Material Safety Data Sheet

MONOMETHYLAMINE 50% aqueous solution

Revision Date *13-Jan-2011*

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

Product Name	**MONOMETHYLAMINE 50% aqueous solution**
Synonyms	Methylamine Methanamine Carbinamine aminomethane
Use of the Substance/Preparation	Chemical intermediate
Company/Undertaking Identification	**Taminco, Inc.** Two Windsor Plaza, Suite 411 7540 Windsor Drive Allentown, PA 18195 (800) 223-3258
Emergency telephone number	In case of emergency call CHEMTREC 1-800-424-9300 703-527-3887 (International Calls), 02-8014-4880 (Australia local calls)

2. HAZARDS IDENTIFICATION

Appearance

Clear, Colorless liquid; Ammoniacal odor

Emergency Overview

- DANGER!
- Extremely flammable liquid and vapor
- Vapors may cause flash fire or explosion
- Corrosive
- Causes skin and eye burns
- Severe respiratory irritant
- May cause delayed lung injury
- Inhalation may cause severe mucous membrane and respiratory irritation, shortness of breath and pulmonary edema
- Harmful if swallowed
- Symptoms may be delayed
- May cause damage to organs
- Liver
- Lungs
- Blood disorders
- The substance is identified as a hazardous chemical according to the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Principal Routes of Exposure

- Inhalation
- Skin contact
- Eye contact

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No	Weight %

Methylamine	74-89-5	50
water	7732-18-5	50

4. FIRST AID MEASURES

Ingestion

- Never give anything by mouth to an unconscious person
- Do not induce vomiting without medical advice
- If victim is conscious
- Rinse mouth
- drink 1 or 2 glasses of water
- Immediate medical attention is required

Skin Contact

- Immediately flush skin with running water for 30 minutes or until no traces remain. Wash with soap and water. Remove contaminated clothing immediately.
- Seek immediate medical attention/advice

Eye Contact

- Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 30 minutes.
- Immediate medical attention is required

Inhalation

- Move to fresh air
- Do not give mouth-to-mouth
- If breathing is difficult, give oxygen
- If breathing is irregular or stopped, administer artificial respiration
- Consult a physician after significant exposure
- Symptoms may be delayed

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

- Extinguishing media - large fires
- Alcohol-resistant foam
- water spray
- Extinguishing media - small fires
- carbon dioxide (CO2)
- dry chemical
- dry sand
- limestone powder

Specific methods

- In case of fire, stop leak if safe to do so
- Evacuate area and fight fire from a safe distance
- Keep people away from and upwind of spill/leak
- Suppress (knock down) gases/vapors/mists with a water spray jet
- In the event of fire, cool tanks with water spray
- Do not allow run-off from fire fighting to enter drains or water courses

Special protective equipment for fire-fighters

- Firefighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand NIOSH approved or equivalent)

Specific hazards

- Extremely flammable
- Eliminate all ignition sources if safe to do so
- Pay attention to the spreading of gases especially at ground level (heavier than air) and to the direction of the wind
- Pay attention to flashback
- Fire or intense heat may cause violent rupture of packages
- In case of fire hazardous decomposition products may be produced such as
- Nitrogen oxides (NOx)
- Ammonia
- Carbon monoxide

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions

- Avoid contact with skin, eyes and clothing
- In case of inadequate ventilation wear respiratory protection
- Remove all sources of ignition
- Evacuate personnel to safe areas
- Keep people away from and upwind of spill/leak
- Take precautionary measures against static discharges
- Pay attention to flashback
- Suppress (knock down) gases/vapours/mists with a water spray jet
- Do not use sparking tools

Environmental Precautions

- Should not be released into the environment
- Prevent product from entering drains

Methods for Clean-up

- Ventilate the area
- Use spark-proof tools and explosion-proof equipment
- Large spills should be collected mechanically (remove by pumping) for disposal
- Absorb spill with inert material (e.g. dry sand or earth), then place in a chemical waste container
- Keep in suitable, closed containers for disposal
- Dispose of as special waste in compliance with local and national regulations

7. HANDLING AND STORAGE

Storage

Technical measures/Precautions

- In accordance with local and national regulations
- Keep containers tightly closed in a dry, cool and well-ventilated place
- Keep away from open flames, hot surfaces and sources of ignition
- Protect containers from physical damage
- To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded

