

METHYLMORPHOLINE (0.4M)IN DMF

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Revision date: 02/27/2015

Version: 1.0

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Substance
 Trade name : METHYLMORPHOLINE (0.4M)IN DMF
 Product code : AB09027

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Laboratory use/Manufacturing component/Research

1.3. Details of the supplier of the safety data sheet

AmericanBio, Inc.
 15 Erie Dr.
 Natick, MA 01760 - USA
 T 800.443.0600 - F 508.655.2754
info@americanbio.com - www.americanbio.com

1.4. Emergency telephone number

Emergency number : 855.835.2572 (U.S.) :: 760.602.8703 (Outside U.S.)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (GHS-US)

Flam. Liq. 2 H225
 Acute Tox. 4 (Dermal) H312
 Acute Tox. 4 (Inhalation:dust,mist) H332

2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US) :



Signal word (GHS-US) : Danger

Hazard statements (GHS-US) : H225 - Highly flammable liquid and vapor
 H312+H332 - Harmful in contact with skin or if inhaled

Precautionary statements (GHS-US) : P210 - Keep away from heat, hot surfaces, open flames, sparks. - No smoking
 P233 - Keep container tightly closed
 P240 - Ground/bond container and receiving equipment
 P241 - Use explosion-proof production equipment
 P242 - Use only non-sparking tools
 P243 - Take precautionary measures against static discharge
 P261 - Avoid breathing fume, gas, mist, spray, vapors
 P271 - Use only outdoors or in a well-ventilated area
 P280 - Wear eye protection, protective clothing, protective gloves
 P302+P352 - IF ON SKIN: Wash with plenty of soap and water
 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 victim to fresh air and keep at rest in a position comfortable for breathing
 P312 - Call a POISON CENTER/doctor/physician if you feel unwell
 P321 - Specific treatment (see SECTION 4 on this label)
 P362+P364 - Take off contaminated clothing and wash it before reuse
 P370+P378 - In case of fire: Use water spray, foam, sand for extinction
 P403+P235 - Store in a well-ventilated place. Keep cool
 P501 - Dispose of contents/container to approved waste facility

2.3. Other hazards

No additional information available

METHYLMORPHOLINE (0.4M)IN DMF

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

2.4. Unknown acute toxicity (GHS-US)

No data available

SECTION 3: Composition/information on ingredients

3.1. Substance

Trade name : METHYLMORPHOLINE (0.4M)IN DMF

Name	Product identifier	%	Classification (GHS-US)
N,N-dimethylformamide	(CAS No) 68-12-2	> 95	Flam. Liq. 3, H226 Acute Tox. 4 (Dermal), H312 Acute Tox. 4 (Inhalation:dust,mist), H332
4-methylmorpholine	(CAS No) 109-02-4	< 5	Flam. Liq. 2, H225 Acute Tox. 4 (Dermal), H312

Full text of H-phrases: see section 16

3.2. Mixture

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

- First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
- First-aid measures after inhalation : Assure fresh air breathing. Allow the victim to rest. Remove to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER/doctor/physician if you feel unwell.
- First-aid measures after skin contact : Rinse skin with water/shower. Remove/Take off immediately all contaminated clothing. Immediately call a POISON CENTER or doctor/physician. Specific measures (see Consult a doctor/medical service on this label). Wash with plenty of soap and water. Wash contaminated clothing before reuse.
- First-aid measures after eye contact : Rinse immediately with plenty of water. Obtain medical attention if pain, blinking or redness persist.
- First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention.

4.2. Most important symptoms and effects, both acute and delayed

- Symptoms/injuries after inhalation : Danger of serious damage to health by prolonged exposure through inhalation. Harmful if inhaled.
- Symptoms/injuries after skin contact : Repeated exposure to this material can result in absorption through skin causing significant health hazard. Harmful in contact with skin.

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

- suitable extinguishing media : Foam. Dry powder. Carbon dioxide. Water spray. Sand.
- Unsuitable extinguishing media : Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

- Fire hazard : Highly flammable liquid and vapor.
- Explosion hazard : May form flammable/explosive vapor-air mixture.

5.3. Advice for firefighters

- Firefighting instructions : Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Avoid (reject) fire-fighting water to enter environment.
- Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- General measures : Remove ignition sources. Use special care to avoid static electric charges. No naked lights. No smoking.

6.1.1. For non-emergency personnel

- Emergency procedures : Evacuate unnecessary personnel.

