

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

#### 1.1. Product identifier

Product form : Substance  
 Trade name : METHYLMORPHOLINE  
 CAS No : 109-02-4  
 Product code : AB09016  
 Formula : C5H11NO

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

Use of the substance/mixture : Laboratory chemical  
 Chemical intermediate  
 Catalyst

#### 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](mailto:info@americanbio.com) - [www.americanbio.com](http://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

#### 2.2. Label elements

##### GHS-US labeling

Hazard pictograms (GHS-US) :



GHS02

GHS07

Signal word (GHS-US) : Danger  
 Hazard statements (GHS-US) : H225 - Highly flammable liquid and vapor  
 H312 - Harmful in contact with skin  
 Precautionary statements (GHS-US) : P210 - Keep away from hot surfaces, open flames, sparks, heat. - No smoking  
 P233 - Keep container tightly closed  
 P240 - Ground/bond container and receiving equipment  
 P241 - Use explosion-proof electrical, lighting, ventilating equipment  
 P242 - Use only non-sparking tools  
 P243 - Take precautionary measures against static discharge  
 P280 - Wear eye protection, protective clothing, protective gloves, face protection  
 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  
 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 foam/water spray/sand for extinction  
 P403+P235 - Store in a well-ventilated place. Keep cool  
 P501 - Dispose of contents/container to Local/Federal regulations

#### 2.3. Other hazards

No additional information available

# METHYLMORPHOLINE

## 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

Name	Product identifier	%	Classification (GHS-US)
METHYLMORPHOLINE (Main constituent)	(CAS No) 109-02-4	100	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 : Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital. 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 : Remove the victim into fresh air. Immediately consult a doctor/medical service. Assure fresh air breathing. Allow the victim to rest.
- First-aid measures after skin contact : Wash immediately with lots of water (15 minutes)/shower. Do not apply (chemical) neutralizing agents. Remove clothing while washing. Do not remove clothing if it sticks to the skin. Cover wounds with sterile bandage. Consult a doctor/medical service. If burned surface > 10%: take victim to hospital. 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 for 15 minutes. Take victim to an ophthalmologist. Do not apply neutralizing agents. Rinse immediately with plenty of water. Obtain medical attention if pain, blinking or redness persist.
- First-aid measures after ingestion : Rinse mouth with water. Immediately after ingestion: give lots of water to drink. Do not induce vomiting. Do not give activated charcoal. Call Poison Information Centre ([www.big.be/antigif.htm](http://www.big.be/antigif.htm)). Immediately consult a doctor/medical service. Take the container/vomit to the doctor/hospital. Ingestion of large quantities: immediately to hospital. Do not give chemical antidote. 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 : Dry/sore throat. Coughing. Irritation of the respiratory tract. Irritation of the nasal mucous membranes. Headache. Nausea. EXPOSURE TO HIGH CONCENTRATIONS: Corrosion of the upper respiratory tract. Respiratory difficulties. FOLLOWING SYMPTOMS MAY APPEAR LATER: Possible oedema of the upper respiratory tract. Possible inflammation of the respiratory tract. Possible laryngeal spasm/oedema. Risk of pneumonia. Risk of lung oedema.
- Symptoms/injuries after skin contact : Caustic burns/corrosion of the skin. Repeated exposure to this material can result in absorption through skin causing significant health hazard. Harmful in contact with skin.
- Symptoms/injuries after eye contact : Corrosion of the eye tissue.
- Symptoms/injuries after ingestion : Burns to the gastric/intestinal mucosa.

### 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 : Preferably: alcohol resistant foam. Water spray. Polyvalent foam. BC powder. Carbon dioxide. Sand/earth. MAJOR FIRE: Quantities of water. Foam. Dry powder. Carbon dioxide. Water spray. Sand.
- Unsuitable extinguishing media : Solid water jet ineffective as extinguishing medium. Do not use a heavy water stream.

### 5.2. Special hazards arising from the substance or mixture

- Fire hazard : DIRECT FIRE HAZARD. Highly flammable. Gas/vapour flammable with air within explosion limits. INDIRECT FIRE HAZARD. May be ignited by sparks. Gas/vapour spreads at floor level: ignition hazard. Highly flammable liquid and vapor.

# METHYLMORPHOLINE

## Safety Data Sheet

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

- Explosion hazard : DIRECT EXPLOSION HAZARD. Gas/vapour explosive with air within explosion limits. INDIRECT EXPLOSION HAZARD. may be ignited by sparks. May form flammable/explosive vapor-air mixture.
- Reactivity : On heating/burning: release of toxic and corrosive gases/vapours (nitrous vapours, carbon monoxide - carbon dioxide). Reacts violently with (strong) oxidizers. Reacts exothermically with (some) acids. Forms with nitrites carcinogenic nitrosamines.