Incompatible products

- Materials to avoid
- Oxidizing agents
- Mineral acid
- organic acids
- Peroxides
- alcohols

Handling

Technical measures/Precautions

- In accordance with local and national regulations
- Use only in area provided with appropriate exhaust ventilation
- Ensure that eyewash stations and safety showers are close to the workstation location

Safe handling advice

- Wear personal protective equipment
- Ensure adequate ventilation
- Use spark-proof tools and explosion-proof equipment
- In case of insufficient ventilation, wear suitable respiratory equipment
- Do not breathe vapors or spray mist
- Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors)
- Ground and bond containers when transferring material
- Do not use sodium nitrite or other nitro sating agents in product
- Empty containers retain product residue and may be hazardous
- Wash thoroughly after handling

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL
Methylamine	TWA: 5 ppm; STEL: 15 ppm	PEL: 12 mg/m³, 10 ppm
water	N/A	None Established

Respiratory Protection

- In accordance with local and national regulations
- Use only in area provided with appropriate exhaust ventilation
- Avoid breathing dust/fume/gas/mist/vapors/spray
- In case of insufficient ventilation, wear suitable respiratory equipment
- In case of higher concentration
- wear a positive-pressure supplied-air respirator with full facepiece
- The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace

Engineering measures

- Local exhaust
- Use explosion-proof equipment

Personal Protective Equipment

Eye Protection

- Face-shield
- Chemical resistant goggles must be worn
- Ensure that eyewash stations and safety showers are close to the workstation location

Hand protection

- Impervious gloves
- Solvent-resistant gloves
- Request information on glove permeation properties from the glove supplier

Skin Protection

- Solvent-resistant apron and boots
- Wash contaminated clothing before re-use
- Choose body protection according to the amount and concentration of the dangerous substance at the work place

Environmental exposure controls

- Prevent product from entering drains
- Do not contaminate surface water
- Avoid subsoil penetration

9. PHYSICAL AND CHEMICAL PROPERTIES

General Information

Physical State	Liquid
Color	Colorless
Odor	Ammoniacal

Important Health Safety and Environmental Information

Boiling Point/Range	38.3°C 101°F
Flash Point	(40 % solution) -10°C 14°F
Viscosity	(40 % solution) 1.50 mPas
Vapor Pressure	210 kPa @ 50 °C
Vapor Density	0.904 kg/m³
Partition Coefficient (n-octanol/water)	log Pow -0.57
pH	11.2 (40% solution)
Water solubility	Miscible
Oxidizing Properties	Not applicable
Explosion Limits	
Explosive Properties	5 - 20.7 vol. %
Melting Point/Range	No data available
Density	0.867 g/cm3 @ 20 °C
Flammability	extremely flammable
Autoignition Temperature	430°C 806°F
Flammability Limits in Air	
lower flammability limit	5 vol. %
upper flammability limit	20.8 vol. %

10. STABILITY AND REACTIVITY

Stability

- Stable under recommended storage conditions

Conditions to Avoid

- Keep away from open flames, hot surfaces and sources of ignition
- Incompatible with strong acids and oxidizing agents
- Peroxides
- Do not use sodium nitrite or other nitro sating agents in product
- Product slowly corrodes copper, aluminum, zinc and galvanized surfaces

Hazardous Decomposition Products

- None under normal use
- Thermal decomposition can lead to release of irritating gases and vapours
- Nitrogen oxides (NOx)
- Carbon monoxide
- Carbon dioxide (CO_2)
- Ammonia

Hazardous Polymerization Hazardous polymerization does not occur.

11. TOXICOLOGICAL INFORMATION

Eye Contact Contact may cause eye burns. May cause blindness. May cause a perception of a "blue haze" or "fog" around lights. Vapors may cause severe irritation and conjunctivitis with possible cornea edema.

Skin Contact Causes skin burns. May cause sensitization by skin contact.

Inhalation Inhalation may cause severe mucous membrane and respiratory irritation, shortness of breath and pulmonary edema. May cause delayed lung injury.

Ingestion If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach. Ingestion may cause burns of the gastrointestinal tract, nausea, vomiting, and diarrhea.

Chronic Effects May cause damage to organs through prolonged or repeated exposure. Blood disorders. Lungs. Liver.

