

# SAFETY DATA SHEET

Nova Molecular Technologies, Inc.



Date Issued: 04/17/2015

SDS No: NMT2 05-009

## Nova t-Butyl Morpholine-90%™

### 1. PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** Nova t-Butyl Morpholine-90%™

**CHEMICAL FAMILY:** Amine

**SYNONYMS:** Tertiary-butyl Morpholine

#### 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

##### Health:

Eye Irritation, Category 2A

Skin Corrosion, Category 1

#### GHS LABEL



Corrosion

**SIGNAL WORD:** DANGER

#### HAZARD STATEMENTS

H314: Causes severe skin burns and eye damage.

H319: Causes serious eye irritation.

#### PRECAUTIONARY STATEMENT(S)

##### Prevention:

P260: Do not breathe dust/fume/gas/mist/vapors/spray.

P264: Wash thoroughly after handling.

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

##### Response:

P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

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.

P310: Immediately call a POISON CENTER or doctor/physician.

P337+P313: If eye irritation persists: Get medical advice/attention.

P363: Wash contaminated clothing before reuse.

**Storage:**

P405: Store locked up.

**Disposal:**

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

**EMERGENCY OVERVIEW**

**PHYSICAL APPEARANCE:** Colorless to light amber clear liquid.

**POTENTIAL HEALTH EFFECTS**

**EYES:** Contact may cause severe eye irritation.

**SKIN:** Corrosive. Causes skin burning. Avoid any skin contact.

**INGESTION:** May cause gastrointestinal irritation.

**INHALATION:** Inhalation may cause respiratory irritation.

**REPRODUCTIVE TOXICITY**

**REPRODUCTIVE EFFECTS:** Not Established.

**TERATOGENIC EFFECTS:** Not Established.

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

**MUTAGENICITY:** Not Established.

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

**SENSITIZATION:** Not Established.

**3. COMPOSITION / INFORMATION ON INGREDIENTS**

Chemical Name	Wt. %	CAS
t-Butyl Morpholine	80 - 95	33719-90-3
Diethylene Glycol	0 - 5	111-46-6

**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:** Remove and isolate contaminated clothing and shoes. In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes. For minor skin contact, avoid spreading material on unaffected skin. Keep victim warm and quiet. Do not remove clothing if adhering to skin. Seek medical attention. Effects of exposure to substance may be delayed.

**INGESTION:** Do not induce vomiting. Get medical attention.

**INHALATION:** Move to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a physician if symptoms develop or persist.

**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**

**EXTINGUISHING MEDIA:**

**SMALL FIRE** - Dry chemical, carbon dioxide or water spray.

**LARGE FIRE** - Dry chemical, carbon dioxide, alcohol-resistant foam or water spray. Move containers from fire area if you can do it without risk. Dike fire control water for later disposal; do not scatter the material.

**HAZARDOUS COMBUSTION PRODUCTS:** Carbon dioxide, carbon monoxide, and nitrogen oxides.

**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. Persons involved in fire-fighting 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.

## 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. As an immediate precautionary measure, isolate spill or leak area 50 meters (160 feet) in all directions for liquids and at least 25 meters (75 feet) for solids. Do not touch or walk through spilled material. Stop leak if you can do it without risk. Cover with dry lime or soda ash. Prevent entry into waterways, sewers, basements or confined areas. Stay upwind. Keep out of low areas.

**LARGE SPILL:** Use similar response procedures as indicated under Small Spill. Consider initial downwind evacuation for at least 800 meters (1/2 mile).

**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:** 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.

**SHELF LIFE:** Five (5) years. Contact Nova at 281-474-5550 if product turns brown from air exposure.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE GUIDELINES

OSHA HAZARDOUS COMPONENTS (29 CFR1910.1200)					
		EXPOSURE LIMITS			
		OSHA PEL		ACGIH TLV	
Chemical Name		ppm	mg/m <sup>3</sup>	ppm	mg/m <sup>3</sup>
t-Butyl Morpholine	TWA	N/E	N/E	N/E	N/E
	STEL	N/E	N/E	N/E	N/E
Diethylene Glycol	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 chemically resistant gloves, chemical suit, and rubber boots when handling this product.

**RESPIRATORY:** Depending on airborne concentration, a NIOSH approved air-purifying respirator with organic vapor cartridges is recommended when concentrations exceed established exposure limits. Use a positive pressure, supplied-air respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.

