

SAFETY DATA SHEET

Nova Molecular Technologies, Inc.



Date Issued: 04/02/2015

SDS No: NMT2 05-005

2-Methyltetrahydrofuran (CAS# 96-47-9)

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: 2-Methyltetrahydrofuran

GENERAL USE: Solvent, chemical intermediate used in professional formulations.

SYNONYMS: METHF; 2-Methyloxolane

MANUFACTURER

Nova Molecular Technologies, Inc.
1 Parker Place, Suite 725
Janesville, WI 53545
Customer Service: 800-445-6682 or 281-474-5550

24 HR. EMERGENCY TELEPHONE NUMBERS

For emergency, spill, leak, fire, exposure or accident, call:

CHEMTREC: 1-800-424-9300

**Outside the United States, call: 703-527-3887
(collect calls accepted)**

2. HAZARDS IDENTIFICATION

GHS CLASSIFICATIONS

Physical:

Flammable Liquids, Category 2

Hazard Not Otherwise Classified, Explosive Peroxides

GHS LABEL



Flame

SIGNAL WORD: DANGER

HAZARD STATEMENTS

H225: Highly flammable liquid and vapor.

May form explosive peroxides.

PRECAUTIONARY STATEMENT(S)

Prevention:

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

P233: Keep container tightly closed.

P240: Ground/bond container and receiving equipment.

P241: Use explosion-proof electrical/ventilating/lighting/.../ equipment.

P271: Use only outdoors or in a well-ventilated area.

P243: Take precautionary measures against static discharge.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

Response:

P303+P361+P353: IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.

P370+P378: In case of fire: Use a Class B, multipurpose dry chemical, or carbon dioxide fire extinguisher for extinction.

Storage:

P403+P235: Store in a well-ventilated place. Keep cool.

Disposal:

P501: Dispose of contents/container in accordance with local/regional/national/international regulations.

EMERGENCY OVERVIEW

PHYSICAL APPEARANCE: Clear, colorless liquid.

POTENTIAL HEALTH EFFECTS

EYES: Contact may cause irritation. Symptoms include stinging, tearing, redness, and swelling of eyes.

SKIN: This product is unlikely to cause skin irritation or injury.

INGESTION: May be harmful if swallowed. Ingestion may cause irritation to mouth, throat, and stomach.

INHALATION: This product is unlikely to cause any significant adverse health hazards.

REPRODUCTIVE TOXICITY

REPRODUCTIVE EFFECTS: This product is not anticipated to be a reproductive toxin.

TERATOGENIC EFFECTS: Not Established.

CARCINOGENICITY: This product is not listed as a carcinogen by NTP, OSHA, or IARC.

MUTAGENICITY: This product is not anticipated to be a mutagen.

ROUTES OF ENTRY: Ingestion, inhalation, skin contact.

SENSITIZATION: Not Established.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	Wt. %	CAS
2-Methyltetrahydrofuran	100	96-47-9

4. FIRST AID MEASURES

EYES: Immediately flush with large amounts of water, holding eyelids open, for at least 20 minutes. Repeat if necessary. Remove contact lenses, if present and easy to do. Get medical attention.

SKIN: Immediately remove contaminated clothing or shoes, wipe excess from skin and flush with plenty of water for at least 15 minutes. Do not reuse clothing until thoroughly cleaned. Get medical attention.

INGESTION: Do not induce vomiting. If symptoms develop, seek medical attention.

INHALATION: Move victim to fresh air. Give artificial respiration if victim is not breathing. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give 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 medical attention.

SIGNS AND SYMPTOMS OF OVEREXPOSURE

ACUTE TOXICITY: Symptoms include cough, shortness of breath, respiratory arrest, unconsciousness, narcosis, inebriation, headache, and drowsiness.

NOTES TO PHYSICIAN: Treat symptomatically. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. First Aid Responders are advised to wear personal protective equipment as found in Section 8 of this SDS. If ingested, give two glasses of activated charcoal slurry. To prepare activated charcoal slurry, suspend 50 grams activated charcoal in 400 ml water in plastic bottle and shake well. Give 5 ml/kg of body weight, or 350 ml for an average adult.

