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

1.1 **Product identifier**
- **Product Name**: M-Bond 610 Adhesive
- **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**: None known.

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**
- **Flam. Liq. 2; H225**
- **Acute Tox. 4; H302**
- **Skin Irrit. 2; H315**
- **Skin Sens. 1; H317**
- **Eye Irrit. 2; H319**
- **STOT SE 3; H335**
- **Carc. 2; H351**
- **Aquatic Chronic 2; H411**

2.2 **Label elements**
- **Product Name**: M-Bond 610 Adhesive
- **Hazard Pictogram(s)**
  - Danger
  - Tetrahydrofuran and Polyglycidyl Ether of Phenol-Formaldehyde
- **Signal Word(s)**: Danger
- **Contains**: Tetrahydrofuran and Polyglycidyl Ether of Phenol-Formaldehyde
- **Hazard Statement(s)**:
  - H225: Highly flammable liquid and vapour.
  - H302: Harmful if swallowed.
  - H315: Causes skin irritation.
  - H317: May cause an allergic skin reaction.
  - H319: Causes serious eye irritation.
  - H335: May cause respiratory irritation.
  - H351: Suspected of causing cancer.
  - H411: Toxic to aquatic life with long lasting effects.
Precautionary Statement(s)

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P201: Obtain special instructions before use.
P304 + P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P333+P313: If skin irritation or rash occurs: Get medical advice/attention.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313: IF exposed or concerned: Get medical advice/attention.

Additional Information

EUH019: May form explosive peroxides.

2.3 Other hazards

None.

3. SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

GHS Classification

<table>
<thead>
<tr>
<th>Chemical identity of the substance</th>
<th>%W/W</th>
<th>CAS No.</th>
<th>EC No.</th>
<th>REACH Registration No.</th>
<th>Hazard Statement(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetrahydrofuran</td>
<td>55 – 65</td>
<td>109-99-9</td>
<td>203-726-8</td>
<td>None assigned</td>
<td>Flam. Liq. 2; H225</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Acute Tox. 4; H302</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Eye Irrit. 2; H319</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>STOT SE 3; H335</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Carc. 2; H351</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>EUH019</td>
</tr>
<tr>
<td>Polyglycidyl Ether of Phenol-Formaldehyde</td>
<td>25 – 32</td>
<td>28064-14-4</td>
<td>-</td>
<td>None assigned</td>
<td>Skin Irrit. 2; H315</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Skin Sens. 1; H317</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Eye Irrit. 2; H319</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Aquatic Chronic 2; H411</td>
</tr>
<tr>
<td>Ethyl methyl ketone</td>
<td>5 – 10</td>
<td>78-93-3</td>
<td>201-159-0</td>
<td>None assigned</td>
<td>Flam. Liq. 2; H225</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Eye Irrit. 2; H319</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>STOT SE 3; H336</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>EUH066</td>
</tr>
</tbody>
</table>


4. SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation

IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell. IF exposed or concerned: Get medical advice/attention.

Skin Contact

IF ON SKIN: Remove contaminated clothing and wash all affected areas with plenty of water. Wash contaminated clothing before reuse. If skin irritation or rash occurs: Get medical advice/attention. IF exposed or concerned: Get medical advice/attention.

Eye Contact

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. IF exposed or concerned: Get medical advice/attention.
Ingestion

IF SWALLOWED: Rinse mouth. Make victim drink plenty of water. Do not give anything by mouth to an unconscious person. Do not induce vomiting unless instructed to do so by medical personnel. Call a POISON CENTER/doctor if you feel unwell. IF exposed or concerned: Get medical advice/attention.

4.2 Most important symptoms and effects, both acute and delayed

Harmful if swallowed. Causes skin irritation. May cause an allergic skin reaction. Causes serious eye irritation. May cause respiratory irritation. Suspected of causing cancer.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

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

Highly flammable liquid and vapour. May decompose in a fire giving off toxic fumes. Carbon monoxide, Carbon dioxide, Phenolic and Explosive Peroxides. Vapours are heavier than air and may travel considerable distances to a source of ignition and flashback. Prevent liquid entering sewers, basements and workpits; vapour may create explosive atmosphere.

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

Ensure adequate ventilation. Stop leak if safe to do so. Eliminate all ignition sources if safe to do so. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use personal protective equipment as required. See Section: 8. Avoid breathing vapours.

