

MATERIAL SAFETY DATA SHEET

Ashland

Page 001

Date Prepared: 03/03/05

Date Printed: 05/01/06

MSDS No: 999.0003825-007.009

MORPHOLINE 99% TECH GRADE

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Material Identity

Product Name: MORPHOLINE 99% TECH GRADE

General or Generic ID: AMINE

Company

Ashland
Ashland Distribution Co. &
Ashland Specialty Chemical Co.
P. O. Box 2219
Columbus, OH 43216
614-790-3333

Emergency Telephone Number:

1-800-ASHLAND (1-800-274-5263)
24 hours everyday

Regulatory Information Number:
1-800-325-3751

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient(s)	CAS Number	% (by weight)
MORPHOLINE	110-91-8	100.0

3. HAZARDS IDENTIFICATION

Potential Health Effects

Eye

Can cause permanent eye injury. Symptoms include stinging, tearing, redness, and swelling of eyes. Can injure the cornea and cause blindness. Additional symptoms of eye exposure may include: halo vision (blurred vision around bright objects).

Skin

Can cause permanent skin damage. Symptoms may include redness, burning, and swelling of skin, burns, and other skin damage. Passage of this material into the body through the skin is possible, and skin contact may be harmful.

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Swallowing

Swallowing this material may be harmful or fatal. Symptoms may include severe stomach and intestinal irritation (nausea, vomiting, diarrhea), abdominal pain, and vomiting of blood. Swallowing this material may cause burns and destroy tissue in the mouth, throat, and digestive tract. Low blood pressure and shock may occur as a result of severe tissue injury.

Inhalation

Breathing of vapor or mist is possible. Breathing this material may be harmful or fatal. Symptoms may include severe irritation and burns to the nose, throat, and respiratory tract. Symptoms usually occur at air concentrations higher than the recommended exposure limits (See Section 8).

Symptoms of Exposure

Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include: stomach or intestinal upset (nausea, vomiting, diarrhea) thirst, irritation (nose, throat, airways), runny nose, cough, central nervous system depression (dizziness, drowsiness, weakness, fatigue, nausea, headache, unconsciousness), muscle weakness, pain in the abdomen, lung edema (fluid buildup in the lung tissue), kidney damage, liver damage, lung damage.

Target Organ Effects

Overexposure to this material (or its components) has been suggested as a cause of the following effects in laboratory animals: nasal damage, eye damage, kidney damage, liver damage, lung damage.

Developmental Information

There are no data available for assessing risk to the fetus from maternal exposure to this material.

Cancer Information

Based on the available information, this material cannot be classified with regard to carcinogenicity. This material is not listed as a carcinogen by the International Agency for Research on Cancer, the National Toxicology Program, or the Occupational Safety and Health Administration.

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Other Health Effects

Nitrites should not be added to this material because this can result in formation of nitrosamines. Many nitrosamines cause cancer in laboratory animals.

Primary Route(s) of Entry

Inhalation, Skin absorption, Skin contact, Eye contact, Ingestion.

4. FIRST AID MEASURES

Eyes

If material gets into the eyes, immediately flush eyes gently with water for at least 15 minutes while holding eyelids apart. If symptoms develop as a result of vapor exposure, immediately move individual away from exposure and into fresh air before flushing as recommended above. Seek immediate medical attention.

Skin

Immediately flush skin with water for at least 15 minutes while removing contaminated clothing and shoes. Seek immediate medical attention. Wash clothing before reuse and discard contaminated shoes.

Swallowing

Seek immediate medical attention. Do not induce vomiting. Vomiting will cause further damage to the mouth and throat. If individual is conscious and alert, immediately rinse mouth with water and give milk or water to drink. If possible, do not leave individual unattended.

Inhalation

If symptoms develop, immediately move individual away from exposure and into fresh air. Seek immediate medical attention; keep person warm and quiet. If person is not breathing, begin artificial respiration. If breathing is difficult, administer oxygen.