5. FIRE FIGHTING MEASURES

FLAMMABLE CLASS: Class IB.

EXTINGUISHING MEDIA:

SMALL FIRE - Carbon dioxide, dry chemical, water spray, or regular foam.

LARGE FIRE - Regular foam or water spray or fog. Use water spray or fog; do not use straight streams.

FIRE FIGHTING PROCEDURES: PROTECTIVE ACTIONS TO TAKE DURING FIRE FIGHTING - Move containers from fire area if you can do it without risk. Dike fire-control water for later disposal; do not scatter the material. Do not get water inside containers. Use water spray or fog; do not use straight streams. Note: use of water spray when fighting fire may be inefficient or cause a chemical reaction. Persons involved in firefighting response involving this product and its containers/packaging should refer to Section 8 of this SDS for the proper selection of exposure controls and personal protective equipment.

FIRE FIGHTING EQUIPMENT: PRECAUTIONS FOR FIRE INVOLVING TANKS OR CAR/TRAILER LOADS - Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. Isolate for 800 meters (1/2 mile) in all directions; also consider initial evacuation for 800 meters (1/2 mile) in all directions. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

FIRE EXPLOSION: HIGHLY FLAMMABLE. Will be easily ignited by heat, sparks or flames. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks). Vapor explosion hazard may be present indoors, outdoors or in sewers. Runoff to sewer may create fire or explosion hazard. Containers may explode when heated.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide and carbon dioxide. Peroxides.

6. ACCIDENTAL RELEASE MEASURES

SMALL SPILL: For emergency information and procedures to follow in the case of an accidental release, call the Emergency Telephone Number(s) listed in Section 1 of this SDS. Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions. Do not touch or walk through spilled material. Stop leak if you can do it without risk. Prevent entry into waterways, sewers, basements or confined areas. A vapor suppressing foam may be used to reduce vapors. Absorb or cover with dry earth, sand or other non-combustible material and transfer to suitable containers. Use clean non-sparking tools to collect absorbed material.

LARGE SPILL: Dike far ahead of liquid spill for later disposal. Consider initial downwind evacuation for at least 800 meters (1/2 mile). Do not release into sewers or waterways.

GENERAL PROCEDURES: MATERIALS & METHODS (EQUIPMENT & TECHNIQUES) FOR CONTAINMENT & CLEANUP - Call Emergency Telephone Number(s) provided in Section 1 of this SDS. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. For a large spill, consider initial downwind evacuation for at least 300 meters (1000 feet). Use clean non-sparking tools to collect absorbed material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing indicated in Section 8 of this SDS.

RELEASE NOTES: ENVIRONMENTAL PRECAUTIONS - Avoid contact of spilled material with soil and prevent runoff from entering surface waterways. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

SPECIAL PROTECTIVE EQUIPMENT: EMERGENCY & NON-EMERGENCY RESPONDERS - Refer to Section 8 of this SDS for appropriate exposure controls and personal protective equipment (PPE).

7. HANDLING AND STORAGE

GENERAL PROCEDURES: Handle in accordance with good industrial hygiene and safety practices. These practices include but are not limited to avoiding unnecessary exposure and prompt removal of material from eyes, skin, and clothing. Wash exposed skin and clothing frequently. If needed, take first aid actions as indicated in Section 4 of this SDS.

HANDLING: Use only with adequate ventilation. Wear appropriate personal protective equipment and use exposure controls as indicated in Section 8 of this SDS. Vent slowly to the atmosphere when opening. Avoid all contact with skin and eyes. Avoid breathing product. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Do not reuse container. Remove contaminated clothing immediately. Wash with soap and water after working with this product.

STORAGE: Keep in airtight container away from all heat sources. Store in a segregated and approved area. Store in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Keep container in a well-ventilated area. Store away from incompatible materials. Store in the original container or an approved alternative made from compatible material. Do not store in unlabeled containers. Treat empty containers in a similar fashion as residual product may exist. Use appropriate containment to avoid environmental contamination.

STORAGE TEMPERATURE: Store containers in a room at ambient temperature.