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

Use non-sparking equipment when picking up flammable spill. Adsorb spillages onto sand, earth or any suitable adsorbent 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. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharges. 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

Ground/bond container and receiving equipment. Keep only in original container. Store in a well-ventilated place. Keep container tightly closed. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep away from direct sunlight.

Storage temperature

Ambient. Keep at temperature not exceeding (°C): 32

Storage life

Stable under normal conditions.

Incompatible materials

Keep away from: Oxidizing agents, Corrosive Substances, Reducing agents, Strong Acids and Alkalis.
8. SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

8.1.1 Occupational Exposure Limits

<table>
<thead>
<tr>
<th>SUBSTANCE</th>
<th>CAS No.</th>
<th>LTEL (8 hr TWA ppm)</th>
<th>LTEL (8 hr TWA mg/m³)</th>
<th>STEL (ppm)</th>
<th>STEL (mg/m³)</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetrahydrofuran</td>
<td>109-99-9</td>
<td>200</td>
<td>590</td>
<td>250*</td>
<td>735*</td>
<td>NIOSH</td>
</tr>
<tr>
<td>Tetrahydrofuran</td>
<td>109-99-9</td>
<td>200</td>
<td>590</td>
<td>-</td>
<td>-</td>
<td>OSHA</td>
</tr>
<tr>
<td>Methyl ethyl ketone</td>
<td>78-93-3</td>
<td>200</td>
<td>590</td>
<td>300*</td>
<td>885*</td>
<td>NIOSH</td>
</tr>
<tr>
<td>Methyl ethyl ketone</td>
<td>78-93-3</td>
<td>200</td>
<td>590</td>
<td>-</td>
<td>-</td>
<td>OSHA</td>
</tr>
</tbody>
</table>

Note: OSHA 1910.1000 TABLE Z-1 / *NIOSH 15 minutes average value

8.1.2 Biological limit value

8.1.3 PNECs and DNELs

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.

8.2.2 Individual protection measures, such as personal protective equipment (PPE)

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 suitable coveralls to prevent exposure to the skin.

Respiratory protection

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

Thermal hazards

Not applicable.

8.2.3 Environmental Exposure Controls

Avoid release to the environment.

9. SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance

Almost colourless Liquid

Odour

Ether-like Odour

Odour threshold

Not available.

pH

Not established.

Melting point/freezing point

Not available.

Initial boiling point and boiling range

66°C

Flash point

-14 °C (Mixture)

Evaporation rate

8 (BuAc = 1)

Flammability (solid, gas)

Not applicable - Liquid

Upper/lower flammability or explosive limits

Flammable Limits (Lower) (%v/v): 1.8 Flammable Limits (Upper) (%v/v): 11.8

Vapour pressure

129 (mmHg) @ 20°C

Vapour density

2.4 (Air = 1)
SAFETY DATA SHEET

Revision: 2.0 Date: 20.08.2015


Relative density: 0.9 (H2O = 1)
Solubility(ies): Water: >50%
Partition coefficient: n-octanol/water: Not available.
Auto-ignition temperature: 320 °C
Decomposition Temperature: Not available.
Viscosity: Not available.
Explosive properties: Not available.
Oxidising properties: Not oxidising.

9.2 Other information

VOC 712 g/L

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

Highly flammable liquid and vapour. The vapour may be invisible, heavier than air and spread along ground. May form explosive peroxides. Contact with aliphatic amines will cause irreversible polymerization with considerable heat build-up.

10.4 Conditions to avoid

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep away from direct sunlight. Keep at a temperature not exceeding (°C): 32.

10.5 Incompatible materials

Oxidizing agents, Corrosive Substances, Reducing agents, Strong Acids and Alkalis.

10.6 Hazardous decomposition product(s)

May decompose in a fire giving off toxic fumes. Carbon monoxide, Carbon dioxide, Phenolic and Explosive Peroxides.

11. SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects (Substances in preparations / mixtures)

Acute toxicity

Ingestion

Acute Tox. 4: Harmful if swallowed.
Acute Toxicity Estimate Mixture Calculation: Estimated LC50 766 mg/kg bw/day.

Inhalation

Based on available data, the classification criteria are not met.
Acute Toxicity Estimate Mixture Calculation: Estimated LC50 >20.0 mg/l.