### 5.3. Advice for firefighters

- Firefighting instructions : Cool tanks/drums with water spray/remove them into safety. Do not move the load if exposed to heat. Dilute toxic gases with water spray. Take account of toxic fire-fighting water. Use water moderately and if possible collect or contain it. 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

- Protective equipment : Gas-tight suit. Corrosion-proof suit. See "Material-Handling" to select protective clothing.
- Emergency procedures : Keep upwind. Mark the danger area. Consider evacuation. Seal off low-lying areas. Close doors and windows of adjacent premises. Stop engines and no smoking. No naked flames or sparks. Spark- and explosionproof appliances and lighting equipment. Keep containers closed. Wash contaminated clothes. Evacuate unnecessary personnel.

#### 6.1.2. For emergency responders

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

### 6.2. Environmental precautions

Prevent soil and water pollution. Prevent spreading in sewers. 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

- For containment : Contain released substance, pump into suitable containers. Consult "Material-handling" to select material of containers. Plug the leak, cut off the supply. Dam up the liquid spill. Try to reduce evaporation. Measure the concentration of the explosive gas-air mixture. Dilute combustible/toxic gases/vapours with water spray. Take account of toxic/corrosive precipitation water. Do not use compressed air for pumping over spills.
- Methods for cleaning up : Damaged/cooled tanks must be emptied. Do not use compressed air for pumping over spills. Take up liquid spill into absorbent material, e.g.: dry sand/earth lime or soda ash. Scoop absorbed substance into closing containers. Carefully collect the spill/leftovers. See "Material-handling" for suitable container materials. Take collected spill to manufacturer/competent authority. Clean contaminated surfaces with an excess of water. Wash clothing and equipment after handling. 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 : Comply with the legal requirements. Remove contaminated clothing immediately. Clean contaminated clothing. Handle uncleaned empty containers as full ones. Thoroughly clean/dry the installation before use. Do not discharge the waste into the drain. Do not use compressed air for pumping over. Use spark-/explosionproof appliances and lighting system. Keep away from naked flames/heat. Keep away from ignition sources/sparks. Observe very strict hygiene - avoid contact. Keep container tightly closed. Measure the concentration in the air regularly. Work under local exhaust/ventilation. 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.

# METHYLMORPHOLINE

## Safety Data Sheet

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

### 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 electrical/ventilating/lighting equipment.
Storage conditions	: Keep only in the original container in a cool, well ventilated place away from : Direct sunlight. Keep in fireproof place. Keep container tightly closed.
Incompatible products	: Strong bases. strong acids.
Incompatible materials	: Sources of ignition. Direct sunlight. Heat sources.
Heat-ignition	: KEEP SUBSTANCE AWAY FROM: heat sources. ignition sources.
Prohibitions on mixed storage	: KEEP SUBSTANCE AWAY FROM: combustible materials. oxidizing agents. (strong) acids.
Storage area	: Store in a cool area. Store in a dry area. Ventilation at floor level. Fireproof storeroom. Provide for a tub to collect spills. Meet the legal requirements.
Special rules on packaging	: SPECIAL REQUIREMENTS: closing. clean. correctly labelled. meet the legal requirements.
Packaging materials	: SUITABLE MATERIAL: stainless steel. tin. MATERIAL TO AVOID: aluminium. copper.

### 7.3. Specific end use(s)

No additional information available

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

No additional information available

### 8.2. Exposure controls

Personal protective equipment	: Avoid all unnecessary exposure.
Materials for protective clothing	: GIVE GOOD RESISTANCE: butyl rubber. PVC.
Hand protection	: Gloves. Wear protective gloves.
Eye protection	: Safety glasses. Chemical goggles or safety glasses.
Skin and body protection	: Head/neck protection. Corrosion-proof clothing.
Respiratory protection	: Gas mask with filter type A. High vapour/gas concentration: self-contained respirator. 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
Appearance	: Liquid.
Molecular mass	: 101.15 g/mol
Color	: Colourless.
Odor	: Ammonia odour.
Odor threshold	: No data available
pH	: 10.6 (5.44 %)
pH solution	: 5.44 %
Relative evaporation rate (butyl acetate=1)	: No data available
Melting point	: -66 °C
Freezing point	: No data available
Boiling point	: 115 °C
Flash point	: 13 °C
Self ignition temperature	: > 165 °C
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor pressure	: 22 hPa
Vapor pressure at 50 °C	: 175 hPa
Relative vapor density at 20 °C	: 3.5
Relative density	: 0.92
Relative density of saturated gas/air mixture	: 1.05
Density	: 920 kg/m <sup>3</sup>

# METHYLMORPHOLINE

## Safety Data Sheet

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

Solubility	: Soluble in water. Soluble in ethanol. Soluble in ether. Water: Complete
Log Pow	: -0.33
Log Kow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: 0.00091 Pa.s (20 °C)
Explosive properties	: No data available
Oxidizing properties	: No data available
Explosive limits	: 2 - 10.6 vol % 84 - 445 g/m <sup>3</sup>

### 9.2. Other information

VOC content	: 100 %
Other properties	: Gas/vapour heavier than air at 20°C. Clear. Volatile. Substance has basic reaction.