STORAGE PRESSURE: Containers should be stored in a room at ambient pressure.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE GUIDELINES

OSHA HAZARDOUS COMPONENTS (29 CFR1910.1200)					
		EXPOSURE LIMITS			
		OSHA PEL		ACGIH TLV	
Chemical Name		ppm	mg/m ³	ppm	mg/m ³
2-Methyltetrahydrofuran	TWA	N/E	N/E	N/E	N/E
	STEL	N/E	N/E	N/E	N/E

ENGINEERING CONTROLS: Provide adequate general and local exhaust ventilation to meet exposure limit requirements. Provide readily accessible eye wash stations and emergency showers. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: Employees should be provided with and required to use splash-proof safety goggles and face shields where there is any possibility of product coming in contact with eyes. Ensure that an eye wash station is operable and nearby.

SKIN: Wear chemical protective gloves, e.g. Polyvinyl alcohol, Teflon, or 4H and Silver Shield brand. Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include such as frequency and duration of contact, chemical resistance of glove material, glove thickness and dexterity. Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739). When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended. Contaminated gloves should be replaced. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended.

RESPIRATORY: Depending on airborne concentration and if exposure exceeds occupational exposure limits, use a NIOSH-approved atmosphere-supplying respirator, an air-purifying respirator with organic vapor cartridges or a full-face respirator with organic vapor canisters to prevent overexposure. In a confined space, wear a self-contained breathing apparatus (SCBA).

WORK HYGIENIC PRACTICES: Use good personal hygiene practices. Avoid repeated and/or prolonged skin exposure. Wash hands before eating, drinking, smoking, or using toilet facilities. Promptly remove contaminated clothing and laundry before reuse. Shower after work using plenty of soap and water.

OTHER USE PRECAUTIONS: FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS - A self-contained breathing apparatus with full facepiece operated in a pressure-demand or other positive pressure mode is recommended for firefighting or other immediately dangerous to life and health conditions. Supplied-air respirator with full facepiece and operated in pressure-demand or other positive pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive pressure mode may also be used.

9. PHYSICAL AND CHEMICAL PROPERTIES

ODOR: Ether-like odor.

ODOR THRESHOLD: Not Applicable.

APPEARANCE: Clear, water white mobile liquid.

pH: Not Applicable.

FLASH POINT: -11°C (12°F)

FLAMMABLE LIMITS: 1.5 to 8.9

Notes: Flammable limits given as percentage volume in air at normal atmospheric temperature and pressure.

AUTOIGNITION TEMPERATURE: 270°C (518°F)

VAPOR PRESSURE: 13.5 kPa at 20°C (68°F)

BOILING POINT: 80°C (176°F)

FREEZING POINT: -136°C (-213°F)

SOLUBILITY IN WATER: Easily soluble in the following materials: cold water, hot water and acetone.

EVAPORATION RATE: Not Applicable. **SPECIFIC GRAVITY:** 0.85 at 20°C (68°F)

VISCOSITY: 4 mPas at 25°C (77°F)

COEFF. OIL/WATER: PARTITION COEFF. n-OCTANOL/WATER - Not Established.

10. STABILITY AND REACTIVITY

STABLE: Yes

HAZARDOUS POLYMERIZATION: No

STABILITY: This product is anticipated to be stable under normal ambient storage and handling conditions of temperature and pressure.

CONDITIONS TO AVOID: Avoid contact with heat, sparks, open flames and elevated temperatures.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide and carbon dioxide. Peroxides.

INCOMPATIBLE MATERIALS: Oxidizing agents, strong acids, bases, and rubber.

11. TOXICOLOGICAL INFORMATION

ACUTE

Chemical Name	ORAL LD ₅₀ (rat)	DERMAL LD ₅₀ (rabbit)	INHALATION LC ₅₀ (rat)
2-Methyltetrahydrofuran	300-2000 mg/kg	4500 mg/kg	6000 ppm (4 hours)

NOTES: Exposure to high concentrations may cause dry / sore throat, coughing, headache. After ingestion may cause nausea and or abdominal pain. May cause eye irritation.

EYE EFFECTS: May cause eye irritation. Contact may result in irritation, lacrimation, pain and redness.

