

SAFETY DATA SHEET

Nova Molecular Technologies, Inc.



Date Issued: 04/02/2015

SDS No: NMT2 05-005

Last Revision: 12/29/2022

Tetrahydrofuran – 99.9% (CAS# 109-99-9)

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Tetrahydrofuran – 99.9%

GENERAL USE: Industrial solvent.

MOLECULAR FORMULA: C₄H₈O

MANUFACTURER

Nova Molecular Technologies, Inc.
208 South Magnolia Street
Sumter, SC 29150
Customer Service: 803-778-0264

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

Health:

Carcinogenicity, Category 2A

Eye Irritation, Category 2A

Specific Target Organ Toxicity (Single Exposure), Category 3

Physical:

Flammable Liquids, Category 2

Hazard Not Otherwise Classified, Explosive Peroxides

GHS LABEL



Flame



Health
Hazard



Exclamation
Mark

SIGNAL WORD: DANGER

HAZARD STATEMENTS

May form explosive peroxides.

H225: Highly flammable liquid and vapor.

H319: Causes serious eye irritation.

H335: May cause respiratory irritation.

H351: Suspected of causing cancer.

PRECAUTIONARY STATEMENT(S)**Prevention:**

- P201: Obtain special instructions before use.
- P202: Do not handle until all safety precautions have been read and understood.
- 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.
- P242: Use only non-sparking tools.
- P243: Take precautionary measures against static discharge.
- P261: Avoid breathing dust/fume/gas/mist/vapors/spray.
- P264: Wash thoroughly after handling.
- P271: Use only outdoors or in a well-ventilated area.
- 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.
- P304+P340: IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
- P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P308+P313: IF exposed or concerned: Get medical advice/attention.
- P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse Mouth
- P337+P313: If eye irritation persists: Get medical advice/attention.
- P370+P378: In case of fire: Use a Class B, multipurpose dry chemical, or carbon dioxide fire extinguisher for extinction.

Storage:

- P403+P233: Store in a well-ventilated place. Keep container tightly closed.
- P403+P235: Store in a well-ventilated place. Keep cool.
- P405: Store locked up.

Disposal:

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

EMERGENCY OVERVIEW

PHYSICAL APPEARANCE: Colorless, mobile liquid.

IMMEDIATE CONCERNS: HAZARD DESCRIPTION / WARNING INFORMATION SUMMARY - Flammable liquid and vapor. May be reactive if not inhibited. May form explosive peroxides. Harmful if swallowed or inhaled. May be irritating to skin, eye, mucous membrane and gastrointestinal tract. May cause central nervous system effects. Please read entire contents of Section 2 of this Safety Data Sheet (SDS) for details.

POTENTIAL HEALTH EFFECTS

EYES: Exposure to vapors may cause eye irritation with tearing, pain, or blurred vision. Contact with liquid may cause severe irritation or burns. Damage may be permanent.

SKIN: Contact may cause severe skin irritation.

SKIN ABSORPTION: Skin absorption is expected. This product is a fast skin penetrant. Prolonged or repeated contact may cause dermatitis.

INGESTION: May be harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

INHALATION: Inhalation may cause respiratory irritation. May cause irritation of respiratory tract due to excess fume, mists, or vapor exposure. Vapors may cause drowsiness and dizziness. Breathing of high vapor concentrations may cause central nervous system depression resulting in dizziness, light-headedness, headache, nausea, and loss of coordination.

REPRODUCTIVE TOXICITY

REPRODUCTIVE EFFECTS: Animal data show developmental affects only at exposure levels producing other toxic effects in the adult animal. Animal testing for reproductive affects shows no change in reproductive performance. This product is not anticipated to be a reproductive toxin.

TERATOGENIC EFFECTS: Not Established.

CARCINOGENICITY: Annex VI of Regulation (EC) No 1272/2008 (CLP Regulation) classifies tetrahydrofuran as a Category 2 carcinogen.

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

MEDICAL CONDITIONS AGGRAVATED: Persons with pre-existing skin disorders or eye problems or impaired liver or kidney function may be more susceptible to the effects of the substance.

ROUTES OF ENTRY: Eye contact, ingestion, inhalation, skin contact.

TARGET ORGAN STATEMENT: Eyes, skin, central nervous system, liver, kidney.

SENSITIZATION: This product is not expected to be sensitizing.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	Wt. %	CAS
Tetrahydrofuran	100	109-99-9

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. Have exposed individual rinse mouth thoroughly with water. If conscious, give two glasses of water or activated charcoal slurry. Never give anything by mouth to an unconscious person. Obtain medical assistance immediately and treat as directed by a medical professional.

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.

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 - Dry chemical, carbon dioxide, water spray or alcohol-resistant foam.

LARGE FIRE - Water spray, fog or alcohol-resistant foam. Do not use straight streams. Dike the fire-control water for later disposal; do not scatter the material.

