MONOMETHYLAMINE, ANHYDROUS

MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Product: Monomethylamine, anhydrous
MSDS number: 175
Material number: 80175

2. Composition / Information on Ingredients

Component CAS Number Percent % OSHA hazard category:
METHYLAMINE 74-89-5 98 Hazardous

3. Hazards Identification

Product Description
Appearance: Colorless gas.
Odor: Strong ammonia-like odor.

Product information: 800 835 5235
1 of 11

Emergency Overview:

DANGER!
•Flammable gas. May cause flash fire.
•May cause respiratory tract, skin and eye irritation.
•Vapor is heavier than air and can travel considerable distance to a source of ignition and flashback.

Manufacturer name and address:

Spar Chem
159, Ashoka Shopping center, L.T.Road, Mumbai 400 001
INDIA TEL +91 22 2264264 FAX +91 22 22642640

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Potential health effects

Routes of exposure: Skin, eyes, inhalation.
Immediate effects:
Skin: Causes skin burns. Symptoms of exposure may include: Redness or discoloration,

swelling, itching, burning or blistering of skin.
Eyes: Exposure to liquid Causes severe eye burns, damage irreversible. Exposure to vapors Causes eye irritation. Symptoms of exposure may include: Eye irritation, burning sensation, pain, watering, and/or change of vision. Transient visual disturbances characterized by mildly blurred vision and a blue-gray discoloration of sight. This effect is commonly referred to as blue haze, or halo vision, with halo vision getting its name form the appearance of a halo when looking at light sources. These effects are due to mild corneal irritation and edema and normally disappear several hours after exposure.
Inhalation: Causes respiratory tract irritation. Harmful if inhaled. Symptoms of exposure may include: Nasal discharge, hoarseness, coughing, chest pain and breathing difficulty. Accumulation of fluid in the lungs (pulmonary edema); symptoms can be delayed for several hours. Nausea, headache and/or dizziness.
Ingestion: Causes digestive tract burns. Harmful if swallowed. Symptoms of exposure may include: Nausea, vomiting, loss of appetite, gastrointestinal irritation and/or diarrhea. Severe damage to the mouth, throat esophagus and/or stomach.
Mutagenic: Shows mixed results for mutagenic potential in vitro.
Target organ effects: •Overexposure (prolonged or repeated exposure) may cause:
Injury to the eyes
Irritation of the respiratory tract
Digestive tract damage
Skin damage.
Medical conditions which may be aggravated by exposure:
Significant exposure to this chemical may adversely affect people with acute or chronic disease of the:
Respiratory Tract
Skin
Eyes
Digestive tract
May cause asthmatic response in persons with asthma, who are particularly sensitive to respiratory irritants.

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For further information, see: Section 4 - First Aid Measures
Section 5 - Fire Fighting Measures
Section 6 - Accidental Release Measures
Section 8 - Exposure Controls/Personal Protection
Section 9 - Physical and Chemical Properties
Section 10 - Stability and Reactivity

4. First Aid Measures

Skin: Initial emergency treatment should consist of washing with large amounts of 5% acetic acid (aqueous vinegar) alternating with soap and water, while removing contaminated clothing and shoes. Continue regime for at least 15 minutes, although the acetic acid may be discontinued once the stickiness is gone. In all cases, large amounts of plain water rinsing for 5 minutes is the final step. If 5% acetic acid is not immediately available, wash with plenty of water until 5% acetic acid can be obtained. Get medical attention immediately. Wash clothing before reuse. Destroy contaminated shoes.
Eyes: Immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lenses, if worn. Get medical attention immediately.
Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult,

give oxygen. Call a physician.
Note to physician: Observe for latent pulmonary edema. Chemical pneumonitis could follow respiratory exposure.

5. Fire Fighting Measures

NFPA: Health: 3 Flammability: 4 Reactivity: 0
Flammable properties
Flash point (test method): Inappropriate for this material
Flammable limits in air, % by volume:
Upper: 20.8 %
Lower: 5 %
Autoignition temperature: 430.3 C (806 F)
Products of combustion: Carbon Monoxide.
Extinguishing Media: Use alcohol type aqueous film forming foam for large fires. Use CO_2 or dry chemical
for small fires.

