SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>Product Name:</th>
<th>NIPPON E-MARINE A/C II GRAY BASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intended Use:</td>
<td>Paint</td>
</tr>
<tr>
<td>Manufacturer:</td>
<td>Nippon Paint (Singapore) Co Pte Ltd</td>
</tr>
<tr>
<td>Supplier:</td>
<td>Nippon Paint Marine (Singapore) Pte Ltd</td>
</tr>
<tr>
<td></td>
<td>No. 1 First Lok Yang Road, Jurong</td>
</tr>
<tr>
<td></td>
<td>Singapore 629728</td>
</tr>
<tr>
<td>Telephone Number:</td>
<td>+65 6268 1161 / +65 6265 5355</td>
</tr>
<tr>
<td></td>
<td>(Within Hours of Operation Mon- Fri: 0900-1700)</td>
</tr>
<tr>
<td>Facsimile Number:</td>
<td>+65 6268 1191 / +65 6264 1603</td>
</tr>
</tbody>
</table>

2. HAZARDS IDENTIFICATION

<table>
<thead>
<tr>
<th>Classification Code:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammable Hazard</td>
<td>Category 2</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>Category 2</td>
</tr>
<tr>
<td>Serious eye damage/irritation</td>
<td>Category 2</td>
</tr>
<tr>
<td>Skin sensitization</td>
<td>Category 1</td>
</tr>
<tr>
<td>Germ cell mutagenicity</td>
<td>Category 1</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>Category 1</td>
</tr>
<tr>
<td>Specific target organ toxicity:</td>
<td></td>
</tr>
<tr>
<td>- Single exposure</td>
<td>Category 1</td>
</tr>
<tr>
<td>- Repeated exposure</td>
<td>Category 1</td>
</tr>
<tr>
<td>Aquatic Chronic</td>
<td>Category 2</td>
</tr>
</tbody>
</table>

GHS Pictogram

Signal Word
Danger

Hazard statements
H225: Highly flammable liquid and vapour
H315: Causes skin irritation
H317: May cause an allergic skin reaction
H319: Causes serious eye irritation
H340: May cause genetic defects
H350: May cause cancer
H370: Causes damage to organs
H372: Causes damage to organs through prolonged or repeated exposure
H411: Toxic to aquatic life with long lasting effects

Precautionary statements
P201: Obtain special instructions before use
P202: Do not handle until all safety precautions have been read and understood
P210: Keep away from heat/sparks/open flames/hot surfaces – No smoking
P233: Keep container tightly closed
P240: Ground/bond container and receiving equipment
P241: Use explosion-proof electrical/ventilating/light/equipment
P242: Use only non-sparking tools
P243: Take precautionary measures against static discharge
P260: Do not breathe dust/fume/gas/mist/vapours/spray
P261: Avoid breathing dust/fume/gas/mist/vapours/spray
P264: Wash hands thoroughly after handling
P270: Do not eat, drink or smoke when using this product
P272: Contaminated work clothing should not be allowed out of the workplace
P273: Avoid release to the environment
P280: Wear protective gloves/protective clothing/eye protection/face protection
P281: Use personal protective equipment as required
Response
P314: Get medical advice/attention if you feel unwell
P321: Specific treatment (see Section 4 of SDS)
P362: Take off contaminated clothing and wash before reuse
P363: Wash contaminated clothing before reuse
P391: Collect spillage
P302+352: IF ON SKIN: Wash with soap and water
P307+311: IF exposed: Call a POISON CENTER or doctor/physician
P308+313: IF exposed or concerned: Get medical advice/attention
P332+313: If skin irritation occurs: Get medical advice/attention
P333+313: If skin irritation or a rash occurs: Get medical advice/attention
P337+313: If eye irritation persists: Get medical advice/attention
P370+378: In case of fire: Use appropriate media for extinction
P303+361+353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P305+351+338: IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing

Storage
P405: Store locked up
P403+235: Store in a well ventilated place. Keep cool

Disposal
P501: Dispose of contents/container to appropriate waste site or reclaimer in accordance with local or national regulations

3. COMPOSITION / INFORMATION ON INGREDIENTS

Substance or Preparation: Preparation
Chemical nature: Epoxy resin paint

<table>
<thead>
<tr>
<th>Substances</th>
<th>CAS No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium Silicate Hydrate</td>
<td>14807-96-6</td>
<td>15 - 40</td>
</tr>
<tr>
<td>Xylene</td>
<td>1330-20-7</td>
<td>10 - 30</td>
</tr>
<tr>
<td>Vinyl Chloride And Vinyl Isobutyl Ether Co-Polymer</td>
<td>25154-85-2</td>
<td>5 - 15</td>
</tr>
<tr>
<td>Bisphenol-A, Epoxy Resin</td>
<td>25068-38-6</td>
<td>1 - 10</td>
</tr>
<tr>
<td>Barium Sulfate</td>
<td>13462-86-7</td>
<td>1 - 5</td>
</tr>
<tr>
<td>Titanium Dioxide</td>
<td>13463-67-7</td>
<td>1 - 5</td>
</tr>
<tr>
<td>Calcium Sulfate</td>
<td>7778-18-9</td>
<td>1 - 5</td>
</tr>
<tr>
<td>Benzyl Alcohol</td>
<td>100-51-6</td>
<td>1 - 5</td>
</tr>
<tr>
<td>Monopropylene Glycol Methyl Ether</td>
<td>107-98-2</td>
<td>0.1 - 0.5</td>
</tr>
<tr>
<td>Fatty Acid, C-18, Unsatd. Trimers, Compd. With 9-Octadecen-1-Amine</td>
<td>147900-93-4</td>
<td>0.1 - 0.5</td>
</tr>
<tr>
<td>Solvent Naptha, Petroleum, Light Aromatic</td>
<td>64742-95-6</td>
<td>0.1 - 0.5</td>
</tr>
</tbody>
</table>

100%

4. FIRST-AID MEASURES

INHALATION
○ Move person to fresh air and call for medical assistance immediately.
○ If not breathing, give artificial respiration, if breathing is difficult, give oxygen. Keep at rest.

SKIN CONTACT
○ In case of contact, immediately flush skin with large amounts of water and soap while removing contaminated clothing and shoes.
○ If irritation persists, get medical attention.

EYE CONTACT
○ Immediately flush eyes with large amounts of water until irritation subsides.
○ Remove contact lens.
○ Obtain medical attention, preferably by an ophthalmologist, immediately.

INGESTION
○ DO NOT induce vomiting unless directed to do so by a medical personnel. Never give anything by mouth to
5. FIRE FIGHTING MEASURES

SUITABLE FIRE EXTINGUISHING MEDIA
- Water fog
- CO2
- Foam
- Dry chemicals
- Dry sand.

SPECIAL PROTECTIVE ACTIONS FOR FIRE FIGHTERS
- Wear full protective clothing and NIOSH - approved self - contained breathing apparatus.
- Use water spray to cool fire - exposed surfaces and to protect personnel. If a leak or spill has not ignited, use water spray to disperse the vapours.
- If possible, isolate product from heat, electrical equipments, sparks and open flames.
- Avoid spraying water directly into storage containers.
- Closed containers may explode when exposed to extreme heat.
- Avoid spreading burning liquid with water, isolate liquid.
- Do not allow runoff from fire fighting to enter drains or watercourses.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURE
- Wear appropriate protective equipment, e.g. respirators, eye protection, gloves and safety shoes.
- Avoid substance contact with eyes. Do not inhale vapours.
- Ensure supply of fresh air in enclosed rooms.

ENVIRONMENTAL PRECAUTIONS
- Eliminate sources of ignition.
- Keep public away.
- Contain spilled liquid with sand or other non-combustible absorbent materials.
- Wash area and prevent runoff into drains and sewerage system.
- Advise authorities if substance has entered a watercourse or sewer or has contaminated soil or vegetation.

METHODS AND MATERIALS FOR CONTAINMENTS AND CLEANING UP
- Clean up all spills immediately.
- Absorb spill with absorbent and inert material, then place in container.
- Disposal in accordance to local/national regulations.

7. HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING
- Use appropriate personal protective equipment.
- Keep out of reach of children.
- Handle containers with care. Open slowly in order to control possible pressure release.
- Do not pressurize containers.
- Do not ingest. Do not breathe in gas/fumes/vapour. Avoid contact with skin and eyes.
- For personal protection, see section 8.
- Take precautionary measures against static discharge.
- Protect from frost and extremes of temperature.

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES
- Keep containers tightly closed.
- Containers that are opened should be properly resealed and kept upright to prevent leakage.
- Store in cool, dry and well - ventilated place at temperature between 20°C to 40°C away from heat and sources of ignition.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

CONTROL PARAMETERS/ OCCUPATIONAL LIMITS

<table>
<thead>
<tr>
<th>Substances</th>
<th>ACGIH TLV-TWA (ppm)</th>
<th>mg/m3</th>
<th>OSHA PEL-TWA (ppm)</th>
<th>mg/m3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium Silicate Hydrate</td>
<td>-</td>
<td>2.00</td>
<td>-</td>
<td>2.00</td>
</tr>
</tbody>
</table>
### APPROPRIATE ENGINEERING CONTROL MEASURES
- Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapours below their respective occupational exposure limits.
- Ensure eyewash stations and safety showers are close to the workstation location.

### PERSONAL PROTECTION

**Respiratory Protection:** Use of NIOSH-approved respirators with organic vapour cartridges is recommended.

**Hand Protection:** Use of solvent resistance type or chemical resistant type of protective gloves is recommended.

**Eye Protection:** Use of safety glasses or goggles with side shields is recommended.

**Skin / Body Protection:** Wear chemical resistant clothes and safety shoes when handling product.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Substance</th>
<th>Appearance</th>
<th>Odour</th>
<th>Odour threshold</th>
<th>pH</th>
<th>Melting point/freezing point</th>
<th>Initial boiling point and boiling range</th>
<th>Flash point</th>
<th>Evaporation rate</th>
<th>Flammability (solid, gas)</th>
<th>Lower flammability or explosive limit</th>
<th>Upper flammability or explosive limit</th>
<th>Vapour pressure</th>
<th>Vapour density</th>
<th>Specific gravity</th>
<th>Solubility</th>
<th>Partition coefficient</th>
<th>Auto-ignition temperature</th>
<th>Decomposition temperature</th>
<th>Viscosity</th>
<th>Stability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xylene</td>
<td>Liquid</td>
<td>Aromatic hydrocarbon odour</td>
<td>Not available</td>
<td>Not available</td>
<td>Not available</td>
<td>Between 119 and 205 °C</td>
<td>24 °C</td>
<td>Not available</td>
<td>Not applicable</td>
<td>1 % by vol</td>
<td>6.7 % by vol</td>
<td>Not available</td>
<td>&gt; 1.00</td>
<td>1.47 - 1.57</td>
<td>Not Miscible in water</td>
<td>&gt; 287 °C</td>
<td>Not available</td>
<td>Not available</td>
<td>Stable under recommended storage and handling conditions (see section 7). When exposed to high temperature, may produce hazardous decomposition products such as carbon monoxide, carbon dioxide, oxides of nitrogen and smoke.</td>
<td></td>
</tr>
<tr>
<td>Bisphenol-A, Epoxy Resin</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Benzyl Alcohol</td>
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<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

### 10. STABILITY AND REACTIVITY

- **Stability:** Stable under recommended storage and handling conditions (see section 7). When exposed to high temperature, may produce hazardous decomposition products such as carbon monoxide, carbon dioxide, oxides of nitrogen and smoke.
- **Hazardous reaction:** Hazardous reaction will not occur.
- **Condition to avoid:** Avoid heating temperatures above 40 deg.C.
- **Materials to avoid:** Keep away from oxidizing agents, strongly alkaline and strongly acid materials in order to avoid possible exothermic reactions.
- **Hazardous decomposition:** The products decomposed on heating producing their oxide or monomers.

### 11. TOXICOLOGICAL INFORMATION

- There is no data available on the product itself.
- Toxicological information of substances:
  - **Acute oral toxicity:** Harmful if swallowed
Substances | Oral LD50(Rat), mg/kg | Data not available |
--- | --- | --- |
Magnesium Silicate Hydrate | Xylene | Bisphenol-A, Epoxy Resin | Benzyl Alcohol |
--- | --- | --- | --- |
Data not available | 5000 | 11400 | 1230 |

**Acute dermal/skin toxicity**

May be harmful if in contact with skin

Substances | Dermal LD50 (Rabbit), mg/kg | Data not available |
--- | --- | --- |
Magnesium Silicate Hydrate | Xylene | Bisphenol-A, Epoxy Resin | Benzyl Alcohol |
--- | --- | --- | --- |
Data not available | 4350 | Data not available | 2000 |

**Acute inhalation toxicity**

Vapour concentrations above the recommended exposure levels may be irritating to the eyes and the respiratory tract, may cause headaches and dizziness, could be anesthetic and may have other central nervous system effects.

Substances | Inhalation Vapor LC50 (Rat), mg/L/4hr | Data not available |
--- | --- | --- |
Magnesium Silicate Hydrate | Xylene | Bisphenol-A, Epoxy Resin | Benzyl Alcohol |
--- | --- | --- | --- |
Data not available | 8000 | Data not available | 8.8 |

**Skin corrosion or irritation**

Causes skin irritation. Frequent or prolonged contact may dry the skin, leading to discomfort and dermatitis

**Serious eye damage or irritation**

May be an eye irritant

**Respiratory or skin sensitisation**

Vapour concentrations above the recommended exposure levels may be irritating to the eyes and the respiratory tract

**Germ cell mutagenicity**

No information available on the product

**Carcinogenicity**

CrystQuartz(SiO2)

The International Agency for Research on Cancer (IARC) has classified Crystalline Silica as probably carcinogenic to humans (Group 1) based on limited evidence of carcinogenicity in humans and sufficient evidence of carcinogenicity in experimental animals.

**Reproductive toxicity**

No information available on the product

**Specific Target Organ Toxicity (STOT)-single exposure**

No information available on the product

**Specific Target Organ Toxicity (STOT)-repeated exposure**

No information available on the product

**Asphyxiation hazard**

May be harmful if swallowed and enters airways

### 12. ECOLOGICAL INFORMATION

For spills or waste, take care to avoid contaminating environment.

Prevent spills and wastewater from entering sewers, water courses or law areas to avoid pollution.

There are no data available on the product itself. Ecological information of ingredients

**Toxicity**

<table>
<thead>
<tr>
<th>Substances name</th>
<th>LC 50(fish) mg/l</th>
<th>Exposure hours</th>
<th>EC 50(for crustacea) mg/l</th>
<th>Exposure hours</th>
<th>Erc50(for algae or other aquatic plants) mg/l</th>
<th>Exposure hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylbenzene</td>
<td>4.2</td>
<td>96</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Substances name</td>
<td>LC 50(fish) mg/l</td>
<td>Exposure hours</td>
<td>EC 50(for crustacea) mg/l</td>
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</tr>
<tr>
<td>----------------------------------------------------</td>
<td>------------------</td>
<td>----------------</td>
<td>---------------------------</td>
<td>----------------</td>
<td>-----------------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Xylene</td>
<td>10</td>
<td>48</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Fatty Acid, C-18, Unsatd. Trimmers, Compd. With 9-Octadecen-1-Amine</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Bisphenol-A, Epoxy Resin</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Persistency and degradability**

Biodegradation - No data available

**Bioaccumulative potential**

No data available

**Mobility in soil**

No data available

**Result of PBT and vPvB assessment**

No data available

**Other adverse effects**

There is no ecotoxicological test data available on the product itself. The product should not be allowed to enter drains or water courses.

### 13. DISPOSAL CONSIDERATIONS

The product should not be allowed to enter drains and watercourses. Preferred methods of waste disposal are incineration or biological treatment in federal/state approved facility. Empty containers should be recycled or disposed through an approved waste management facility or licensed contractor. All federal, state and local environmental regulations shall be observed.

### 14. TRANSPORT INFORMATION

Transport to be in accordance with ADR/RID for road/rail, IMDG for sea and IATA for Air.

**LAND TRANSPORT**

Classified as Dangerous Goods by the criteria of the European Agreement concerning the international carriage of Dangerous Goods (ADR) by Road & Regulations concerning the international carriage of Dangerous goods (RID) by Rail

- **UN Number:** 1263
- **Proper shipping name:** PAINT (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base) or PAINT RELATED MATERIAL (including paint thinning or reducing compound)
- **Class:** Class 3
- **Packaging Group:** III

**SEA TRANSPORT**

Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport of Sea

- **UN Number:** 1263
- **Proper shipping name:** PAINT (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base) or PAINT RELATED MATERIAL (including paint thinning or reducing compound)
- **Class:** Class 3
- **Packaging Group:** III
- **Marine Pollutant:** Yes

**SEA (ANNEX II OF MARPOL 73/78 AND THE IBC CODE)**

Not applicable

**AIR TRANSPORT**

Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by Air

- **UN Number:** 1263
Proper shipping name: PAINT (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base) or PAINT RELATED MATERIAL (including paint thinning or reducing compound)

Class: Class 3
Packaging Group: III

15. REGULATORY INFORMATION

Applicable national regulations:

- Standards on Hazard communication for hazardous chemicals and dangerous goods
- MOM: Workplace Safety and Health Act & Workplace Safety and Health (General Provisions) Regulations
  - This product is subject to SDS, labelling, PEL and other requirements in the Acts/Regulations.
- NEA: Environmental Protection and Management Act & Environmental Protection and Management (Hazardous Substances) Regulations
  - This product is not subject to control under this Acts/Regulations.
- SCDF: Fire Safety Act & Fire Safety (Petroleum and Flammable Materials) Regulations
  - This product is subject to the requirement of this Acts/Regulations.
- SPF: The Arms and Explosive Act, the Arms and Explosives (Explosives) Rules, and the Arms and Explosives (Explosive Precursors) Rules
  - This product is not subject to the requirement of this Acts/Regulations.

16. OTHER INFORMATION

Previous Revision Date /Version No.: 26-07-2017 /03

Abbreviation
ACGIH American Conference of Governmental Industrial Hygienists
TLV Threshold limit value
TWA Time-Weighted Average
OSHA Occupational Safety and Health Administration
PEL Permissible Exposure Limit
LD50 Lethal Dose
LC50 Median lethal concentration
IACR International Agency for Research in Cancer

Disclaimer
To the best of our knowledge, the information contained herein is accurate. However, the information is provided without any representation or warranty, expressed or implied, regarding its accuracy or completeness. Since the conditions of handling, storage, use and disposal are beyond our control and may be beyond our knowledge, for this and other reasons, we make no guarantee of results and assume no liability for damages incurred by the use of this product. Please be reminded that all chemicals may present unknown health hazards and should be used with caution.
SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: NIPPON E-MARINE A/C II HARDENER
Intended Use: Hardener for Paint
Manufacturer: Nippon Paint (Singapore) Co Pte Ltd
Supplier: Nippon Paint Marine (Singapore) Pte Ltd
No. 1 First Lok Yang Road, Jurong
Singapore 629728
Telephone Number: +65 6268 1161 / +65 6265 5355
(Within Hours of Operation Mon- Fri: 0900-1700)
Facsimile Number: +65 6268 1191 / +65 6264 1603

2. HAZARDS IDENTIFICATION

Classification Code:
- Flammable Hazard Category 2
- Acute Toxicity:
  - Inhalation Category 4
  - Skin corrosion/irritation Category 2
  - Serious eye damage/irritation Category 2
  - Skin sensitization Category 1
  - Germ cell mutagenicity Category 1
  - Reproductive toxicity Category 1

Specific target organ toxicity:
- Single exposure Category 2
- Repeated exposure Category 2

Not classified as an environmental hazard under GHS criteria

GHS Pictogram

Signal Word
Danger
Hazard statements
H225: Highly flammable liquid and vapour
H315: Causes skin irritation
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H332: Harmful if inhaled
H340: May cause genetic defects
H360: May damage fertility or the unborn child
H371: May cause damage to organs
H373: May cause damage to organs through prolonged or repeated exposure

Precautionary statements
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P260: Do not breathe dust/fume/gas/mist/vapours/spray
P261: Avoid breathing dust/fume/gas/mist/vapours/spray
P264: Wash hands thoroughly after handling
P270: Do not eat, drink or smoke when using this product
P271: Use only outdoors or in a well-ventilated area
P272: Contaminated work clothing should not be allowed out of the workplace
P280: Wear protective gloves/protective clothing/eye protection/face protection
P281: Use personal protective equipment as required
Response
P312: Call a POISON CENTER or doctor/physician if you feel unwell
P314: Get medical advice/attention if you feel unwell
P321: Specific treatment (see Section 4 of SDS)
P362: Take off contaminated clothing and wash before reuse
P363: Wash contaminated clothing before reuse
P304+340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P308+313: IF exposed or concerned: Get medical advice/attention
P309+311: IF exposed or you feel unwell: Call a POISON CENTER or doctor/physician
P332+313: If skin irritation occurs: Get medical advice/attention
P333+313: If skin irritation or a rash occurs: Get medical advice/attention
P337+313: If eye irritation persists: Get medical advice/attention
P370+378: In case of fire: Use appropriate media for extinction
P305+351+338: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P303+361+353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
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P309+311: IF exposed or you feel unwell: Call a POISON CENTER or doctor/physician
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P405: Store locked up
P403+235: Store in a well ventilated place. Keep cool
Disposal
P501: Dispose of contents/container to appropriate waste site or reclamer in accordance with local or national regulations

3. COMPOSITION / INFORMATION ON INGREDIENTS

Substance or Preparation: Preparation
Chemical nature: Polyamideamine resin solution

<table>
<thead>
<tr>
<th>Substances</th>
<th>CAS No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-Methylpentane-2-One, Iso Butyl Methyl Ketone</td>
<td>108-10-1</td>
<td>10 - 45</td>
</tr>
<tr>
<td>Alkyl Glycidyl Ether</td>
<td>68609-97-2</td>
<td>5 - 25</td>
</tr>
<tr>
<td>Toluene</td>
<td>108-88-3</td>
<td>1 - 10</td>
</tr>
<tr>
<td>Benzyl Alcohol</td>
<td>100-51-6</td>
<td>1 - 10</td>
</tr>
<tr>
<td>Petroleum Resin</td>
<td>64742-16-1</td>
<td>1 - 10</td>
</tr>
<tr>
<td>Fatty Acid, C-18, Unsatd. Trimers, Compd. With 9-Octadecen-1-Amine</td>
<td>147900-93-4</td>
<td>0.5 - 1.5</td>
</tr>
<tr>
<td>Solvent Naptha, Petroleum, Light Aromatic</td>
<td>64742-95-6</td>
<td>0.5 - 1.5</td>
</tr>
</tbody>
</table>

4. FIRST-AID MEASURES

INHALATION
- Move person to fresh air and call for medical assistance immediately.
- If not breathing, give artificial respiration, if breathing is difficult, give oxygen. Keep at rest.

SKIN CONTACT
- In case of contact, immediately flush skin with large amounts of water and soap while removing contaminated clothing and shoes.
- If irritation persists, get medical attention.

EYE CONTACT
- Immediately flush eyes with large amounts of water until irritation subsides.
- Remove contact lens.
- Obtain medical attention, preferably by an ophthalmologist, immediately.

INGESTION
- DO NOT induce vomiting unless directed to do so by a medical personnel. Never give anything by mouth to an unconscious person. Keep at rest. Get medical attention immediately.
5. FIRE FIGHTING MEASURES

SUITABLE FIRE EXTINGUISHING MEDIA
- Water fog
- CO2
- Foam
- