

SAFETY DATA SHEET



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2,2,4-TRIMETHYLPENTANE

SDS No. M0207

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: 2,2,4-Trimethylpentane

Synonyms: Isooctane; Isobutyltrimethylmethane; TMP

Recommended Use: This product is recommended for laboratory and manufacturing use only. It is not recommended for drug, food or household use.

2. HAZARDS IDENTIFICATION



Classification:

Flammable Liquids: GHS Category 2

Skin Irritation: GHS Category 2

Specific Target Organ Toxicity, Single Exposure: GHS Category 3

Aspiration Hazard: GHS Category 1

Acute Aquatic Toxicity: GHS Category 1

Chronic Aquatic Toxicity: GHS Category 1

Label Elements

Signal Word: DANGER!

Hazard Statements:

- H225 – Highly flammable liquid and vapor.
- H304 – May be harmful if swallowed and enters airways.
- H315 – Causes skin irritation.
- H336 – May cause drowsiness and dizziness.
- H410 – Very toxic to aquatic life with long lasting effects.

Precautionary Statements:

- P210 – Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
- P243 – Take precautionary measures against static discharge.
- P273 – Avoid release to the environment.
- P280 – Wear protective gloves/protective clothing/eye protection/face protection.
- P303+P361+P353 – If on skin or hair: Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.

P304+P341 - IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.

Emergency Overview

Breathing vapors may cause drowsiness and dizziness. Causes irritation eyes, skin, and respiratory tract. Aspiration hazard if swallowed. Can damage lungs. Highly flammable liquid and vapor. Vapor may cause flash fire. Target Organs: Central nervous system, lungs, eyes, and skin.

HMIS Rating:

Health – 2 Flammability – 3 Physical Hazard – 0 PPE – User supplied

NOTE: HMIS ratings use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. These ratings are based on the inherent properties of this chemical under expected conditions of normal use and are not intended to be used in emergency situations. PPE is determined by the user based on their needs and conditions.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

<u>Ingredient</u>	<u>CAS No</u>	<u>Percent</u>	<u>Hazardous</u>
Trimethylpentane	540-84-1	>99%	Yes

4. FIRST-AID MEASURES

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Ingestion: Aspiration hazard if swallowed. Get medical help immediately. Do not induce vomiting unless directed by medical personnel. If vomiting occurs naturally, have victim lean forward. Never give anything by mouth to an unconscious person.

Skin Contact: Remove any contaminated clothing. Wash skin with soap or mild detergent and water for at least 15 minutes. Get medical attention.

Eye Contact: Check for and remove contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention.

Notes to Physician: Treat symptomatically and supportively.

5. FIRE FIGHTING MEASURES

Flammability: Highly flammable liquid and vapor (GHS Category 2)

Auto-ignition Temperature: 415° C (779° F)

Flash Point: -12° C (10.4° F)

Flammable Limits: Lower Limit – 1.1 vol %, Upper Limit – 6.0 vol %

Products of Combustion: May decompose into irritating and highly toxic gases under fire conditions (carbon monoxide, carbon dioxide).

Specific Fire Hazards: As in any fire, always wear self-contained breathing apparatus in pressure-demand (MSA/NIOSH approved or equivalent), and full protective gear. Material is lighter than water, and may ignite on top of the water. Water may be ineffective and spread the fire. Use water spray to keep fire exposed containers cool. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Vapors are heavier than air and may travel to a source of ignition and flash back. Vapors can spread along the ground and collect in low or confined areas. May collect static electricity

Specific Explosion Hazards: None

Fire Fighting Media: Water may be ineffective. This material is lighter than water and insoluble in water. The fire could easily spread by use of water where run-off cannot be contained. Do not use straight streams of water. Use dry chemical, carbon dioxide, or alcohol-resistant foam.

National Fire Protective Association: Health - 2, Flammability - 3, Reactivity - 0

NOTE: NFPA ratings use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. They are for use by emergency personnel to address the hazards that

are presented by short term, acute exposure to this product under fire, spill, or similar emergencies. Ratings involve data and interpretations that may vary from company to company.

6. ACCIDENTAL RELEASE MEASURES

Use water spray to reduce vapors. Water spray may reduce vapors but still not prevent ignition in closed spaces. Absorb spilled liquid with sorbent pads, socks, or other inert material such as vermiculite, sand, or earth. Do not use sawdust or any combustible material. Use spark-proof tools. Provide ventilation to the affected area and remove all ignition sources. Approach the spill from upwind and pick up absorbed material and place it in a suitable container. Always use proper personal protective equipment as described in section 8.

7. HANDLING AND STORAGE

Precautions: Always use proper personal protective equipment as described in section 8. Wash thoroughly after handling. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Avoid contact with eyes, skin, and clothing. Remove contaminated clothing and wash before reuse. Empty containers contain product residue (liquid and vapor) and can be dangerous. Keep container tightly closed and away from heat, spark, and flame. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks, or open flames. Use with adequate ventilation. Avoid breathing vapor or mist.