EXPLOSION HAZARDS: UNUSUAL FIRE AND EXPLOSION HAZARDS - Tetrahydrofuran can form heat sensitive peroxide, which may explode on concentration by distillation or drying. Do not distill or allow tetrahydrofuran, or solution containing tetrahydrofuran to dry if tests show more than 0.05% tetrahydrofuran peroxide present. To avoid a possible explosion, tetrahydrofuran should never be distilled to dryness. BHT antioxidant is added to tetrahydrofuran to minimize peroxide formation unless specifically requested otherwise.

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.

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: Wear appropriate personal protective equipment and use exposure controls as indicated in Section 8 of this SDS. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling.

STORAGE: Store in dark glass bottles or steel drums. Protect against physical damage. Store in a cool, dry, well ventilated location, away from direct sunlight and any areas where the fire hazard may be acute. Store in tightly closed containers (preferably under nitrogen atmosphere). Outside or detached storage is preferred. Inside storage should be in a standard flammable liquids storage room or cabinet. Separate from oxidizing materials. Containers should be bonded and grounded for transfers to avoid static sparks. Storage areas and use areas should be "no smoking" areas. Use non-sparking type tools and equipment. Do not use compressed air for filling, discharging, or handling. Peroxides can be removed by treatment with strong ferrous sulfate solution made slightly acidic with sodium bisulfate. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, sparks, flame, static electricity or other sources of ignition as they may explode and cause injury or death. Do not allow to evaporate to near dryness unless absence of peroxides has been shown. Addition of appropriate reducing agents will lessen peroxide formation.

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
Tetrahydrofuran	TWA	200	590	50	147
	STEL	N/E	N/E	100	295

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: Neoprene coated gloves such as Ansell Scorpio™ or equivalent and additional protection including impervious boots, apron or coveralls, as needed in areas of unusual exposure.

RESPIRATORY: If the exposure limit is exceeded and engineering controls are not feasible, a half-face organic vapor respirator may be worn for up to ten times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece organic vapor respirator may be worn up to 50 times the exposure limit, or the maximum use concentration, specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-face piece positive pressure, air supplied respirator. **WARNING!** – Air purifying respirators do not protect workers in oxygen deficient atmospheres.

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 launder 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.

APPEARANCE: Colorless, mobile liquid.

pH: 7

PERCENT VOLATILE: 100

FLASH POINT: -14.4°C (6°F)

FLAMMABLE LIMITS: 2.0 to 11.8

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

AUTOIGNITION TEMPERATURE: 321°C (610°F)

VAPOR PRESSURE: 129 at 20°C (68°F)

VAPOR DENSITY: 2.5 (Air = 1)

BOILING POINT: 66°C (151°F)

MELTING POINT: -108°C (-162°F)

SOLUBILITY IN WATER: Miscible.

EVAPORATION RATE: > 1

SPECIFIC GRAVITY: 0.886 to 0.891

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. Avoid direct sunlight.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide and carbon dioxide.

INCOMPATIBLE MATERIALS: Can form potentially explosive peroxides upon long exposure to air. LiAlH₂, strong oxidizers, NaAlH₂ and potassium hydroxide. Will attack some forms of plastics, rubbers, and coatings.

11. TOXICOLOGICAL INFORMATION

ACUTE

Chemical Name	ORAL LD ₅₀ (rat)	DERMAL LD ₅₀ (rabbit)	INHALATION LC ₅₀ (rat)
Tetrahydrofuran	2050 to 2850 mg/kg	> 2000 mg/kg	54 mg/L (4 hours)

NOTES: This product is an eye irritant, severe skin irritant, and may be an inhalation and ingestion hazard. Fast skin penetrant. Overexposure may cause coughing, shortness of breath, dizziness, central nervous system depression, intoxication and collapse. Ingestion may produce symptoms of nervous system depression including headache, dizziness, nausea, loss of sense of balance, drowsiness, and visual disturbances. This product is not expected to be a sensitizer.

EYE EFFECTS: Contact may cause severe eye irritation. Prolonged contact may cause irreversible damage.

SKIN EFFECTS: This product is a severe skin irritant. Skin absorption is expected. 10 and 30% aqueous THF solutions were found to rapidly penetrate but not damage human skin in vitro. Higher aqueous concentrations and undiluted tetrahydrofuran may damage the skin and affect absorption, although irritation sensations may limit in vivo exposure. Note that the penetration coefficient (K_p value) of 10% aqueous THF ranged from 0.011 to 0.015 cm/hr.

CHRONIC: Prolonged or repeated eye contact may cause conjunctivitis. Prolonged or repeated skin contact may cause defatting and dermatitis. May cause liver and kidney damage. May cause lung damage. Narcotic in high concentrations.