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Fire Fighting Instructions: Water may be ineffective but should be used to cool fire-exposed structures and
vessels. Use water spray for large fires. Water spray can be used to reduce the intensity of flames and to dilute spills to a non-flammable mixture. Keep personnel removed from and upwind of fire. If potential for exposure to vapors or products of combustion exists, wear full fire fighting turnout gear and NIOSH approved selfcontained breathing apparatus. Oxidizing chemicals may accelerate the burning rate in a fire situation. Vapor is heavier than air and can travel considerable distance to a source of ignition and flashback.
Fire Fighting
Environmental Concerns:
Water run-off and vapor cloud may be corrosive. Dike and collect water used to fight fire for neutralization before release. Vapors and combustion gases can be controlled using a water fog stream. Thoroughly decontaminate bunker gear and other firefighting equipment before re-use.

6. Accidental Release Measures

Spill or Leak Instructions Eliminate ignition sources. See Section 8 for appropriate personal protective equipment. Contain spill with dikes of soil or nonflammable absorbent to minimize contaminated area. Water fog stream may reduce vapors. If fire potential exists, blanket spill with alcohol type aqueous film-forming foam or use water fog stream to disperse vapors. Avoid run-off into storm sewers and ditches leading to waterways. If required, notify state and local authorities. Place leaking containers in wellventilated area.
Within the United States, call the National Response Center (800-424-8802) and appropriate state and local authorities if the quantity released over 24 hours is equal to or greater than the reportable quantity listed below:
100 lbs. of the material as is, based on a Reportable Quantity of 100 lbs. of monomethylamine.
Keep unnecessary people away; isolate hazard area and deny entry. Stay upwind; keep out of low areas. Isolate for 800 meters or 0.5 miles in all directions if tank, rail car, or tank truck in involved in fire. Evacuate downwind areas as conditions warrant to prevent exposure and to allow vapors or fumes to dissipate. Spills may expose downwind areas to toxic or flammable concentrations over considerable distances in some cases.

7. Handling and Storage

Handling: Use with adequate ventilation. Keep containers closed when not in use. Always open containers slowly to allow any excess pressure to vent. Avoid breathing vapor. Avoid contact with eyes, skin or clothing. Wash thoroughly with soap and water after handling. Decontaminate soiled clothing thoroughly before re-use. Destroy contaminated leather clothing.

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This product may generate a static charge. Ground/bond equipment when transferring material to prevent static accumulation. Electrical equipment and circuits in all storage and handling must conform to requirements of National Electric Code (Article 500 and 501) for hazardous location.

Storage: Do not store with incompatible materials. See Section 10. Stability and Reactivity. Keep all containers tightly closed when not in use. Store out of direct sunlight and on an impermeable floor.

8. Exposure Controls / Personal Protection

Engineering Controls: General or dilution ventilation is frequently insufficient as the sole means of controlling employee exposure. Local ventilation is usually preferred. Explosionproof equipment (for example fans, switches, and grounded ducts) should be used in mechanical ventilation systems.

Protective Equipment A safety shower and eyebath should be readily available. 5% Acetic acid solution
(aqueous vinegar) should be readily available for first aid treatment of splashes to the skin.

Skin protection: Wear impervious clothing and gloves to prevent contact. Nitrile rubber is recommended. Other protective material may be used, depending on the situation, if adequate degradation and permeation data is available. If other chemicals are used in conjunction with this chemical, material selection should be based on protection for all chemicals present.

Eye/face protection: Wear chemical goggles when there is a reasonable chance of eye contact. In addition to goggles, wear a face shield if there is a reasonable chance for splash to the face.

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Respiratory protection: Based on workplace contaminant level and working limits of the respirator, use a
respirator approved by NIOSH. The following is the minimum recommended equipment for an occupational exposure level. To estimate an occupational exposure level see Section 3, Section 8 and Section 11.

For concentrations > 1 and < 10 times the occupational exposure level: Use airpurifying respirator with full facepiece and organic vapor cartridge(s) or air-purifying full facepiece respirator with an organic vapor canister or a full facepiece powered air-purifying respirator fitted with organic vapor cartridge(s). The air purifying element must have an end of service life indicator, or a documented change out schedule must be established. Otherwise, use supplied air.

