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Material Safety Data Sheet

Trimethylol propane

Section 1: Chemical Product and Company Identification

Molecular formula: C₆H₁₄O₃

CAS Nr: 77-99-6

EINECS: 201-074-9

Synonyms: Trimethylolpropane; Tris(hydroxymethyl)propane; 1,1,1-Tris-(hydroxymethyl)propane;
1,1,1-Trimethylolpropane; Trimethyloy propane; 1,1,1-tris(hydroxymethyl)propane;

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Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	%By Weight
TRIMETHYLOLPROPANE	77-99-6	99

Section 3: Hazards Identification

Emergency Overview:

CAUTION!

- May cause respiratory tract and eye irritation.
- Prolonged or repeated contact may dry skin and cause irritation.

Product Description

Appearance: White, waxy solid flake.

Odor: Odorless.

Potential health effects

Routes of exposure: Skin, eyes, inhalation, ingestion.

Immediate effects:

Skin:

Prolonged or repeated contact may dry skin and cause irritation.

Symptoms of exposure may include: Drying, cracking or inflammation of skin.

Eyes:

May cause eye irritation. Symptoms of exposure may include: Eye irritation or burning sensation.

Inhalation:

May cause respiratory tract irritation.

Symptoms of exposure may include: Nasal discharge, hoarseness, coughing, chest pain and breathing difficulty.

Ingestion:

Essentially non-toxic.

Reproductive:

No evidence of reproductive effects.

Carcinogenic:

No evidence of carcinogenicity.

Mutagenic:

Does not show mutagenic potential in most in vitro tests.

Teratogenic:

No evidence of birth defects.

Target organ effects: •

Overexposure (prolonged or repeated exposure) may cause:

Irritation of the respiratory tract

Drying of the skin

Local irritation at the site of exposure

Medical conditions which may

be aggravated by exposure:

Significant exposure to this chemical may adversely affect people with acute or chronic disease of the:

Respiratory Tract

Skin

Eyes

Section 4: First Aid Measures

Skin:

Immediately flush skin with plenty of water. Remove contaminated shoes and clothing.

Get medical attention if irritation develops and persists. Wash clothing before reuse.

Thoroughly clean shoes before reuse.

Eyes:

Immediately flush eyes with plenty of water for at least 15 minutes.

If easy to do, remove contact lenses, if worn. Get medical attention.

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration.

If breathing is difficult, give oxygen. Get medical attention.

Ingestion:

If large quantities of this material are swallowed, call a physician immediately.

Do NOT induce vomiting unless directed to do so by a physician.

Never give anything by mouth to an unconscious person. Get medical attention.

Section 5: Fire and Explosion Data

NFPA: Health: 1 Flammability: 1 Reactivity: 0

Flammable properties

Flash point (test method): > 99 C (> 210 F) (Closed Cup)

Flammable limits in air, % by volume:

Upper: 9.7%

Lower: 1.3

Autoignition temperature: Not Applicable

Products of combustion: Carbon Monoxide.

Extinguishing Media:

Use alcohol type aqueous film forming foam for large fires. Use CO₂ or dry chemical for small fires.

Fire Fighting Instructions:

Water spray should be used to cool fire-exposed structures and vessels. Water or foam may cause frothing.

Water spray can be used to reduce the intensity of flames and to dilute spills to a non-flammable mixture.

Keep personnel removed from and upwind of fire. If potential for exposure to vapors or products of combustion exists, wear full fire fighting turnout gear and NIOSH approved self-contained breathing apparatus.

Oxidizing chemicals may accelerate the burning rate in a fire situation.

Fire Fighting

Environmental Concerns:

Thoroughly decontaminate bunker gear and other fire-fighting equipment before re-use.

Section 6: Accidental Release Measures

Spill or Leak Instructions

See Section 8 for appropriate personal protective equipment.

Contain spill with dikes of soil or nonflammable absorbent to minimize contaminated area.

Avoid run-off into storm sewers and ditches leading to waterways.

If required, notify state and local authorities. Place leaking containers in well-ventilated area. Clean up spills by sweeping.