METHYLMORPHOLINE (0.4M)IN DMF

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

6.1.2. For emergency responders

Protective equipment : Equip cleanup crew with proper protection.
Emergency procedures : Ventilate area.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed : Handle empty containers with care because residual vapors are flammable.
Precautions for safe handling : Wash hands and other exposed areas with mild soap and water before eat, drink or smoke and when leaving work. Provide good ventilation in process area to prevent formation of vapor. No naked lights. No smoking. Use only non-sparking tools. Use only outdoors or in a well-ventilated area. Avoid breathing fume/gas/mist/vapours/spray.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Proper grounding procedures to avoid static electricity should be followed. Ground/bond container and receiving equipment. Use explosion-proof production equipment.
Storage conditions : Keep only in the original container in a cool, well ventilated place away from : Direct sunlight., Heat sources. Keep in fireproof place. Keep container tightly closed.
Incompatible products : Strong bases. strong acids.
Incompatible materials : Sources of ignition. Direct sunlight. Heat sources.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

N,N-dimethylformamide (68-12-2)		
USA ACGIH	ACGIH TWA (ppm)	10 ppm
USA ACGIH	ACGIH STEL (ppm)	10 ppm

8.2. Exposure controls

Personal protective equipment : Avoid all unnecessary exposure.
Hand protection : Wear protective gloves.
Eye protection : Chemical goggles or safety glasses.
Respiratory protection : Wear approved mask.
Other information : When using, do not eat, drink or smoke.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquid
Color : Colorless.
Odor : characteristic.
Odor threshold : No data available
pH : No data available
Relative evaporation rate (butyl acetate=1) : No data available
Melting point : No data available
Freezing point : No data available
Boiling point : No data available
Flash point : No data available
Self ignition temperature : No data available

METHYLMORPHOLINE (0.4M)IN DMF

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor pressure	: No data available
Relative vapor density at 20 °C	: No data available
Relative density	: No data available
Solubility	: No data available
Log Pow	: No data available
Log Kow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Explosive limits	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

10.2. Chemical stability

Not established. Highly flammable liquid and vapor. May form flammable/explosive vapor-air mixture.

10.3. Possibility of hazardous reactions

Not established.

10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures. Open flame.

10.5. Incompatible materials

strong acids. Strong bases.

10.6. Hazardous decomposition products

fume. Carbon monoxide. Carbon dioxide. May release flammable gases.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Harmful in contact with skin. Harmful if inhaled.

N,N-dimethylformamide (68-12-2)	
LD50 oral rat	> 2000 mg/kg (Rat)
LD50 dermal rat	1100 mg/kg (Rat)
LC50 inhalation rat (mg/l)	5.9 mg/l/4h (Rat)
LC50 inhalation rat (ppm)	1948 ppm/4h (Rat)

4-methylmorpholine (109-02-4)	
LD50 oral rat	> 1960 mg/kg (Rat)
LD50 dermal rat	1820 mg/kg (Rat)
LD50 dermal rabbit	1242 mg/kg (Rabbit)

Skin corrosion/irritation	: Not classified
Serious eye damage/irritation	: Not classified
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified

N,N-dimethylformamide (68-12-2)	
IARC group	3 - Not Classifiable

Reproductive toxicity : Not classified

METHYLMORPHOLINE (0.4M)IN DMF

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Specific target organ toxicity (single exposure)	: Not classified
Specific target organ toxicity (repeated exposure)	: Not classified
Aspiration hazard	: Not classified
Potential Adverse human health effects and symptoms	: Based on available data, the classification criteria are not met. Harmful in contact with skin. Harmful if inhaled.
Symptoms/injuries after inhalation	: Danger of serious damage to health by prolonged exposure through inhalation. Harmful if inhaled.
Symptoms/injuries after skin contact	: Repeated exposure to this material can result in absorption through skin causing significant health hazard. Harmful in contact with skin.

SECTION 12: Ecological information

12.1. Toxicity

N,N-dimethylformamide (68-12-2)	
LC50 fish 1	9800 mg/l 96 h; Salmo gairdneri (Oncorhynchus mykiss)
EC50 Daphnia 1	1300 mg/l (48 h; Daphnia magna)
LC50 fish 2	6300 mg/l (96 h; Lepomis macrochirus)
TLM fish 1	10.2 ppm 96 h; Salmo gairdneri (Oncorhynchus mykiss)
Threshold limit algae 1	10 mg/l (Scenedesmus quadricauda)
Threshold limit algae 2	0.5 mg/l (Selenastrum capricornutum)

4-methylmorpholine (109-02-4)	
LC50 fish 1	100 - 500 mg/l (48 h; Leuciscus idus)
LC50 fish 2	320 - 460 mg/l (96 h; Leuciscus idus)
Threshold limit other aquatic organisms 1	100 mg/l (48 h; Daphnia magna)
Threshold limit algae 1	802 mg/l (72 h; Scenedesmus quadricauda)

12.2. Persistence and degradability

METHYLMORPHOLINE (0.4M)IN DMF	
Persistence and degradability	Not established.

N,N-dimethylformamide (68-12-2)	
Persistence and degradability	Readily biodegradable in water. Biodegradable in the soil. Photodegradation in the air.
Biochemical oxygen demand (BOD)	0.9 g O ₂ /g substance
Chemical oxygen demand (COD)	0.3645 g O ₂ /g substance
ThOD	1.863 g O ₂ /g substance
BOD (% of ThOD)	0.49 % ThOD

4-methylmorpholine (109-02-4)	
Persistence and degradability	Biodegradable in water.