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Note to Physicians

Preexisting disorders of the following organs (or organ systems) may be aggravated by exposure to this material: respiratory tract skin, lung (for example, asthma-like conditions), liver, kidney, eye.

5. FIRE FIGHTING MEASURES

Flash Point

95.0 F (35.0 C) TCC

Explosive Limit

No data

Autoignition Temperature

590.0 F (310.0 C)

Hazardous Products of Combustion

May form: carbon dioxide and carbon monoxide, formaldehyde, nitrogen compounds.

Fire and Explosion Hazards

Material is volatile and readily gives off vapors which may travel along the ground or be moved by ventilation and ignited by pilot lights, flames, sparks, heaters, smoking, electric motors, static discharge or other ignition sources at locations near the material handling point. Never use welding or cutting torch on or near drum (even empty) because product (even just residue) can ignite explosively.

Extinguishing Media

alcohol resistant (AR) foam, water fog, carbon dioxide, dry chemical.

Fire Fighting Instructions

Wear full firefighting turn-out gear (full Bunker gear), and respiratory protection (SCBA).

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NFPA Rating

Health - 2, Flammability - 3, Reactivity - 0

6. ACCIDENTAL RELEASE MEASURES

Small Spill

Absorb liquid on vermiculite, floor absorbent, or other absorbent material and transfer to hood. Persons not wearing proper personal protective equipment should be excluded from area of spill. Collect material with vacuum cleaner.

Large Spill

Eliminate all ignition sources (flares, flames including pilot lights, electrical sparks). Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source. Prevent from entering drains, sewers, streams or other bodies of water. Prevent from spreading. If runoff occurs, notify authorities as required. Pump or vacuum transfer spilled product to clean containers for recovery. Absorb unrecoverable product. Transfer contaminated absorbent, soil and other materials to containers for disposal. Prevent run-off to sewers, streams or other bodies of water. If run-off occurs, notify proper authorities as required, that a spill has occurred.

7. HANDLING AND STORAGE

Handling

Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in the data sheet must be observed. Static ignition hazard can result from handling and use. Electrically bond and ground all containers, personnel and equipment before transfer or use of material. Special precautions may be necessary to dissipate static electricity for non-conductive containers. Use proper bonding and grounding during product transfer as described in National Fire Protection Association document NFPA 77. Do not use sodium nitrite or other nitrosating agents in formulations containing this product. Suspected cancer-causing nitrosamines could be formed. Emergency eyewash fountains and safety showers should be available in the immediate vicinity of potential exposure.

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye Protection

Chemical splash goggles and face shield (8" min.) in compliance with OSHA regulations are advised; however, OSHA regulations also permit other type safety glasses. (Consult your industrial hygienist.)

Skin Protection

Wear impervious gloves (consult your safety equipment supplier). To prevent skin contact, wear impervious clothing and boots.

Respiratory Protections

If workplace exposure limit(s) of product or any component is exceeded (see exposure guidelines), a NIOSH/MSHA approved air supplied respirator is advised in absence of proper environmental control. OSHA regulations also permit other NIOSH/MSHA respirators (negative pressure type) under specified conditions (see your industrial hygienist). Engineering or administrative controls should be implemented to reduce exposure.

Engineering Controls

Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV(s).

Exposure Guidelines

Component

MORPHOLINE (110-91-8)

OSHA PEL 20.000 ppm - TWA (Skin)

OSHA VPEL 20.000 ppm - TWA (Skin)

OSHA VPEL 30.000 ppm - STEL (Skin)

ACGIH TLV 20.000 ppm - TWA (Skin)

ACGIH TLV 30.000 ppm - STEL (Skin)

9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point

(for product) 259.0 - 266.0 F (126.1 - 130.0 C) @ 760 mmHg

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Vapor Pressure

(for product) .000 @ 68.00 F

Specific Vapor Density

3.000 @ AIR=1

Specific Gravity

1.001 - 1.004 @ 68.00 F

Liquid Density

8.340 lbs/gal @ 68.00 F

1.001 kg/l @ 20.00 C

Percent Volatiles

100.0 %

Volatile Organic Compounds (VOC)

