1. SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier
Product Name: M-Bond Curing Agent – Type 10
Chemical Name: Mixture
CAS No.: Mixture
EINECS No.: Mixture
REACH Registration No.: None assigned.

1.2 Recommended use of the chemical and restrictions on use
Identified Use(s): Adhesives.
Uses Advised Against: For professional users only.

1.3 Supplier's details
Company Identification: VISHAY MEASUREMENTS GROUP, INC.
Post Office Box 27777
Raleigh, NC 27611
USA
Telephone: 919-365-3800
Fax: 919-365-3945
E-Mail (competent person): mm.us@vishaypg.com

1.4 Emergency Phone No.
1-800-424-9300
CHEMTREC

2. SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
2.1.1 GHS Classification
Acute Tox. 4; H312
Skin Corr. 1B; H314
Skin Sens. 1; H317
Repr. 1B; H360Df
Aquatic Chronic 3; H412

2.2 Label elements
Product Name: M-Bond Curing Agent – Type 10

Hazard Pictogram(s)

Signal Word(s): Danger

Contains: Triethylenetetramine, 2-(2-Aminoethylamino)ethanol, 2-Piperazin-1-ylethylamine and 3,6,9-Triazaundecamethylenediamine.

Hazard Statement(s)
H312: Harmful in contact with skin.
H314: Causes severe skin burns and eye damage.
H317: May cause an allergic skin reaction.
H360Df: May damage the unborn child. Suspected of damaging fertility.
H412: Harmful to aquatic life with long lasting effects.

Precautionary Statement(s)
P201: Obtain special instructions before use.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P301+P330+P331: IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P303+P361+P353: IF ON SKIN (or hair): Remove/Take off immediately all

4. SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF exposed or concerned: Get medical advice/attention.

Skin Contact IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER/doctor.

Eye Contact IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor. Treatment by an ophthalmologist due to possible caustic burn.
5. **SECTION 5: FIREFIGHTING MEASURES**

5.1 **Extinguishing media**

*Suitable Extinguishing media*

As appropriate for surrounding fire. Extinguish with carbon dioxide, dry chemical, foam or waterspray.

*Unsuitable extinguishing media*

Do not use water jet. Direct water jet may spread the fire.

5.2 **Special hazards arising from the substance or mixture**

May decompose in a fire giving off toxic fumes. Decomposes in a fire giving off toxic fumes: Nitrogen oxides, Carbon monoxide and Carbon dioxide.

5.3 **Advice for fire-fighters**

Fire fighters should wear complete protective clothing including self-contained breathing apparatus. Do not breathe fumes. Keep containers cool by spraying with water if exposed to fire. Avoid run off to waterways and sewers.

6. **SECTION 6: ACCIDENTAL RELEASE MEASURES**

6.1 **Personal precautions, protective equipment and emergency procedures**

Avoid breathing vapours. Avoid all contact. Ensure adequate ventilation. Stop leak if safe to do so. Use personal protective equipment as required. See Section: 8.

6.2 **Environmental precautions**

Avoid release to the environment. Do not allow to enter drains, sewers or watercourses. Spillages or uncontrolled discharges into watercourses must be alerted to the Environment Agency or other appropriate regulatory body.

6.3 **Methods and material for containment and cleaning up**

Adsorb spillages onto sand, earth or any suitable absorbent material. Transfer to a container for disposal. Ventilate the area and wash spill site after material pick-up is complete. This material and its container must be disposed of as hazardous waste.

6.4 **Reference to other sections**

See Section: 8, 13

7. **SECTION 7: HANDLING AND STORAGE**

7.1 **Precautions for safe handling**

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid all contact. Do not breathe vapour. Ensure adequate ventilation. Use personal protective equipment as required. See Section: 8. Do not eat, drink or smoke when using this product. Wash hands before breaks and after work.

7.2 **Conditions for safe storage, including any incompatibilities**

*Storage temperature*

Ambient. 5 - 25°C

*Storage life*

Stable under normal conditions.