12.3. Bioaccumulative potential

METHYLMORPHOLINE (0.4M)IN DMF	
Bioaccumulative potential	Not established.

N,N-dimethylformamide (68-12-2)	
BCF fish 1	0.3-1.2, Cyprinus carpio; Test duration: 8 weeks
Log Pow	-1.01 (Experimental value)
Bioaccumulative potential	Bioaccumulation: not applicable.

4-methylmorpholine (109-02-4)	
Log Pow	-0.33
Bioaccumulative potential	Bioaccumulation: not applicable.

12.4. Mobility in soil

N,N-dimethylformamide (68-12-2)	
Surface tension	0.036 N/m (25 °C)

METHYLMORPHOLINE (0.4M)IN DMF

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

12.5. Other adverse effects

Other information : Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to approved waste facility.

Additional information : Handle empty containers with care because residual vapors are flammable.

Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

In accordance with DOT

Transport document description : UN2535 4-Methylmorpholine, 3, II

UN-No.(DOT) : 2535

DOT NA no. : UN2535

DOT Proper Shipping Name : 4-Methylmorpholine

Department of Transportation (DOT) Hazard Classes : 3 - Class 3 - Flammable and combustible liquid 49 CFR 173.120

Hazard labels (DOT) : 3 - Flammable liquid
8 - Corrosive



Packing group (DOT) : II - Medium Danger

DOT Special Provisions (49 CFR 172.102) : B6 - Packaging shall be made of steel.
IB2 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized.
T7 - 4 178.274(d)(2) Normal..... 178.275(d)(3)
TP1 - The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling = $97 / 1 + a (tr - tf)$ Where: tr is the maximum mean bulk temperature during transport, and tf is the temperature in degrees celsius of the liquid during filling.

DOT Packaging Exceptions (49 CFR 173.xxx) : None

DOT Packaging Non Bulk (49 CFR 173.xxx) : 202

DOT Packaging Bulk (49 CFR 173.xxx) : 243

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 1 L

DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 5 L

DOT Vessel Stowage Location : B - (i) The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length; and (ii) "On deck only" on passenger vessels in which the number of passengers specified in paragraph (k)(2)(i) of this section is exceeded.

DOT Vessel Stowage Other : 40 - Stow "clear of living quarters"

Additional information

Other information : No supplementary information available.

ADR

Transport document description : UN N/A

Packing group (ADR) : N/A

Hazard identification number (Kemler No.) : N/A

Classification code (ADR) : N/A

Transport by sea

No additional information available

METHYLMORPHOLINE (0.4M)IN DMF

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Air transport

No additional information available

SECTION 15: Regulatory information

15.1. US Federal regulations

N,N-dimethylformamide (68-12-2)

Listed on the United States TSCA (Toxic Substances Control Act) inventory
Listed on SARA Section 313 (Specific toxic chemical listings)

RQ (Reportable quantity, section 304 of EPA's List of Lists) :	100 lb
--	--------

4-methylmorpholine (109-02-4)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

CANADA

No additional information available

EU-Regulations

No additional information available

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Not classified

Classification according to Directive 67/548/EEC or 1999/45/EC

Not classified

15.2.2. National regulations

No additional information available

15.3. US State regulations

N,N-dimethylformamide (68-12-2)

U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

4-methylmorpholine (109-02-4)

U.S. - New Jersey - Right to Know Hazardous Substance List

SECTION 16: Other information

Other information : None.

Full text of H-phrases: see section 16:

Acute Tox. 4 (Dermal)	Acute toxicity (dermal) Category 4
Acute Tox. 4 (Inhalation:dust,mist)	Acute toxicity (inhalation:dust,mist) Category 4
Flam. Liq. 2	Flammable liquids Category 2
Flam. Liq. 3	Flammable liquids Category 3
H225	Highly flammable liquid and vapor
H226	Flammable liquid and vapor
H312	Harmful in contact with skin
H332	Harmful if inhaled

METHYLMORPHOLINE (0.4M)IN DMF

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SDS US (GHS HazCom 2012)

AmericanBio, Inc. does not make any representations, guaranties or warranties as to the accuracy of the information provided in this Safety Data Sheet, which has been provided by a third party, is made in accordance with United States Global Harmonization System (GHS) initiative HAZCOM 2012 (Federal Register, Vol. 77, No. 58, Monday March 26, 2012/Rules and Regulations), and is intended only to describe the product for the purposes of health, safety and environmental requirements. It is expressly understood and agreed that AmericanBio, Inc. shall in no way be deemed or held to be obligated, liable, or accountable upon or under any guaranties or warranties, express or implied, statutory, by operation of law, or otherwise, in any manner or form, including any implied warranty of merchantability or fitness for a particular purpose, that in any way relates to or arises out of the information provided in this Safety Data Sheet.