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical Name	IARC	ACGIH	OSHA	NTP
Methylamine	Not Listed	Not Listed	Not Listed	Not Listed
water	Not Listed	Not Listed	Not Listed	Not Listed

Aggravated Medical Conditions Eye disease. Skin disorders. Respiratory disorders.

Product Information

LD50/oral/rat = 698 mg/kg
LD50/dermal/rat = Not applicable: Corrosive Material:
LC50/inhalation/4h/rat = > 2 mg/l
Eye irritation corrosive
Skin irritation corrosive
Mutagenic Effects Did not show mutagenic effects in animal experiments
Reproductive toxicity No known effect

12. ECOLOGICAL INFORMATION

Ecotoxicity

Toxicity to fish	LC50 : 970 mg/l - 48hour
EC50/48h/daphnia =	163 mg/l (40 % solution)
Toxicity to algae	21% Growth inhibition @ 31 mg/l
Toxicity to bacteria	EC20 (30 min) : 240 mg/l

Mobility

Koc = 10.74

Persistence and Degradability

Readily biodegradable

Bioaccumulative Potential

Bioconcentration factor (BCF) = 3.16

13. DISPOSAL CONSIDERATIONS

Waste disposal methods	Dispose of in accordance with local regulations
Contaminated Packaging	In accordance with local and national regulations. Empty containers should be taken for local recycling, recovery or waste disposal. Empty containers retain product residue and may be hazardous.

14. TRANSPORT INFORMATION

DOT

Shipping Description	UN1235, Methylamine, aqueous solution, 3(8), PG II
Hazard Class	3
Subsidiary Class	8
UN-No	UN1235
Packing Group	II
Reportable Quantity (RQ)	200 lbs (90.7 kg)
Marine Pollutant	No
Labelling	Flammable liquid and Corrosive

IMDG/IMO

Shipping Description	UN1235, Methylamine, aqueous solution, 3(8), PG II
Hazard Class	3
Subsidiary Class	8
UN-No	UN1235
Packing Group	II
Marine Pollutant	No
Labelling	Flammable liquid and Corrosive

IATA

UN-No	UN1235
Shipping Description	UN1235, Methylamine, aqueous solution, 3(8), PG II
Hazard Class	3
Subsidiary Class	8
Packing Group	II
Labelling	Flammable liquid and Corrosive

15. REGULATORY INFORMATION

International Inventories

All of the components in the product are on the following Inventory lists: U.S.A. (TSCA), Europe (EINECS/ELINCS/NLP), Canada (DSL/NDSL), Japan (ENCS), Japan Bioaccum (MITI), Australia (AICS), Philippines (PICCS), China (IECSC), Korea (KECL), New Zealand (NZIoC).

NOTE: X = Listed

Chemical Name	TSCA	EINECS	DSL	ENCS	MITI	AICS	PICCS	IECSC	KECL	NZIoC
Methylamine	X	200-820-0	X	2-129	(2)-129	X	X	X	KE-23421	X
water	X	231-791-2	X	N/A		X	X	X	X	X

OSHA HAZARD CLASSIFICATION: This material is classified as hazardous under Federal OSHA regulation: Corrosive, Flammable liquid, Toxic, Target Organ Effects

SARA 311/312 Hazardous Categorization
Acute Health Hazard, Chronic Health Hazard, Fire Hazard

SARA TITLE III SECTION 313 INFORMATION:
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

NOTE: X = Listed

CERCLA Hazardous Substances
This product has the following CERCLA/SARA TPQ and RQ:

Chemical Name	TPQ	RQ
Methylamine 74-89-5		100 lbs

State Right-to-Know

NOTE: X = Listed

Chemical Name	PA	NJ	MA
Methylamine 74-89-5	X	X	X
water 7732-18-5	Not Listed	Not Listed	Not Listed

California Proposition 65 This product does not contain any Proposition 65 chemicals.

WHMIS Hazard Class	B2 Flammable liquid D1B Toxic materials E Corrosive material
Canadian Environmental Protection Act	This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR

16. OTHER INFORMATION

HMIS	**Health** 3	**Flammability** 4	**Physical Hazard** 0
NFPA	**Health** 3	**Fire** 4	**Instability** 0

Legend: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe

Literary Reference -Chemiekaarten : 25th ed. - 2010 -Taminco Proprietary Studies

Disclaimer: The information provided on this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of Safety Data Sheet