Keep unnecessary people away; isolate hazard area and deny entry. Stay upwind; keep out of low areas.

Assess the spill situation, as the spill may not evolve large amounts of hazardous airborne contaminants in many outdoor spill situations. It may be advisable in some cases to simply monitor the situation until spilled product is removed.

Section 7: Handling and Storage

Handling:

Use with adequate ventilation. Keep containers closed when not in use. Avoid breathing vapor. Avoid contact with eyes, skin or clothing.

Wash thoroughly with soap and water after handling.

Decontaminate affected clothing thoroughly before re-use.

Destroy contaminated leather clothing.

Dust from this material can form an explosive organic dust cloud.

If compressed air is used to transfer this material, special safety design considerations and procedures must be utilized to prevent potential fires and explosions. Avoid allowing particles to free-fall.

Caution: Flexible intermediate bulk containers can build static electrical charge while contents are being emptied or filled. Do not allow contents to free fall in areas where potential flammable air-vapor or air-dust mixtures exist. Use proper grounding procedures when transferring. For example, use of a grounded intermediate hopper or conveyor is recommended. Do not allow any ungrounded objects such as equipment, tools, rings, watches, etc. in the work area.

Storage:

Do not store with incompatible materials. See Section 10. Stability and Reactivity.

Keep all containers tightly closed when not in use. Store out of direct sunlight and on an impermeable floor.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:

General or dilution ventilation is frequently insufficient as the sole means of controlling employee exposure.

Local ventilation is usually preferred.

Protective Equipment

A safety shower and eyebath should be readily available.

Skin protection:

Wear impervious clothing and gloves to prevent contact. Nitrile rubber is recommended.

Other protective material may be used, depending on the situation, if adequate degradation and permeation data is available.

If other chemicals are used in conjunction with this chemical, material selection should be based on protection for all chemicals present.

Eye/face protection:

Wear chemical goggles when there is a reasonable chance of eye contact.

Respiratory protection:

Based on workplace contaminant level and working limits of the respirator, use a respirator approved by NIOSH.

The following is the minimum recommended equipment for an occupational exposure level.

To estimate an occupational exposure level see Section 3, Section 8 and Section 11.

For concentrations > 1 and < 10 times the occupational exposure level: Use air-purifying respirator with a full facepiece and HEPA particulate filters.

For concentrations more than 10 times the occupational exposure level and less than the lower of either 100 times the occupational exposure level or the IDLH: Use Type C full facepiece supplied-air respirator operated in positive-pressure or continuous-flow mode.

For concentrations > 100 times the occupational exposure level or greater than the IDLH level or unknown concentrations (such as in emergencies): Use self-contained breathing apparatus with full facepiece in positive-pressure mode or Type C positive-pressure full facepiece supplied-air respirator with an auxiliary positive-pressure self-contained breathing apparatus escape system. For escape: Use self-contained breathing apparatus with full facepiece or any respirator specifically approved for escape.

Section 9: Physical and Chemical Properties

Appearance: White, waxy solid flake.

Odor: Odorless.

pH: 5.6

Vapor Pressure: < 1 mm Hg at 20 deg C

Vapor Density (Air=1 @ 20°C): 4.63

Boiling Point (760 mmHgA): 285 C (545 F)

Melting Point: 59 C (138 F)

Solubility in Water @ 20°C: 100 %

Bulk Density: 0.6 - 0.8 g/cm³ at 20 deg C

Molecular Weight: 134.2

Section 10: Stability and Reactivity Data

Stability: Stable.

Conditions to Avoid: Avoid heat, flames, sparks, and other sources of ignition. Avoid generating dust.

Hazardous Combustion or

Decomposition Products:

Thermal decomposition products may include oxides of carbon.

Hazardous Polymerization: Hazardous polymerization will not occur.

Section 11: Toxicological Information

Acute Exposure:

Oral LD50: 14.1-14.7g/kg (rats); practically nontoxic to animals.

Inhalation LC50: >850 mg/m³ (rats, 4 hrs.) no mortality at this dose; slightly toxic to animals.

