision): February 24, 2004 (1.0)

Tn Chemical MSDS No.: B-176-US

MATERIAL SAFETY DATA SHEET

Section 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: 1,3,5,7-Tetramethylcyclotetra-siloxane

MSDS Number 8-176-US

Synonym(s):

MANUFACTURER

C Company Name: Tn Chemical Laboratories Inc.

Address: 8154-217, Uenohara, Uenohara-Machi,
Kitatsuru-Gun, Yamanashi, 409-0112 Japan

EMERGENCY TELEPHONE NUMBER

Tn Chemical Laboratories Inc.: Phone: +81-554-63-6600

8:30 am-4:30 pm Japan Time M-F

Section 2. COMPOSITION, INFORMATION ON INGREDIENTS

Ingredient **Formula Percentage CASRegtryNo.**

[1,3,5,7-Tetramethylcyclotetra-siloxane] | C₄H₁₆Si₄O₄ | Li2Q% | 2370-88-9 Section 3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Flammable liquid. Colorless.

Harmful and cause irritation by inhalation, ingestion and contact.

POTENTIAL HEALTH EFFECTS

PRIMARY ROUTE OF EXPOSURE

INHALATION: Maybe moderately irritate.

EYE CONTACT: Can cause mild eye irritation.

SKIN CONTACT: Can cause mild skin irritation.

INGESTION: Maybe moderately irritate.

CHRONIC TOXICITY/CARCINOGENICITY: No information found.

HAZARD Ratings RATINGS SYSTEM

Health: 2 0= No Hazard

Flammability: 4 1 = Slight Hazard

Reactivity: 1 2= Moderate Hazard

Protective Equipment: See 3 Serious Hazard

Section 8. 4 Severe Hazard

W= Water Reactive

NIA Not Applicable

1,3,5,7-Tetramethylcyclotetra-siloxane (TMCTS)

C₄H₁₆Si₄O₄

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Section 4. FIRST AID MEASURES

EYE CONTACT: In case of contact, immediately flush eyes with copious amounts of water for at least 15 minutes, separating upper and lower eyelids with fingers, until no evidence of chemical remains.

Remove contact lenses if easily possible. Get medical attention immediately.

SKIN CONTACT: In case of contact, immediately flush skin with copious amounts of water and soap, until no evidence of chemical remains (for at 3

least 15-20 minutes). Remove contaminated clothing and shoes immediately. Get medical attention, if needed.

INHALATION: If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

INGESTION: If ingested, wash out mouth with water. Get medical attention immediately. If person is conscious, give 1-2 glass of water and make vomiting. Do not make an unconscious person vomit or drink water. If person is unconscious, turn head to side.

NOTE TO PHYSICIAN: Treatment may vary with condition of victim and specifics of incident.

Section 5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

Flash Point and Method degrees-C: 25

Flammable Limits % lower: No data found.

Flammable Limits % upper: No data found.

Auto ignition Temperature degrees-C: 239

EXTINGUISHING MEDIA

Carbon dioxide / Dry chemical powder / Alcohol foam or Polymer foam

FIRE FIGHTING INSTRUCTIONS

Wear appropriate respirator and protective clothing to protect from contact with skin and eyes.

Stay upwind and keep out of low areas.

Fight fire from a safe distance (or from protected location).

Stop leak of material before attempting to extinguish fire if possible without risk.

Move container from fire area if it can be done without risk.

If impossible, use water spray for container and surrounding to cool down.

Cool container with water spray until well after the fire is out.

Decomposition may take place during a fire due to heat, and closed container may rupture.

Thermal decomposition may produce toxic fume of CO.

Avoid inhalation of material or combustion by-products.

I,3,5,7-Tetramethylcyclotetra-siloxane (TMCTS)

C₄H₁₆Si₄O₄

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Section 6. ACCIDENTAL RELEASE MEASURES

Alert those around the accident.

Keep unnecessary people away, isolate hazard area and deny entry.

Wear an appropriate respirator and other protective equipment.

Shut off all sources of ignition.

Avoid heat, flames, and sparks.

C Do not touch spilled material.

Stop leak if possible without risk.

Collect spilled material in closed container using non-sparking tools and transport outdoors.

Ventilate area and wash spill site after material pickup is complete.

Prevent from entering into sewers and drainage system.

Section 7. HANDLING AND STORAGE

Store and handle in accordance with all current regulations and standards.

HANDLING

Handle in closed systems/equipment, or mechanical exhaust ventilation required.

Wear appropriate respirator and other protective equipment.
Wash thoroughly after handling.
Keep away from heat, sparks, open flame, and incompatible substances.