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

On heating/burning: release of toxic and corrosive gases/vapours (nitrous vapours, carbon monoxide - carbon dioxide). Reacts violently with (strong) oxidizers. Reacts exothermically with (some) acids. Forms with nitrites carcinogenic nitrosamines.

### 10.2. Chemical stability

Stable under normal conditions. 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.

METHYLMORPHOLINE ( f )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  
pH: 10.6 (5.44 %)

Serious eye damage/irritation : Not classified  
pH: 10.6 (5.44 %)

Respiratory or skin sensitization : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

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.

# METHYLMORPHOLINE

## Safety Data Sheet

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

- Symptoms/injuries after inhalation : Dry/sore throat. Coughing. Irritation of the respiratory tract. Irritation of the nasal mucous membranes. Headache. Nausea. EXPOSURE TO HIGH CONCENTRATIONS: Corrosion of the upper respiratory tract. Respiratory difficulties. FOLLOWING SYMPTOMS MAY APPEAR LATER: Possible oedema of the upper respiratory tract. Possible inflammation of the respiratory tract. Possible laryngeal spasm/oedema. Risk of pneumonia. Risk of lung oedema.
- Symptoms/injuries after skin contact : Caustic burns/corrosion of the skin. Repeated exposure to this material can result in absorption through skin causing significant health hazard. Harmful in contact with skin.
- Symptoms/injuries after eye contact : Corrosion of the eye tissue.
- Symptoms/injuries after ingestion : Burns to the gastric/intestinal mucosa.

## SECTION 12: Ecological information

### 12.1. Toxicity

- Ecology - air : Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009).
- Ecology - water : Mild water pollutant (surface water). Slightly harmful to fishes (LC50(96h) 100-1000 mg/l). Slightly harmful to invertebrates (Daphnia) (EC50 > 100 mg/l). Slightly harmful to algae (EC50 (72h): 100 - 1000 mg/l). pH shift. Not harmful to activated sludge.

#### 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 (109-02-4)

Persistence and degradability	Biodegradable in water. Not established.
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### 12.3. Bioaccumulative potential

#### METHYLMORPHOLINE (109-02-4)

Log Pow	-0.33
Bioaccumulative potential	Bioaccumulation: not applicable. Not established.

### 12.4. Mobility in soil

No additional information available

### 12.5. Other adverse effects

- Other information : Avoid release to the environment.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

- Waste disposal recommendations : Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Incinerate under surveillance with energy recovery. Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to Local/Federal regulations.
- Additional information : LWCA (the Netherlands): KGA category 03. Hazardous waste according to Directive 2008/98/EC. 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  
No dangerous good in sense of transport regulations

### Additional information

- Other information : No supplementary information available.

### ADR

- Transport document description : UN 2535, 3 (8), II, (D/E)
- Packing group (ADR) : II

# METHYLMORPHOLINE

## Safety Data Sheet

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

Class (ADR) : 3 - Flammable liquid  
Hazard identification number (Kemler No.) : 338  
Classification code (ADR) : FC  
Danger labels (ADR) : 3 - Flammable liquids  
8 - Corrosive substances



Orange plates : 

Tunnel restriction code : D/E

### Transport by sea

UN-No. (IMDG) : 2535  
Class (IMDG) : 3 - Flammable liquids  
Subsidiary risks (IMDG) : 8  
EmS-No. (1) : F-E  
EmS-No. (2) : S-C

### Air transport

UN-No. (IATA) : 2535  
Class (IATA) : 3 - Flammable Liquids  
Packing group (IATA) : II - Medium Danger  
Subsidiary risks (IATA) : 8

## SECTION 15: Regulatory information

### 15.1. US Federal regulations

#### 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]

Flam. Liq. 2 H225  
Acute Tox. 4 (Inhalation) H332  
Acute Tox. 4 (Dermal) H312  
Acute Tox. 4 (Oral) H302  
Skin Corr. 1B H314

Full text of H-phrases: see section 16

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

F; R11  
Xn; R20/21/22  
C; R34

Full text of R-phrases: see section 16

# METHYLMORPHOLINE

## Safety Data Sheet

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

### 15.2.2. National regulations

No additional information available

### 15.3. US State regulations

#### METHYLMORPHOLINE(109-02-4)

State or local regulations	U.S. - New Jersey - Right to Know Hazardous Substance List
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## SECTION 16: Other information

Other information : None.

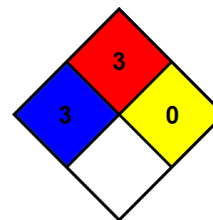
Full text of H-phrases: see section 16:

Acute Tox. 4 (Dermal)	Acute toxicity (dermal) Category 4
Flam. Liq. 2	Flammable liquids Category 2
H225	Highly flammable liquid and vapor
H312	Harmful in contact with skin

NFPA health hazard : 3 - Short exposure could cause serious temporary or residual injury even though prompt medical attention was given.

NFPA fire hazard : 3 - Liquids and solids that can be ignited under almost all ambient conditions.

NFPA reactivity : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



SDS US (GHS HazCom 2012)

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