Skin:

Very slight irritation of rabbit skin (24-hr. exposure); practically nontoxic to animals (LD50, rabbits > 10 g/kg).

Eye: Slightly irritating to rabbit eyes.

Mutagenicity:

Not mutagenic in bacterial and mammalian cells *in vitro* (includes Ames Test; Chinese Hamster Lung Cell Assay).

No *in vivo* information available.

Carcinogenicity: No information.

Reproductive/Developmental Effects:

In the study described under Repeated Exposure,

no effect on reproduction or development was observed at dose levels up to 800mg/kg/day.

Section 12: Ecological Information

Ecotoxicity:

TMP exhibits low acute and chronic toxicity to aquatic species.

Fish (Cyprinodon variegatus),96-hr. LC50 = 14400ppm.

Fish (Alburnus alburnus), 96-hr. LC50 >1000ppm.

Fish (Leuciscus idus), 48-hr. LC50 >= 1000ppm.

Fish (Oryzias latipes), 96-hr. LC50 > 1000ppm.

Fish (Petromyzon marinus), 24-hr. LC0 >/= 5ppm.

Water flea (Daphnia magna), 48-hr. EC50 = 13000ppm.

Water flea (Daphnia magna), 48-hr. EC0 >/= 102 ppm.

Crustacean (Nitocra spinipes), 96-hr. EC50 >1000 ppm.

Algae (Selenastrum capricornutum), 72-hr. EC50 > 1000ppm.

Bacteria (Pseudomonas fluorescens), 24-hr. EC0 = 10000ppm.

The no effect concentration for water fleas (Daphnia magna) was greater than 1000ppm in a 21-day chronic study.

Environmental Fate:

Degradation:

In the Zahn Wellens Test for "inherent biodegradability", 70% biodegradation was observed in 7 days and 100% in 28 days. In tests for "ready biodegradability" (OECD Guidelines 301C,301D & 301E), 0 to 6% degradation was observed. Test durations ranged from 14 to 28 days. Hydrolysis half-life in water (pH 4, 7 or 9 at 25C) was greater than 1 year.

Bioaccumulation:

The log n-octanol/water partition coefficients are in the range -0.47 to -2.4. This suggests that TMP has low potential to bioaccumulate.

Section 13: Disposal Considerations

Dispose of spilled material in accordance with state and local regulations for waste that is non-hazardous by Federal definition. Note that this information applies to the material as manufactured; processing, use, or contamination may make this information inappropriate, inaccurate, or incomplete. Note that this handling and disposal information may also apply to empty containers, liners and rinsate. State or local regulations or restrictions are complex and may differ from federal regulations. This information is intended as an aid to proper handling and disposal; the final responsibility for handling and disposal is with the owner of the waste. See Section 9 - Physical and Chemical Properties.

Section 14: Transport Information

US Department of Transportation:

Shipping name: TRIMETHYLOLPROPANE

Hazard class: Not regulated

ICAO/IATA:

Proper Shipping Name: TRIMETHYLOLPROPANE

Hazard Classification: Not Regulated.

IMDG:

Proper Shipping Name: TRIMETHYLOLPROPANE

Hazard Class: Not Regulated.

Flash point (test method): > 99 C (> 210 F) (Closed Cup)

Transport Canada

Proper Shipping Name: PRODUCT IS NOT REGULATED BY IAW TDG REGULATIONS

Trade Information

Schedule B Code (export): 2905.41.0000

Section 15: Other Regulatory Information

U.S. STATE REGULATIONS

Chemicals associated with the product which are subject to the state right-to-know regulations are listed along with the applicable state(s):

U.S. FEDERAL REGULATIONS

TSCA Inventory: We certify that all components are either on the TSCA inventory or qualify for an exemption.

Acute health: Yes

Chronic health: No

Fire: No

Sudden release of pressure:No

Reactive: No

AUSTRALIA,CHINA,CANADA,EUROPE,KOREA,PHILIPPINES, JAPAN

CANADIAN REGULATIONS

WHMIS Classification: Not a WHMIS controlled product.

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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