CARCINOGENICITY: Annex VI of Regulation (EC) No 1272/2008 (CLP Regulation) classifies tetrahydrofuran as a Category 2 carcinogen. However, the Occupational Safety and Health Administration (OSHA), the American Conference of Governmental Industrial Hygienists (ACGIH), the Environmental Protection Agency (EPA), and the International Agency for Research on Cancer (IARC) have not classified tetrahydrofuran as a carcinogen. In lifetime bioassays conducted under the NTP in rats and mice exposed to concentrations up to 1800 ppm tetrahydrofuran by inhalation for 6 hours/day, 5 day/week for 105 weeks, some evidence of renal carcinogenicity was observed in male rats exposed to the 2 highest concentrations tested (600 and 1800 ppm) and clear evidence of liver carcinogenicity was observed in female mice exposed only to the highest concentration tested (1800 ppm). No evidence of carcinogenicity was seen in either female rats or male mice.

SENSITIZATION: This product is not expected to be a sensitizer.

NEUROTOXICITY: Not Established.

GENETIC EFFECTS: This product is not anticipated to cause genetic effects.

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: This material is expected to leach into groundwater.

BIOACCUMULATION/ACCUMULATION: This product is not readily biodegradable. This material is not expected to significantly bioaccumulate.

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

AQUATIC TOXICITY (ACUTE)

96-HOUR LC₅₀: 2160 mg/L (*Pimephales promelas*)

CHEMICAL FATE INFORMATION: When released into the air, this material may be removed from the atmosphere to a moderate extent by wet deposition.

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: It is recommended that this product, in any form, be disposed of in an approved landfill, if allowed locally. Otherwise, incinerate in a suitable combustion chamber for disposal.

EMPTY CONTAINER: Empty containers may retain residues. All label precautions must be observed. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition.

RCRA HAZARD CLASS: U213: Ignitable Waste.

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: Tetrahydrofuran

PRIMARY HAZARD CLASS/DIVISION: 3

UN/NA NUMBER: 2056

PACKING GROUP: II

NAERG: 127

REPORTABLE QUANTITY (RQ) UNDER CERCLA: 1000 lbs

LABEL: Flammable Liquids

MARINE POLLUTANT: Not Listed.

ROAD AND RAIL (ADR/RID)

PROPER SHIPPING NAME: Tetrahydrofuran

UN NUMBER: 2056

HAZARD CLASS: 3

PACKING GROUP: II

LABEL: Flammable Liquids

AIR (ICAO/IATA)

PROPER SHIPPING NAME: Tetrahydrofuran

UN/NA NUMBER: 2056

PRIMARY HAZARD CLASS/DIVISION: 3

PACKING GROUP: II

IATA PSN Code: XSI

ERG: 127

LABEL: Flammable Liquids.

VESSEL (IMO/IMDG)

PROPER SHIPPING NAME: Tetrahydrofuran

UN/NA NUMBER: 2056

PRIMARY HAZARD CLASS/DIVISION: 3

PACKING GROUP: II

LIMITED QUANTITY: 1L

EmS: F-E, S-D

MARINE POLLUTANT: Not Listed.

LABEL: Flammable Liquids**CANADA (TDG)****PROPER SHIPPING NAME:** Tetrahydrofuran**UN NUMBER:** 2056**HAZARD CLASS:** 3**PACKING GROUP:** II**LABEL:** Flammable Liquids**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. Immediate (acute) health hazard. Delayed (chronic) health hazard.**FIRE:** Yes**PRESSURE GENERATING:** No**REACTIVITY:** No**ACUTE:** Yes**CHRONIC:** Yes**CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT)**

Chemical Name	Wt. %	CERCLA RQ
Tetrahydrofuran	100	1000

TSCA (TOXIC SUBSTANCE CONTROL ACT)

Chemical Name	CAS
Tetrahydrofuran	109-99-9

CLEAN AIR ACT**40 CFR PART 68---RISK MANAGEMENT FOR CHEMICAL ACCIDENT RELEASE PREVENTION:** This product does not contain and is not manufactured with Class I or Class II ozone depleting chemicals, as defined in the Clean Air Act of 1990.**STATES WITH SPECIAL REQUIREMENTS**

Chemical Name	Requirements
Tetrahydrofuran	California Hazardous Substance Delaware Air Quality Management Idaho Air Pollutant Maine Hazardous Air Pollutant Massachusetts Hazardous Substance Minnesota Hazardous Substance New York Hazardous Substance Pennsylvania Hazardous Substance Washington PELs for Air Contaminants Wisconsin Hazardous Air Containment

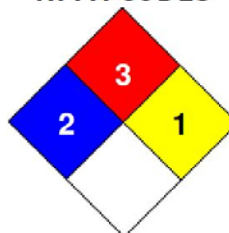
CALIFORNIA PROPOSITION 65: This product does not contain any chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm at concentrations that trigger the warning requirements of California Proposition 65.

16. OTHER INFORMATION

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

HMIS RATING

HEALTH	2
FLAMMABILITY	3
PHYSICAL HAZARD	1
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.