*Unsuitable containers:*

Copper, Aluminium, or Brass

*Incompatible materials*

Keep away from: Oxidizing agents and Acids. May be corrosive to metals. (Aluminium, Copper and Zinc).

7.3 **Specific end use(s)**

Adhesives. See Section: 1.2

8. **SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

8.1 **Control parameters**

8.1.1 **Occupational Exposure Limits**
2,2'-Iminodi(ethylamine) | 111-40-0 | 1 | 4 | - | - | NIOSH

Note: National Institute for Safety and Health

8.1.2 Biological limit value
Not established.

8.1.3 PNECs and DNELs
Not established.

8.2 Exposure controls

8.2.1 Appropriate engineering controls
Ensure adequate ventilation or use appropriate containment. Atmospheric levels should be controlled in compliance with the occupational exposure limit. Guarantee that the eye flushing systems and safety showers are located close to the working place.

8.2.2 Individual protection measures, such as personal protective equipment (PPE)
General hygiene measures for the handling of chemicals are applicable. Avoid all contact. Do not breathe vapour. Wash hands before breaks and after work. Keep work clothes separately. Do not eat, drink or smoke at the work place.

Eye/ face protection
Wear protective eye glasses for protection against liquid splashes. Wear eye protection with side protection (EN166).

Skin protection
Hand protection: Wear impervious gloves (EN374). Gloves should be changed regularly to avoid permeation problems. Breakthrough time of the glove material: refer to the information provided by the gloves’ producer.

Body protection: Wear impervious protective clothing, including boots, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Respiratory protection
In case of inadequate ventilation wear respiratory protection. Open system(s): Wear suitable respiratory protective equipment.

8.2.3 Environmental Exposure Controls
Not applicable.

9. SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties
Appearance
Yellow Coloured liquid.
Odour
Amine-like Odour
Odour threshold
Not available.
Holding point/freezing point
Not available.
Initial boiling point and boiling range
277°C
Flash point
148°C [Closed cup]
Evaporation rate
2.83 (BuAc = 1)
Flammability (solid, gas)
Not applicable - Liquid
Upper/lower flammability or explosive limits
Flammable Limits (Lower) (%v/v): 1 @ 185°C
Flammable Limits (Upper) (%v/v): >6.4 @ 185°C
Vapour pressure
<1 kPa at 20°C
Vapour density
5 (Air = 1)
Relative density
0.98 g/cm³ (H2O = 1)
Solubility(ies)
100% (Water)
Partition coefficient: n-octanol/water
Not available.
Auto-ignition temperature
Not available.
Decomposition Temperature
Not available.
Viscosity: Not available.
Explosive properties: Not explosive.
Oxidising properties: Not oxidising.

9.2 Other information: None

10. SECTION 10: STABILITY AND REACTIVITY

10.1 Stability and reactivity: Stable under normal conditions.
10.2 Chemical stability: Stable under normal conditions.
10.3 Possibility of hazardous reactions: Hazardous polymerisation will not occur.
10.4 Conditions to avoid: Keep away from heat, sources of ignition and direct sunlight.
10.5 Incompatible materials: Keep away from: Oxidizing agents and Acids. May be corrosive to metals. (Aluminium, Copper and Zinc).
10.6 Hazardous decomposition product(s): Decomposes in a fire giving off toxic fumes: Nitrogen oxides, Carbon monoxide and Carbon dioxide.

11. SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects (Substances in preparations / mixtures)
Acute toxicity
Ingestion: Based upon the available data, the classification criteria are not met. Acute Toxicity Estimate Mixture Calculation: Estimated LC50 > 2000 mg/kg bw/day.
Inhalation: Based upon the available data, the classification criteria are not met. Acute Toxicity Estimate Mixture Calculation: Estimated LC50 > 20.0 mg/l.
Skin Contact: Acute Toxicity Estimate Mixture Calculation: Estimated LC50 1090 mg/kg bw/day.
Skin corrosion/irritation: Skin Corr. 1B: Causes severe skin burns.
Serious eye damage/irritation: Skin Corr. 1B: Causes serious eye damage.
Respiratory or skin sensitization: Skin Sens. 1: May cause an allergic skin reaction.
Germ cell mutagenicity: Based upon the available data, the classification criteria are not met.
Carcinogenicity: Based upon the available data, the classification criteria are not met.
Reproductive toxicity: Repr. 1B: May damage the unborn child. Suspected of damaging fertility.
STOT - single exposure: Based upon the available data, the classification criteria are not met.
STOT - repeated exposure: Based upon the available data, the classification criteria are not met.
Aspiration hazard: Based upon the available data, the classification criteria are not met.
11.2 Other information: None.

12. SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity: Aquatic Chronic 3: Harmful to aquatic life with long lasting effects. Estimated Mixture LC50 >10 mg/l (Fish)
12.2 Persistence and degradability: Part of the components are poorly biodegradable.
12.3 Bioaccumulative potential: The product has low potential for bioaccumulation.
12.4 Mobility in soil: The product is predicted to have high mobility in soil. Soluble in water.
12.5 Results of PBT and vPvB assessment: Not classified as PBT or vPvB.
12.6 Other adverse effects: None known.

13. SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods: This material and its container must be disposed of as hazardous waste. Send after pre-treatment to a appropriate hazardous waste incinerator facility according to legislation.
13.2 Additional Information: Dispose of contents in accordance with local, state or national legislation.
14. **SECTION 14: TRANSPORT INFORMATION**

14.1 UN number

14.2 Proper Shipping Name

14.3 Transport hazard class(es)

14.4 Packing group

14.5 Environmental hazards

14.6 Special precautions for user

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

14.8 Additional Information

ADR/RID / IMDG / IATA

**UN number**: UN 2259

**Proper Shipping Name**: TRIETHYLENETHETRAMINE

**Transport hazard class(es)**: 8

**Packing group**: II

**Environmental hazards**: Not classified as a Marine Pollutant.

**Special precautions for user**: See Section: 2

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**: Not applicable.

15. **SECTION 15: REGULATORY INFORMATION**

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1 National regulations

- **USA**: NTP: Not listed
  OSHA Regulated: Not listed

15.1.2 IARC Monographs

- Not listed

15.1.3 European regulations

- **SVHCs**: None
- **Germany**: Water hazard class: 2

15.2 Chemical Safety Assessment

- Not available.

16. **SECTION 16: OTHER INFORMATION**

The following sections contain revisions or new statements: 1-16.

**References**: Existing Safety Data Sheet (SDS), Harmonised Classification(s) for Triethylenetetramine (CAS# 112-24-3), 2-(2-Aminooethylamino)ethanol (CAS# 111-41-1), 2-Piperazin-1-yl ethylamine (CAS# 140-31-8), Tetraethylenepentamine 3,6,9-triazaundecamethylenediamine (CAS# 112-57-2) and 2,2'-iminodiethylamine (CAS# 111-40-0).

<table>
<thead>
<tr>
<th>GHS Classification of the substance or mixture</th>
<th>Classification Procedure</th>
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<tr>
<td>Repr. 1B; H360D</td>
<td>Threshold Calculation</td>
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<tr>
<td>Aquatic Chronic 3; H312</td>
<td>Summation Calculation</td>
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**LEGEND**

- LTEL: Long Term Exposure Limit
- STEL: Short Term Exposure Limit
- DNEL: Derived No Effect Level
- PNEC: Predicted No Effect Concentration
- PBT: Persistent, Bioaccumulative and Toxic
- vPvB: very Persistent and very Bioaccumulative
- NTP: National Toxicology Program
- IARC: International Agency for Research on Cancer
- OSHA: The Occupational Safety & Health Administration
- NIOSH: National Institute for Occupational Safety and Health

Training advice: Consideration should be given to the work procedures involved and the potential extent of exposure as they may determine whether a higher level of protection is required.
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Annex to the extended Safety Data Sheet (eSDS)

No information available.