For concentrations more than 10 times the occupational exposure level and less than the lower of either 100 times the occupational exposure level or the IDLH: Use Type C full facepiece supplied-air respirator operated in positive-pressure or continuousflow

mode.
For concentrations > 100 times the occupational exposure level or greater than the IDLH level or unknown concentrations (such as in emergencies): Use self-contained breathing apparatus with full facepiece in positive-pressure mode or Type C positive-pressure full facepiece supplied-air respirator with an auxiliary positivepressure self-contained breathing apparatus escape system.
For escape: Use self-contained breathing apparatus with full facepiece or any respirator specifically approved for escape.

Exposure guidelines

Component CAS
Number
Percent
%
ACGIH
TWA
ACGIH
STEL
ACGIH
CEILING
OSHA
TWA
OSHA
STEL
OSHA
CEILING
Celanese
WEL *
Mexico
TWA
Mexico
STEL
Mexico
CEILING
METHYLAMINE 74-89-5 98 5 ppm 15 ppm - 10 ppm - - - 10 ppm - -
Component CAS Number Percent % 1990 NIOSH IDLH
METHYLAMINE 74-89-5 98 - 100 ppm
Comments: Celanese has adopted the ACGIH TLVs

9. Physical and Chemical Properties

Appearance: Colorless gas.
Odor: Strong ammonia-like odor.
Vapor Pressure: 2251 mm Hg at 20 deg C
Vapor Density (Air=1 @ 20°C): 1.07

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Boiling Point (760 mmHgA): - 6.3 C (20.7 F)
Melting Point: - 93.5 C (- 136.3 F)
Specific Gravity: 0.663 at 20 deg C
Molecular Weight: 31.1

10. Stability and Reactivity

Stability: Stable.
Conditions to Avoid: Avoid heat , flames, sparks, and other sources of ignition.
Incompatibility: Keep away from acids, oxidizing agents, nitrites, copper, copper alloys or cellulose nitrate.
Hazardous Combustion or
Decomposition Products:
Thermal decomposition products may include oxides of nitrogen and carbon.

Hazardous Polymerization: Hazardous polymerization will not occur.

11. Toxicological Information

Component Toxicological Information

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12. Ecological Information

Component Ecological Information

Mutagenicity: Genotoxicity results were equivocal in vitro: negative in the Ames Test and positive in the mouse lymphoma cell assay. In vivo information was not available.
Carcinogenicity: No information.
Reproductive/Developmental Effects: No information.
Repeated Exposure: Rats were subjected to inhalation exposure (6 hrs./day; 5 days/week) for 2 weeks to vapor concentrations of 75, 250 or 750 ppm. Additional animals exposed similarly were allowed a 2-week recovery period after exposure ended. Upper respiratory tract irritation (nasal lesions) was observed in all groups although effects were marginal at 75 ppm. Mortality and clinical chemistry findings indicative of liver injury were also seen at 750 ppm. Effects were lessened in recovery animals.
Component METHYLAMINE
Acute Exposure:
Oral LD50: 0.1-0.2 g/kg as 40% aqueous basic solution (rats); moderately toxic to animals.
Inhalation LC50: 5000 ppm (estimated for rats, 1 hr.); 1890 ppm (mice, 2 hrs.); moderately toxic to animals. Transient nose & throat irritation was reported in humans from brief exposures at 20-100 ppm, but not at concentrations less than 10 ppm. One case of allergic or chemical bronchitis was reported in a worker exposed to methylamine.
Skin: Liquified methylamine or 40% aqueous basic solution is corrosive to animal skin; vapors may produce skin irritation.
Eye: 40% Aqueous basic solution was corrosive to rabbit eyes. Transient eye irritation was reported in humans from brief exopsures at 20-100 ppm, but not at concentrations less than 10 ppm. Vapors of related amines have been eported to cause corneal edema with resultant "halovision" around lights.
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13. Disposal Considerations

