

MONOMETHYLAMINE(MMA)

Specifications

CAS NO.

CAS NO.	74-89-5
---------	---------

NATURE

NATURE	It is available as anhydrous (Liquified gas under pressure) & 40% solution (Colourless liquid)
--------	--

PHYSICAL PROPERTIES (FOR ANHYDROUS)

Empirical Formula	CH ₅ N
Structural formula	CH ₃ NH ₂
Molecular Wt.	31.06
Refractive Index	1.351
Colour (APHA) Max	15
Solubility in Water	Soluble
Autoignition Temperature	430 °C
Flammability Limits	L E L: 5 Vol % H E L: 21 Vol %
Critical Temperature	155.9 °C
Critical Pressure	73.6 Atm.

PHYSICAL PROPERTIES (For Anhydrous)

Sp. gravity at 25 °C	0.656
Boiling Point	-6.3 °C
Freezing Point	-93.5 °C
Flash Point	----

PHYSICAL PROPERTIES (For 40% Solution)

Sp. gravity at 25 °C	0.897
Boiling Point	48.0 °C
Freezing Point	-38 °C

Flash Point -10 °C

MSDS

FIRE PROPERTIES

- Extremely flammable compounds

PREVENTIVE MEASURES

1. PERSONAL PROTECTIVE EQUIPMENTS

- PVC suits, PVC gloves, PVC hoods, rubber goggles and gum boots are recommended to wear while doing any maintenance jobs.
- Air masks or cartridge masks are recommended for respiratory systems.

2. LEAKS AND SPILLS

- In case of leaks , Isolate the source from leaking point to reduce the pressure.
- Do not use water jets, but only water curtains.

3. HANDLING

- All equipments and containers are to be grounded properly to avoid any ignition from the static charges.
- Methylamines are highly corrosive to Aluminum, Copper, Zinc and their alloys.
- While loading into or unloading from the tanker, a must be taken to avoid direct contact of methylamines with mercury as it forms explosive mixture.

4. STORAGE

- Anhydrous methylamines storage and their storage yards are to got approved from the Department of explosive.
- No Aluminum,Copper,Zinc or their alloys shall be used.

5. SHIPPING

- All the amines are highly soluble in water. Their 40 % solutions can be filled in atmospheric pressure road tankers, tankcars or drums. But, a drum of thicker size is recommended for Indian conditions as the ambient temperatures can be high.

FIRST AID MEASURE

1. SKIN

- Strip Contaminated clothing from the body.
- Do not use any ointments on the skin.
- Cover the injured area with dry clothing or

dressing.

2. EYES
- Immediately flush the eyes thoroughly with plenty of water keeping the eye lids wide open.
 - Do not use any ointments on the skin.
3. INHALATION
- Remove the victim atones to fresh air. If brathing is stopped artifical respiration should be administered.

Vapour Pressure (For Anhydrous)

Temperature in °C	Pressure in kg/cm2
20	2.8
40	5.8
60	10.0

Vapour Pressure (For 40% solution)

Temperature in °C	Pressure in kg/cm2
20	0.4
40	0.9
60	1.7

SPECIFICATIONS (For Anhydrous)

Content	Units %
Purity	99.50 min
Water	00.25 max
Ammonia	00.10 max
Other Amines/NOI	00.50 max

SPECIFICATIONS (For 40% solution)

Content	Units %
Purity	40.00 min
Water	59.75 max
Ammonia	00.05 max

Applications

PHARMACEUTICALS: As an intermediate or catalytic agent for drugs like Adrenaline, Ephedrine and Pethidine. Vasodilators like Theophylline and Caffeine are manufactured from Dimethyl Urea derived from MMA.

AGRO CHEMICALS: As a raw material for manufacture of systemic insecticides like Dimethoate, Carbarly and Carbofuron and fungicides like Sodium N_Methyl dithiocarbamate.
AS a raw material to manufacture Monomethylacetoacetamide, an intermediate used to manufacture Monocrotophos, one of the largest selling Insecticides.

CORROSION CONTROL: MEthyl-diethanolamine manufactured using MMA is used as a selective absorbent for H₂S gas during purification of petrochemicals in refineries.

PHOTOGRAPIC CHEMICALS: Used in the manufacture of Photographic developer like N-Methyl P-Aminophenol sulphate, popularly known as METOL.

ROCKET FULL: In manufacturing Monomethyl Hydrazine which is one of the ingredients of Rocket Fuel required for Space Research.

EXPLOSIVE: As a raw material to manufacture Explosive booster like Tetryl-Unsymmetrical Dimethyl-hydrazine and Explosive sensitizers like Monomethylamine Nitrate.

DYES: Used in the manufacture of Dyestuff intermediates like N-Methyl aniline, N-Methyl J Acid, sarcosine and Anthraquinone derivatives.

SOLVENT: As a raw material to manufacture special solvent like N-Metyl 2-Pyrrolidone.

RUBBER CHEMICALS: Directly used as a stabilizing agent and preservative for Natural rubber latex.

PACKING: Anhydrous & Aqueous solutions are offered in bulk Road Tankers. Aqueous solution is offered in 210 liter capacity UN approved M.S.drums containing 170 kg net of MMA. small quantities of anhydrous material can also be mad available in cylinders provided by the customer on request.

IMDG CLASS: Anhydrous Class 2

PACKING GROUP AS PER IMO: Solution Class 3
Solution II

UN NO. : Anhydrous 1061
Solution 1235