Skin Contact

Based on available data, the classification criteria are not met.
Acute Toxicity Estimate Mixture Calculation: Estimated LC50 > 2000 mg/kg bw/day.

Skin corrosion/irritation

Skin Irrit. 2: Causes skin irritation.

Serious eye damage/irritation

Eye Irrit. 2: Causes serious eye irritation.

Respiratory or skin sensitization

Skin Sens. 1: May cause an allergic skin reaction.

Germ cell mutagenicity

Based on available data, the classification criteria are not met.

Carcinogenicity

Carc. 2: Suspected of causing cancer.

Reproductive toxicity

Based on available data, the classification criteria are not met.

STOT - single exposure

STOT SE 3: May cause respiratory irritation.

STOT - repeated exposure

Based on available data, the classification criteria are not met.

Aspiration hazard

Based on available data, the classification criteria are not met.

11.2 Other information

None

12. SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic Chronic 2: Toxic to aquatic life with long lasting effects.
Estimated Mixture LC50 >1 < 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.

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

ADR/RID / IMDG / IATA

UN 1133

14.2 Proper Shipping Name

ADHESIVES containing flammable liquid

14.3 Transport hazard class(es)

3

14.4 Packing group

II

14.5 Environmental hazards

Marine Pollutant / Environmentally hazardous substance

14.6 Special precautions for user

See Section: 2

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

Not applicable.

14.8 Additional Information

None.

15. **SECTION 15: REGULATORY INFORMATION**

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

15.1.1 EU regulations

SVHCs

None

Germany

Water hazard class: 2

15.1.2 National regulations

USA

NTP: Not listed

IARC Monographs: Not listed

OSHA Regulated: Not listed

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 Tetrahydrofuran (CAS# 109-99-9) and Methyl ethyl ketone (CAS# 78-93-3), Existing ECHA registration(s) for Tetrahydrofuran (CAS# 109-99-9) and Methyl ethyl ketone (CAS# 78-93-3) and the Classification and Labelling Inventory for Polyglycidyl Ether of Phenol-Formaldehyde (CAS# 28064-14-4).

<table>
<thead>
<tr>
<th>Classification of the substance or mixture According to Regulation (EC) No. 1272/2008 (CLP)</th>
<th>Classification Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flam. Liq. 2; H225</td>
<td>Flash Point [Closed cup] Test Result/ Boiling Point (°C)</td>
</tr>
<tr>
<td>Acute Tox. 4; H302</td>
<td>Acute Toxicity Estimate (ATE) Calculation.</td>
</tr>
<tr>
<td>Skin Irrit. 2; H315</td>
<td>Threshold Calculation</td>
</tr>
<tr>
<td>Skin Sens. 1; H317</td>
<td>Threshold Calculation</td>
</tr>
<tr>
<td>Eye Irrit. 2; H319</td>
<td>Threshold Calculation</td>
</tr>
<tr>
<td>STOT SE 3; H335</td>
<td>Threshold Calculation</td>
</tr>
<tr>
<td>Carc. 2; H351</td>
<td>Threshold Calculation</td>
</tr>
<tr>
<td>Aquatic Chronic 2</td>
<td>Summation Calculation</td>
</tr>
</tbody>
</table>

**LEGEND**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LTEL</td>
<td>Long Term Exposure Limit</td>
</tr>
<tr>
<td>STEL</td>
<td>Short Term Exposure Limit</td>
</tr>
<tr>
<td>DNEL</td>
<td>Derived No Effect Level</td>
</tr>
</tbody>
</table>
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.

**Disclaimers**

Information contained in this publication or as otherwise supplied to Users is believed to be accurate and is given in good faith, but it is for the Users to satisfy themselves of the suitability of the product for their own particular purpose. Vishay Measurements Group, Inc. gives no warranty as to the fitness of the product for any particular purpose and any implied warranty or condition (statutory or otherwise) is excluded except to the extent that exclusion is prevented by law. Vishay Measurements Group, Inc. accepts no liability for loss or damage (other than that arising from death or personal injury caused by defective product, if proved), resulting from reliance on this information. Freedom under Patents, Copyright and Designs cannot be assumed.

**Annex to the extended Safety Data Sheet (eSDS)**

No information available.