**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:** Strong amine odor.

**APPEARANCE:** Colorless to light amber clear liquid.

**PERCENT VOLATILE:** 100

**FLASH POINT:** > 77°C (170°F)

**FLAMMABLE LIMITS:** Not Established.

**VAPOR PRESSURE:** Not Available.

**VAPOR DENSITY:** Not Available.

**BOILING POINT:** 178°C (352°F)

**SOLUBILITY IN WATER:** Soluble.

**EVAPORATION RATE:** < 1.0 (n-Butyl Acetate)

**SPECIFIC GRAVITY:** 0.93

**FLAMMABILITY** - Refer to Section 2 and Section 5 of this SDS for classification and flammability characteristics.

### **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 oxides and nitrogen oxides.

**INCOMPATIBLE MATERIALS:** Strong oxidizing agents.

**11. TOXICOLOGICAL INFORMATION****ACUTE**

Chemical Name	ORAL LD <sub>50</sub> (rat)	DERMAL LD <sub>50</sub> (rabbit)	INHALATION LC <sub>50</sub> (rat)
t-Butyl Morpholine	N/E	N/E	N/E
Diethylene Glycol	12565 mg/kg	11890 mg/kg	N/E

**ORAL LD<sub>50</sub>:** Chronic tests with rats show NOAEL for gastrointestinal irritation: 30 mg/kg/day = 8-hour TWA of 27.4 ppm

**EYE EFFECTS:** Acute ocular tests on analogous compounds show permanent tissue damage to the eyes in rabbits.

**SKIN EFFECTS:** Acute dermal toxicity tests show permanent skin damage in rabbits. Chronic studies on analogous compounds show NOAEL for skin irritation is 1%. Corrosive at 5%.

**CARCINOGENICITY**

**IARC:** Not Listed.

**NTP:** Not Listed.

**OSHA:** Not Listed.

**SENSITIZATION:** Not Established.

**NEUROTOXICITY:** Not Established.

**GENETIC EFFECTS:** Not Established.

**REPRODUCTIVE EFFECTS:** Not Established.

**TERATOGENIC EFFECTS:** Not Established.

**MUTAGENICITY:** Not Established.

**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.

**AQUATIC TOXICITY (ACUTE):** Ecological data does not exist.

**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:** It is recommended that this product, in any form, be disposed of in accordance with applicable Federal, state and local regulations. Do not discharge into any sewers, on the ground or into any body of water.

**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:** Corrosive liquid, basic, organic, n.o.s. (Alkyl morpholine)**PRIMARY HAZARD CLASS/DIVISION:** 8**UN/NA NUMBER:** 3267**PACKING GROUP:** II**NAERG:** 153**LABEL:** 8: Corrosive**MARINE POLLUTANT:** Not Listed.**ROAD AND RAIL (ADR/RID)****PROPER SHIPPING NAME:** Corrosive liquid, basic, organic, n.o.s. (Alkyl morpholine)**UN NUMBER:** 3267**HAZARD CLASS:** 8**PACKING GROUP:** II**AIR (ICAO/IATA)****PROPER SHIPPING NAME:** Corrosive liquid, basic, organic, n.o.s. (Alkyl morpholine)**UN/NA NUMBER:** 3267**PRIMARY HAZARD CLASS/DIVISION:** 8**PACKING GROUP:** II**ERG:** 153**LABEL:** 8: Corrosive.**VESSEL (IMO/IMDG)****SHIPPING NAME:** Corrosive liquid, basic, organic, n.o.s. (Alkyl morpholine)**UN/NA NUMBER:** 3267**PRIMARY HAZARD CLASS/DIVISION:** 8**PACKING GROUP:** II**MARINE POLLUTANT:** Not Listed.**LABEL:** 8: Corrosive**15. REGULATORY INFORMATION****UNITED STATES****DOT LABEL SYMBOL AND HAZARD CLASSIFICATION**

Corrosive

**SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)****311/312 HAZARD CATEGORIES:** Immediate (acute) health hazard**FIRE:** No**PRESSURE GENERATING:** No**REACTIVITY:** Yes**ACUTE:** Yes**CHRONIC:** No**TSCA (TOXIC SUBSTANCE CONTROL ACT)**

Chemical Name	CAS
Diethylene Glycol	111-46-6

**TSCA REGULATORY:** This product is registered under TSCA.**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.

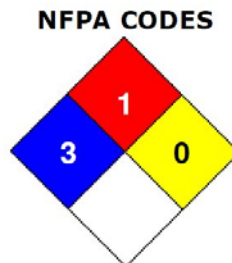
**CARCINOGEN:** This product is not listed as a carcinogen under NTP, IARC, or OSHA.

**FDA (FOOD AND DRUG ADMINISTRATION):** This product is not registered with the FDA or USDA.

## 16. OTHER INFORMATION

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

HMIS RATING	
HEALTH	3
FLAMMABILITY	1
PHYSICAL HAZARD	0
PERSONAL PROTECTION	H



**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.

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