100.000 %

1001.000 g/l @ 20°C

8.340 lbs/gal

Evaporation Rate

< 1.00 (N-BUTYL ACETATE)

Appearance

CLEAR LIQUID

State

LIQUID

Physical Form

ADDITIVE-FREE

Color

CLEAR, PT-CO COLOR 15 MAX

Odor

AMMONIA-LIKE

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pH

11.0 @ 25% AQUEOUS SOLUTION

Viscosity

2.2 cps

Freezing Point

23.0 F (-5.0 C)

Molecular Weight

87.1

Solubility in Water

> 10%

Octanol/Water Partition Coefficient

< .000

Bulk Density

1.110 lbs/ft³

10. STABILITY AND REACTIVITY

Hazardous Polymerization

Product will not undergo hazardous polymerization.

Hazardous Decomposition

May form: carbon dioxide and carbon monoxide, formaldehyde, nitrogen compounds, Material decomposes between 400 and 500 degrees F.

Chemical Stability

Stable.

Incompatibility

Avoid contact with: acids, halogenated hydrocarbons, strong oxidizing agents.

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11. TOXICOLOGICAL INFORMATION

Chronic/Carcinogenicity

One study with morpholine in laboratory animals produced cancer, while others have not. The tumors in the one study may have resulted from exposure to N-nitrosomorpholine, an animal carcinogen. N-nitrosomorpholine can occur as a contaminant in morpholine or as a result of the interaction of morpholine with nitrite of unknown origin. There is no evidence that morpholine causes cancer in humans.

12. ECOLOGICAL INFORMATION

No data

13. DISPOSAL CONSIDERATION

Waste Management Information

Dispose of in accordance with all applicable local, state and federal regulations. For assistance with your waste management needs - including disposal, recycling and waste stream reduction, contact Ashland Distribution Company, IC&S Environmental Services Group at 800-531-7106.

14. TRANSPORT INFORMATION

DOT Information - 49 CFR 172.101

DOT Description:

MORPHOLINE, 8(3), UN2054, I

Container/Mode:

55 GAL DRUM/TRUCK PACKAGE

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NOS Component:

None

RQ (Reportable Quantity) - 49 CFR 172.101

Not applicable

Other Transportation Information

The Transport Information may vary with the container and mode of shipment.

15. REGULATORY INFORMATION

US Federal Regulations

TSCA (Toxic Substances Control Act) Status

TSCA (UNITED STATES) The intentional ingredients of this product are listed.

CERCLA RQ - 40 CFR 302.4(a)

None listed

SARA 302 Components - 40 CFR 355 Appendix A

None

Section 311/312 Hazard Class - 40 CFR 370.2

Immediate(X) Delayed(X) Fire(X) Reactive() Sudden
Release of Pressure()

SARA 313 Components - 40 CFR 372.65

None

OSHA Process Safety Management 29 CFR 1910

None listed

EPA Accidental Release Prevention 40 CFR 68

None listed

International Regulations

Inventory Status

AICS (AUSTRALIA) The intentional ingredients of this product are listed.

DSL (CANADA) The intentional ingredients of this product are listed.

ECL (SOUTH KOREA) The intentional ingredients of this product are listed.

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EINECS (EUROPE) The intentional ingredients of this product are listed.

ENCS (JAPAN) The intentional ingredients of this product are listed.

IECSC (CHINA) The intentional ingredients of this product are listed.

PICCS (PHILIPPINES) The intentional ingredients of this product are listed.

State and Local Regulations

California Proposition 65

None

New Jersey RTK Label Information

MORPHOLINE

110-91-8

Pennsylvania RTK Label Information

MORPHOLINE

110-91-8

16. OTHER INFORMATION

The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances.