SAFETY DATA SHEET

Nova Molecular Technologies, Inc.

Date Issued: 5/01/2017

Nova Methoxypropylamine

(CAS 5332-73-0)

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Nova Methoxypropylamine
GENERAL USE: Methoxypropylamine (MOPA) is widely used as an industrial vapor phase corrosion inhibitor. Nova Methoxypropylamine is primarily used in condensate lines of steam boilers and in refinery overheads systems as a vapor phase corrosion inhibitor. Nova Methoxypropylamine is also used in floor waxes.
MOLECULAR FORMULA: C4-H11-N-O
GENERIC NAME: 3-Methoxypropylamine; (MOPA)

MANUFACTURER	**24 Hour Emergency Telephone Numbers**
Nova Molecular Technologies, Inc.	**For emergency, spill, leak, fire, exposure or**
10200 Bay Area Blvd.	**Accident, call: CHEMTREC; 1-800-424-9300**
Pasadena, TX 77507	**Outside the United States, call 703-527-3887**
Customer Service 800-445-6682 or 281-474-5550	**collect calls accepted**

2. HAZARDS IDENTIFICATION

GHS CLASSIFICATION	
Classification of the substance or mixture	**GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**
Flammable liquids (Category 3), H226 Acute toxicity, Oral (Category 4), H302 Skin Corrosion (Category 1A), H314 Skin Sensitization (Category 1), H317 Serious eye damage (Category 1), H318 Aquatic (Category 3), H412	
For the full text of the H-Statements mentioned in this Section, see Section 16.	

GHS LABEL	
SIGNAL WORD:	Danger
HAZARD STATEMENTS	
H226	Flammable liquid and vapor.
H302	Harmful if swallowed.
H314	Skin Corrosion.
H317	Skin Sensitization.
H318	May cause serious eye damage.

Precautionary statement(s)	
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 skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/ eye protection/ face protection.
P301 + P312 + P330	IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth.
P303 + P361 + P353	IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 + P312	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician If you feel unwell.
P305 + P351 + P338 + P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/ physician.
P332 + P313	If skin irritation occurs: Get medical advice/ attention.
P362	Take off contaminated clothing and wash before reuse.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
P403 + P235	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	Wt.%	CAS
Nova Methoxypropylamine	99%	5332-73-0

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. Seek medical assistance if irritation persists.

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: If large amounts are swallowed, give water to drink. 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.

5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA:

SMALL FIRE - Dry chemical, CO_2, water spray or regular foam.

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

FIRE FIGHTING PROCEDURES: PROTECTIVE ACTIONS TO TAKE DURING FIRE FIGHTING: If material on fire or involved in fire: Do not extinguish fire unless flow can be stopped. Use water in flooding quantities as fog. Solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water. Apply water from as far a distance as possible. Use "alcohol" foam, dry chemical or carbon dioxide.

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.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon dioxide and carbon monoxide.

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 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: Evacuate to fresh air and ventilate area before reentering. Self-contained breathing apparatus should be utilized when responding to spills or heavy fumes. Remove sources of heat, sparks, flame, impact, friction and electricity and use non-sparking tools and equipment. Contain and recover liquid when possible. Dike spill. Collect liquid in an appropriate container or absorb with an inert material (i.e. vermiculite, dry sand, earth) and place in a chemical waste container. Use water spray to disperse vapors or to flush liquid away from fire exposure.

US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of Reportable Quantities. Comply with all federal, state and local regulations. Prevent liquid from entering waterways or low areas.

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. Do not breathe material. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. 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. Avoid contact with skin and eyes. Avoid breathing gas. 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/m³	ppm	mg/m³
Nova Methoxypropylamine	TWA	10 ppm	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 splash shields where there is any possibility of product coming in contact with eyes. Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of contact lenses. 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: Depending on airborne concentration, use a NIOSH approved respirator with organic vapor cartridges. Use a positive pressure, air-supplying 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.

9. PHYSICAL AND CHEMICAL PROPERTIES

a. Appearance	Colorless liquid
b. Odor	Ethereal
c. Odor Threshold	No data available
d. pH	11.7
e. Melting point/freezing point	No data available
f. Initial boiling point and boiling range	116-117˚C/241 ˚F
g. Flash point	32˚C/90˚F
h. Evaporation rate	No data available
i. Flammability (solid, gas)	No data available
j. Upper/lower flammability or explosion limits	No data available
k. Vapor pressure	20 mmHg
l. Vapor density	No data available
m. Specific Gravity	0.874 @ 20˚C
n. Water solubility	No data available
o. Partition coefficient: n-octanol/water	No data available
p. Auto ignition temperature	No data available
q. Decomposition temperature	No data available
r. Viscosity	No data available
s. Explosive properties	No data available
t. Oxidizing properties	No data available

10. STABILITY AND REACTIVITY

Reactivity	No data available
Chemical stability	Stable under recommended storage conditions.
Possibility of hazardous reactions	Vapors may form explosive mixture with air.
Conditions to avoid	Exposure to moisture Heat, flames and sparks.
Incompatible materials	Strong acids, strong oxidizing agents, acid chlorides, acid anhydrides.
Hazardous decomposition products	Hazardous gases/vapors Produced are carbon monoxide.

11. TOXICOLOGICAL INFORMATION

ACUTE

Chemical Name	**ORAL LD_{50} (rat)**	**DERMAL LD_{50} (rabbit)**	**INHALATION LC_{50} (rat)**
Nova Methoxypropylamine	180mg/kg	N/E	11,500 ppm/6H

Skin corrosion/irritation	Corrosive to skin
Serious eye damage/eye irritation	Corrosive to eyes
Respiratory or skin sensitization	Classified in respiratory or skin sensitization (categories 1, 1A or 1B)
Germ cell mutagenicity	No known significant effects or critical hazards
Carcinogenicity	No known significant effects or critical hazards

Reproductive toxicity	No known significant effects or critical hazards
Specific target organ toxicity - single exposure	No known significant effects or critical hazards
Specific target organ toxicity - repeated exposure	No known significant effects or critical hazards
Aspiration hazard	No known significant effects or critical hazards
Additional Information	No data available

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL DATA:

Toxicity	
Toxicity to fish	LC 50 (4 days) 146.6-1000 mg/L [2]
Toxicity to daphnia and other aquatic invertebrates	EC 50 (48 h) 65 mg/L [1]
Toxicity to algae	EC 50 (72 h) 31-44 mg/L [2]
Persistence and degradability	No data available
Biodegradability	No data available
Bio-accumulative potential	No data available
Mobility in soil	28.7 ug/kg soil dw (1)
Results of PBT and vPvB assessment	No data available
Other adverse effects	No data available

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

EMPTY CONTAINER: Contents should be completely used and containers emptied prior to discard. Large empty containers, such as drums, should be returned to the distributor or a drum reconditioned. To assure proper disposal of small empty containers, consult state and local regulations and disposal authorities.

14. TRANSPORT INFORMATION

DOT (DEPARTMENT OF TRANSPORTATION)

PROPER SHIPPING NAME: Amine, liquid, corrosive, flammable n.o.s. (3-Methoxypropylamine)
UN/NA NUMBER: 2734
CLASS: 8, 3
PACKING GROUP: II
MARINE POLLUTANT: No

15. REGULATORY INFORMATION

Information United States	
SARA 302 Components	No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313 Components	Nova Methoxypropylamine
SARA 311/312 Components	Fire Hazard, Acute Health Hazard, Chronic Health Hazard
Massachusetts Right To Know Components	Nova Methoxypropylamine
Pennsylvania Right To Know Components	Nova Methoxypropylamine
New Jersey Right To Know Components	Nova Methoxypropylamine
California Prop. 65 Components	This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

INFORMATION	
Full text of H-Statements referred to under sections 2 and 3.	
Acute Tox	Acute Toxicity
Eye dam.	Serious eye damage
Flam Liq	Flammable liquids
H226	Flammable liquid and vapor
H302	Harmful if swallowed
H314	Causes skin corrosion
H317	Skin sensitization
H318	Causes serious eye damage
Skin Irrit	Skin Irritation
HMIS RATING	
Health Hazard	2
Chronic health hazard	*
Flammability	3
Physical hazard	0
NFPA RATING	
Health Hazard	2
Fire Hazard	3
Reactivity hazard	0

DATA SOURCES:

REFERENCES

ACGIH. 2013 Guide to Occupational Exposure Values. Cincinnati, OH. Signature Publications, 2013.
Forsberg, K.; Mansdorf, S.Z. Quick Selection Guide to Chemical Protective Clothing. Fifth Edition. Hoboken, NJ. John Wiley & Sons, 2007.
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 Conversation 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 MERCANTABILITY, 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.