SKIN EFFECTS: Not expected to cause prolonged or significant skin irritation.

CARCINOGENICITY

IARC: Not Listed.

NTP: Not Listed.

OSHA: Not Listed.

SENSITIZATION: Not Established.

NEUROTOXICITY: Not Established.

GENETIC EFFECTS: Not Established.

REPRODUCTIVE EFFECTS: This product is not anticipated to be a reproductive toxin.

TERATOGENIC EFFECTS: Not Established.

MUTAGENICITY: This product is not anticipated to be mutagenic.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL DATA: MOBILITY IN SOIL POTENTIAL - Not Established.

ECOTOXICOLOGICAL INFORMATION: TERRESTRIAL/MICROORGANISM TOXICITY –

ACUTE: Ecological data does not exist.

CHRONIC: Ecological data does not exist.

DISTRIBUTION: Do not discharge into or allow runoff to flow into sewers and natural waterways. Contain spill material and dike for proper disposal.

CHEMICAL FATE INFORMATION: PERSISTENCE & DEGRADABILITY - Not Established.

GENERAL COMMENTS: Any other adverse environmental effects, such as environmental fate (exposure), ozone depletion potential, photochemical ozone creation potential, endocrine disrupting potential, and global warming potential are indicated in this section if data exists. Otherwise, this data has not been established.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Recycle by distillation, remove to authorized incinerator equipment with an afterburner and flue gas scrubber, do not discharge into surface water. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

EMPTY CONTAINER: Empty containers or liners may retain some product residues.

RCRA/EPA WASTE INFORMATION: Under the U.S. Environmental Protection Agency's (EPA) Resource Conservation and Recovery Act (RCRA), it is the responsibility of the user to determine at the time of disposal whether the product meets RCRA criteria for a hazardous waste. This is because product uses, transformations, mixtures, processes, etc. may render the resulting materials hazardous. Empty containers retain residues. All labeled precautions must be observed.

COMMENTS: Dispose of material in accordance with national, state, regional, and local regulations. Never discharge directly into sewers or surface water. Consult with environmental regulatory agencies for guidance on acceptable disposal practices for the product, in any form, and its containers/packaging.

14. TRANSPORT INFORMATION**DOT (DEPARTMENT OF TRANSPORTATION)**

PROPER SHIPPING NAME: Methyltetrahydrofuran

PRIMARY HAZARD CLASS/DIVISION: 3

UN/NA NUMBER: 2536

PACKING GROUP: II

NAERG: 127

LABEL: Flammable Liquids

MARINE POLLUTANT: Not Listed.

ROAD AND RAIL (ADR/RID)

PROPER SHIPPING NAME: Methyltetrahydrofuran

HAZARD CLASS: 3

PACKING GROUP: II

LABEL: Flammable Liquids

AIR (ICAO/IATA)

PROPER SHIPPING NAME: Methyltetrahydrofuran

UN/NA NUMBER: 2536

PRIMARY HAZARD CLASS/DIVISION: 3

PACKING GROUP: II

ERG: 127

LABEL: Flammable Liquids.

VESSEL (IMO/IMDG)

PROPER SHIPPING NAME: Methyltetrahydrofuran

UN/NA NUMBER: 2536

PRIMARY HAZARD CLASS/DIVISION: 3

PACKING GROUP: II

MARINE POLLUTANT: Not Listed.

LABEL: Flammable Liquids

CANADA TRANSPORT OF DANGEROUS GOODS

PROPER SHIPPING NAME: Methyltetrahydrofuran

UN/NA NUMBER: 2536

PRIMARY HAZARD CLASS/DIVISION: 3

PACKING GROUP: II

15. REGULATORY INFORMATION**UNITED STATES****DOT LABEL SYMBOL AND HAZARD CLASSIFICATION**

Flammable
Liquid

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

311/312 HAZARD CATEGORIES: Fire hazard.

FIRE: Yes **PRESSURE GENERATING:** No **REACTIVITY:** Yes **ACUTE:** No **CHRONIC:** No

TSCA (TOXIC SUBSTANCE CONTROL ACT)

Chemical Name	CAS
2-MethylTHF	96-47-9

CALIFORNIA PROPOSITION 65: This product does not contain any chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm at concentrations that trigger the warning requirements of California Proposition 65.

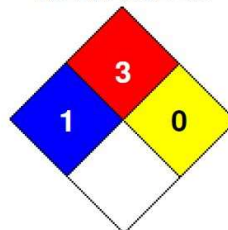
CARCINOGEN: This product is not listed as a carcinogen under NTP, IARC, or OSHA.

16. OTHER INFORMATION

PREPARED BY: Total Safety d/b/a EHS Services

HMIS RATING

HEALTH	*	1
FLAMMABILITY		3
PHYSICAL HAZARD		0
PERSONAL PROTECTION		B

NFPA CODES

HMIS RATINGS NOTES: Please refer to Section 8 of this SDS for recommended personal protective equipment.

DATA SOURCES:**REFERENCES**

ACGIH. 2014 Guide to Occupational Exposure Values. Cincinnati, OH. Signature Publications, 2014.
 Forsberg, K. et al. Quick Selection Guide to Chemical Protective Clothing. Sixth Edition. Hoboken, NJ. John Wiley & Sons, 2014.
 Lide, D.R. CRC Handbook of Chemistry and Physics. 88th Edition. Boca Raton, FL. CRC Press, 2008.
 UNECE. Globally Harmonized System of Classification and Labeling of Chemicals (GHS). Third Revised Edition. New York and Geneva. United Nations, 2009.
 US DOT; Pipeline and Hazardous Materials Safety Administration. 2008 Emergency Response Guidebook. Neenah, WI. J.J. Keller & Associates, Inc. 2008.
 US EPA. Consolidated List of Chemicals Subject to the Emergency Planning and Community Right-To-Know Act (EPCRA) and Section 112(r) of the Clean Air Act. [Available] Online: <http://www.epa.gov/ceppo/pubs/title3.pdf>. Retrieved 02/02/2011.

ADDITIONAL SDS INFORMATION:**KEY / LEGEND**

ACGIH - American Conference of Governmental Industrial Hygienists
 ADR - Agreement on Dangerous Goods by Road
 CAA - Clean Air Act
 CAS - Chemical Abstracts Service Registry Number
 CDG - Carriage of Dangerous Goods By Road and Rail Manual
 CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
 CFR - Code of Federal Regulations

EINECS - European Inventory of Existing Chemical Substances Registry Number
ERG - Emergency Response Guidebook
EPCRA - Emergency Planning and Community Right-to-Know Act
GHS - Globally Harmonized System of Classification and Labeling of Chemicals
IARC - International Agency for Research on Cancer
IATA - International Air Transport Association
ICAO - International Civil Aviation Organization
IMDG - International Maritime Dangerous Goods Code
IMO - International Maritime Organization
N/E - Not Established
NTP - National Toxicology Program
OSHA - Occupational Safety and Health Administration
PEL - Permissible Exposure Limit
PPE - Personal Protective Equipment
RCRA - Resource Conservation and Recovery Act
RID - Regulations Concerning the International Transport of Dangerous Goods by Rail
RQ - Reportable Quantities
SARA - Superfund Amendments and Reauthorization Act of 1986
SDS - Safety Data Sheet
TCC - Tag Closed Cup
TDG - Transportation of Dangerous Goods
TLV - Threshold Limit Value
TSCA - Toxic Substance Control Act
UN/NA - United Nations / North American Number
UNECE - United Nations Economic Commission for Europe
US DOT - United States Department of Transportation
US EPA - United States Environmental Protection Agency
Vol. - Volume
WHMIS - Workplace Hazardous Materials Information System

GENERAL STATEMENTS: Other information not included anywhere else in this SDS is included in this section if, in fact, such data exists.

MANUFACTURER DISCLAIMER: This information relates to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty or guarantee is made as to its accuracy, reliability or completeness. NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, IS MADE CONCERNING THE INFORMATION HEREIN PROVIDED. It is the user's responsibility to satisfy himself as to the suitability and completeness of such information for his own particular use. We do not accept liability for any loss or damage that may occur from the use of this information nor do we offer warranty against patent infringement.