Dispose of spilled material in accordance with state and local regulations for hazardous waste. Recommended
methods are incineration or biological treatment at a federally or state-permitted disposal facility. Note that this
information applies to the material as manufactured; processing, use, or contamination may make this information

inappropriate, inaccurate, or incomplete.
Note that this handling and disposal information may also apply to empty containers, liners and rinsate. State or
local regulations or restrictions are complex and may differ from federal regulations. This information is intended as
an aid to proper handling and disposal; the final responsibility for handling and disposal is with the owner of the
waste. See Section 9 - Physical and Chemical Properties.
EPA Hazardous Waste Code(s): D001

14. Transport Information

US Department of Transportation:

UN/NA Number: UN 1061
Shipping name: METHYLAMINE, ANHYDROUS
Hazard class: 2.1
DOT Reportable Quantity (RQ): 100 lb/45.4 kg
Emergency Response Guide: 118

ICAO/IATA:

IATA UN Number: UN 1061
Proper Shipping Name: METHYLAMINE, ANHYDROUS

Ecotoxicity: Monomethylamine exhibits slight acute toxicity to aquatic species.
The alkaline nature of this material probably inhances the toxicity by increasing the
pH in aquatic test systems. The LC50 values for various fish species are as follows:
Creek chub (24 hrs., pH 8.3) > 10 ppm but < 30 ppm;
Brook trout (22 hrs., pH buffered to 7.5) 90 ppm.
The 48-hr.EC50 for the water flea (daphnid) is 163-702 ppm (pH greater than or
equal to 7).
In the green algae, Scenedesmus obli- quus, photosyntheses was inhibited at 160
ppm (pH 7.9).
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Hazard Classification: 2.1 (Flammable Gas)
Label: (Flammable Gas) (Cargo Aircraft Only)

IMDG:

International Marine UN Number: UN 1061
Proper Shipping Name: METHYLAMINE, ANHYDROUS
Hazard Class: 2.1 (Flammable Gas)
Flash point (test method): Inappropriate for this material

Transport Canada

Trade Information

Schedule B Code (export): 2921.11.0000

15. Regulatory Information

U.S. STATE REGULATIONS
Chemicals associated with the product which are subject to the state right-to-know regulations are listed along with the
applicable state(s):
U.S. FEDERAL REGULATIONS
TSCA Inventory: We certify that all components are either on the TSCA inventory or qualify for an exemption.
Environmental Regulations:
SARA 311:

Illinois Listed
CERCLA Hazardous Substance Listed
Massachusetts Listed
Rhode Island Listed
METHYLAMINE 74-89-5
Pennsylvania Listed
New York Listed
New Jersey Listed
METHYLAMINE 74-89-5
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Acute health: Yes
Chronic health: No
Fire: Yes
Sudden release of pressure: No
Reactive: No
INTERNATIONAL REGULATIONS
International Chemical Inventory
Listed on the chemical inventories of the following countries or qualifies for an exemption:
AUSTRALIA,CHINA,CANADA,EUROPE,KOREA,PHILIPPINES, JAPAN

16. Other Information

Prepared by: Product Stewardship Department
Celanese Ltd.
Hazard ratings This information is intended solely for the use of individuals trained in the NFPA and/or HMIS systems.
NFPA: Health: 3 Flammability: 4 Reactivity: 0
HMIS: Health: 3 Flammability: 4 Reactivity: 0
Revisions: The following sections have been revised since the last issue of this MSDS.
Footer: Product Information number
For industrial use only. The information contained herein is accurate to the best of our knowledge. We do not suggest or guarantee that any hazards listed herein are the only ones which exist. Celanese makes no warranty of any kind, express or implied, concerning the safe use of this material in your process or in combination with other substances. Effects can be aggravated by other materials and/or this material may aggravate or add to the effects of other materials. This material may be released from gas, liquid, or solid materials made directly or indirectly from it. User has the sole responsibility to determine the suitability of the materials for any use and the manner of use contemplated. User must meet all applicable safety and health standards. Material safety data sheets are provided on the Internet by Celanese as a service to its customers. Possession of an Internet MSDS does not indicate that the possessor of the MSDS was a purchaser or user of the subject product.