Storage: Keep in a flammables area away from all sources of ignition and oxidizing materials. Keep in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Protect from moisture.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Use explosion-proof ventilation equipment. Facilities storing or using the material should be equipped with eyewash station and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Personal Protection: Wear protective chemical goggles or other appropriate eye protection. Use butyl rubber gloves and protective clothing to prevent skin exposure. A respiratory protection program that meets OSHA 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever possible. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

Exposure Limits:

ACGIH – 200 ppm TWA (listed under octane);

NIOSH – 75 ppm TWA; 350 mg/m³ TWA (listed under octane); 1000 ppm IDLH (listed under octane);

OSHA Final PELs – 500 ppm TWA; 2350 mg/m³ TWA (listed under octane)

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State and Appearance: Clear, colorless liquid.

Odor: gasoline-like

Molecular Formula: (CH₃)₂CHCH₂C(CH₃)₃

Molecular Weight: 114.23

Auto-ignition Temperature: 415° C (779° F)

Flash Point: -12° C (10.4° F)

Flammable Limits: Lower Limit – 1.1 vol %, Upper Limit – 6.0 vol %

pH: Not available.

Boiling Point: 98-99° C @ 760 mm Hg

Freezing/Melting Point: -107° C

Decomposition Temperature: No information available.

Specific Gravity: 0.69 g/cm³

Vapor Density (Air=1): 3.94

Vapor Pressure: 49.3 mm Hg @ 25° C.

Evaporation Rate (Ether = 1): <1

Viscosity: 0.51 mpa @ 22° C

Solubility: Insoluble

10. STABILITY AND REACTIVITY

Stability: Stable at room temperature in closed containers under normal storage and handling conditions.

Conditions to Avoid: Ignition sources, excess heat, electrical sparks, confined spaces.

Incompatibility With Various Substances: Strong oxidizing agents, strong acids, strong bases.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide.

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation, skin absorption, skin contact

Acute Exposure Hazards:

INHALATION HAZARD: Causes respiratory tract irritation. May cause narcotic effects in high concentrations. Aspiration may lead to pulmonary edema.

INGESTION HAZARD: May cause gastrointestinal irritation with nausea, vomiting, and diarrhea. Aspiration into lungs may cause chemical pneumonitis, which may be fatal. May cause central nervous system depression.

SKIN CONTACT HAZARD: Causes skin irritation. Prolonged and/or repeated exposure may cause defatting of the skin and dermatitis. A single prolonged skin exposure is not likely to result in the material being absorbed in harmful amounts.

EYE CONTACT HAZARD: Exposure to high concentrations may cause irritation, redness, and pain.

Chronic Exposure Hazards: Repeated or prolonged exposure may cause dermatitis and defatting of the skin. In a subchronic oral laboratory study, TMP produced kidney damage in male rats only. No comparable health hazard for kidney disease is known to occur in humans.

Animal Toxicity:

Dermal, rabbit: LD50 = >2000 mg/kg;

Inhalation, rat: LC50 = 33.5 mg/kg/4H;

Oral, rat: LD50 = >5000 mg/kg (values from Phillips 66);

Carcinogenicity: Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65

Epidemiology: No information available.

Teratogenicity: No information available.

Reproductive Effects: No information available.

Mutagenicity: Possible effects observed.

Neurotoxicity: ACGIH No information available.

12. ECOLOGICAL INFORMATION

No information available

13. DISPOSAL CONSIDERATIONS

Material that cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Processing, use or contamination of this product may change the waste management options. Waste generators must decide if discarded material is a hazardous waste. State and local disposal regulations may differ from federal disposal definitions found in 40 CFR 261.3. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. TRANSPORT INFORMATION

US DOT

Proper Shipping Name: Octanes

Hazard Class: 3

UN Number: UN1262

Packing Group: II

IMDG

Proper Shipping Name: Octanes

Hazard Class: 3

UN Number: UN1262

Packing Group: II

.

IATA

Proper Shipping Name: Octanes

Hazard Class: 3

UN Number: UN1262

Packing Group: II

15. REGULATORY INFORMATION

US Federal Regulations:

CERCLA Hazardous Substances: 540-84-1 – 1000 lb final RQ; 454 kg final RQ

SARA Section 302: Does not have a TPQ

SARA Codes: CAS# 540-84-1 – immediate, fire

Section 313: TMP (CAS# 540-84-1) is not subject to SARA Title III reporting requirements.

Clean Air Act: CAS# 540-84-1 is listed as a hazardous air pollutant (HAP).

OSHA: Not considered highly hazardous by OSHA.

US State Regulations:

CAS# 540-84-1 is on the following state right-to-know lists: New Jersey, Pennsylvania, and Massachusetts.

California Prop 65: This product contains no chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Originally Prepared: 1/1/2006

Last Revised: 11/26/2014 – Updated hazard categories, hazard statements, and precautionary statements in Section 2 and toxicological information in Section 11.

The information contained herein is based on current knowledge and experience; no responsibility is accepted that the information is sufficient or correct in all cases. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers and the protection of the environment.

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