STORAGE

Store in a tightly closed container.
Store in a cool, dry, well-ventilated place (at upright position).
Store away from direct sunlight.
Prevent from falling down to the ground.
Keep away from heat, sparks, open flame, and incompatible substances.
Avoid friction and physical shock.
I,3,5,7-Tetramethylcyclotetra-siloxane (TMCTS)
C4H16Si4O4

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Section 8. EXPOSURE CONTROLS, PERSONAL PROTECTION
ENGINEERING CONTROLS

Closed-systems/equipment or local exhaust ventilation required.

PERSONAL PROTECTIVE EQUIPMENT

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Safety goggle (splash resistant).
Provide an emergency eye wash fountain and quick drench shower in the immediate work area.
Chemical-resistant gloves and clothes.
Remove any chemical soaked clothing immediately.
Self-contained breathing apparatus with full facepiece should be available for emergency use.

EXPOSURE GUIDELINES

ACGIH THRESHOLD LIMIT \6°tLUE: Not established.

Section 9. PHYSICAL AND CHEMICAL PROPERTIES

CHEMICAL STABILITY

Stable under normal condition.
Moisture sensitive. (React with moisture in the air gradually.)

CONDITIONS TO AVOID

Heat, flames, sparks, other sources of ignition and incompatibles.
Friction.
Physical shock.
Direct sunlight.
High temperature.

INCOMPATIBILITY WITH OTHER MATERIALS:

Moisture.
I,3,5,7-Tetramethylcyclotetra-siloxane (TMCTS)

D

Eye/Face Protection:
Skin Protection:
Respiratory Protection:

D

C₄H₁₆Si₄O₄

Formula:	C ₄ H ₁₆ Si ₄ O ₄
Molecular Weight:	240.51
Color:	Colorless
Physical State:	Liquid
Boiling Point degrees-C:	134-135
Melting Point degrees-C:	—69
Specific Gravity:	D2014 0.9912
Solubility in Water:	Hydrolysis (moderately)
Solubility in Others:	Soluble in organic solvents such as alcohol, ether, toluene etc.
Section 10. STABILITY AND REACTIVITY	

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Strong oxidizing agents, strong acid, strong bases. /

HAZARDOUS DECOMPOSITION PRODUCTS: /

Thermal decomposition products : carbon monoxide, carbon dioxide and Si oxides.

¹
INTERNATIONAL (Ocean. IMDG).

PROPER SHIPPING NAME:
HAZARD CLASS:
SUBSIDIARY RISK:
U.N.IN.A. NUMBER:
LABEL:
INTERNATIONAL (Air. IATA).

Flammable liquid n.o.s.
(1,3,5,7-Tetramethylcyclotetra-siloxane)

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UN 1993

“Flammable Liquid”

PROPER SHIPPING NAME:
 HAZARD CLASS:
 SUBSIDIARY RISK:
 U.N.J.N.A. NUMBER:
 LABEL:

Flammable liquid n.o.s.
 (1, 3,5,7-Tetramethylcyclotetra-siloxane)

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UN 1993

“Flammable Liquid”

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 $C_4H_{16}Si_4O_4$

Section 11. TOXICOLOGICAL INFORMATION	
No LD50/LC50 information found relating to normal route df occupational exposure material. HEALTH EFFECTS Inhalation : Can cause irritation. Eye contact : Can cause irritation and conjunctivitis. \ Skin contact : Can cause irritation. Ingestion : Can cause irritation.	of this
Section 12. ECOLOGICAL INFORMATION	
No information found.	
Section 13. DISPOSAL CONSIDERATIONS	
Comply with all applicable federal, state and local regulations. Do not dump this material into sewers, on the ground or into any body of water.	

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Section 15. REGULATORY INFORMATION

Please refer to national measures that may be relevant.

Section 16. OTHER INFORMATION

Legal Disclaimer

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This is reminded that the above MSDS has been prepared based on the information and relevant data as far as we can obtained and believed to be accurate and reliable as of the date compiled.

This shall, however, only be referred to as a guideline.

Tn Chemical Laboratories Inc., therefore, shall not be held liable for any damage, loss or injury resulting from handling or from contact with the products.

In case of handling or treatment of the products in any special purposes and circumstances, it is strongly requested to take an appropriate safety measures so as to avoid any abnormalities.

Signature:

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Tn Chemical Laboratories Inc.

1,3,5,7-Tetraniethylcyclotetra-siloxane (TMCTS)

C₄H₁₆Si₄O₄

RESPONSIBILITY OF THIS MSDS
Responsible Division: Technology & Development Division
Responsible Person: Koichi Kiso / General Manager
REFERENCE
“Dangerous Goods Regulations 39 edition -(IATA)

“IMDG Code on CD-ROM version 5.0” (IMDG)