

SAFETY DATA SHEET



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2-METHYLTETRAHYDROFURAN

SDS No. M0556

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: 2-Methyltetrahydrofuran

Synonyms: Tetrahydro-2-Methylfuran, 2-Methyloxolane, MTHF, Tetrahydrofuran

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

Acute Toxicity, Inhalation: GHS Category 5

Label Elements

Signal Word: DANGER!

Hazard Statements:

H225 – Highly flammable liquid and vapor.

H335 – May cause respiratory irritation.

Precautionary Statements:

P210 – Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

P243 – Take precautionary measures against static discharge.

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.

Emergency Overview

Causes irritation to eyes and respiratory Tract. Highly flammable liquid and vapor. Vapor may cause flash fire. May form explosive peroxides. Target Organs: Respiratory system and eyes.

HMIS Rating:

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

Clear focus. Consistent results. Complete confidence.

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>
2-Methyltetrahydrofuran	96-47-9	>99%	Yes

4. FIRST-AID MEASURES

Inhalation: If inhaled, remove to fresh air. If breathing is labored or with coughing, give 100% supplemental oxygen. If not breathing, begin artificial respiration. Get medical aid immediately.

Ingestion: If swallowed, get medical attention immediately; DO NOT induce vomiting unless directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid immediately.

Skin Contact: Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid. Wash clothing before reuse. Thoroughly clean shoes before reuse.

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 immediately.

Notes to Physician: Treat symptomatically and supportively.

5. FIRE FIGHTING MEASURES

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

Auto-ignition Temperature: Not available.

Flash Point: -11° C (12° F)

Flammable Limits: Not available.

Products of Combustion: May decompose into carbon monoxide and carbon dioxide in fire conditions.

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. Use water spray to keep fire exposed containers cool. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Vapors can cause flash fire.

Specific Explosion Hazards: Can release vapors that form explosive mixtures at temperatures above the flashpoint. May form explosive peroxides.

Fire Fighting Media: Water may be ineffective. Use dry chemical, carbon dioxide, or appropriate foam.

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

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

Avoid run-off into storm sewers and ditches which lead to waterways. Provide ventilation to the affected area and remove all ignition sources. Absorb spilled liquid with sorbent pads, socks, or other inert material such as vermiculite, sand, or earth. 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. 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 away from heat, sparks, and flame in a flammables area. Store in a cool place in the original container and protect from sunlight and moisture. Keep under a nitrogen blanket. Keep from contact with oxidizing materials. Containers should be dated when opened and tested periodically for the presence of peroxides. Should crystals form in a peroxidizable liquid, peroxidation may have occurred and the product should be considered extremely dangerous. In this instance, the container should only be opened remotely by professionals. All peroxidizable substances should be stored away from heat and light and be protected from ignition sources.

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 appropriate eye protection. Use appropriate protective 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 (Methyltetrahydrofuran): None established

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State and Appearance: Clear, colorless liquid.

Odor: Not available

Odor Threshold: Not available

Molecular Formula: C₄H₈O

Molecular Weight: 72.11

Auto-ignition Temperature: Not available.

Flash Point: -11° C (12° F)

Flammable Limits: Not available.

pH: Not available.

Boiling Point: 78-80° C

Freezing/Melting Point: -136° C

Decomposition Temperature: Not available

Specific Gravity: 0.860 g/cm³

Vapor Density (Air=1): Not available

Vapor Pressure: 102 mm Hg @ 20° C.

Evaporation Rate (Butyl acetate = 1): <1

Viscosity: 4.0 mPas 25° C

Solubility: 15g/100ml (25° C)

10. STABILITY AND REACTIVITY

Stability: May form explosive peroxides. Air sensitive.

Conditions to Avoid: Incompatible materials, ignition sources, exposure to air, excess heat.

Incompatibility With Various Substances: Oxidizing agents, strong acids, strong bases.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide.

Hazardous Polymerization: Has not been reported.

11. TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation, skin absorption, skin contact

Acute Exposure Hazards:

INHALATION HAZARD: Causes respiratory tract irritation. May be harmful if inhaled.

INGESTION HAZARD: May cause irritation to the digestive tract. May be harmful if swallowed.

SKIN CONTACT HAZARD: May cause skin irritation. May be harmful if absorbed through the skin.

EYE CONTACT HAZARD: Causes eye irritation.

Chronic Exposure Hazards: Prolonged or repeated exposure may cause permanent eye damage. Prolonged or repeated exposure may cause nausea, dizziness, and headache.

Animal Toxicity:

Draize test, rabbit, eye: 500 mg/24H Mild;

Inhalation, rat: LC50 = 6000 ppm/4H;

Skin, rabbit: LD50 = 4500 mg/kg;

Carcinogenicity: No information found.

Epidemiology: No information found.

Teratogenicity: No information found.

Reproductive Effects: Animal No information found.

Mutagenicity: No information found.

Neurotoxicity: No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity: No information found.

Environmental Fate: Do not empty into drains.

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: Methyltetrahydrofuran

Hazard Class: 3

UN Number: UN2536

Packing Group: II

IMDG

Proper Shipping Name: Methyltetrahydrofuran

Hazard Class: 3

UN Number: UN2536

Packing Group: II

IATA

Proper Shipping Name: Methyltetrahydrofuran

Hazard Class: 3

UN Number: UN2536

Packing Group: II

15. REGULATORY INFORMATION

US Federal Regulations:

CERCLA Hazardous Substances: CAS# 96-47-9: Not listed
SARA Section 302: Does not have a TPQ
SARA Codes: CAS# 96-47-9: Not listed
Section 313: Methyltetrahydrofuran (CAS# 96-47-9) is not reportable under Section 313.
OSHA: Not considered highly hazardous by OSHA.

US State Regulations:

CAS# 96-47-9 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: 4/11/2008

Last Revised: 11/14/2014 – Updated hazard and precautionary statements in Section 2.

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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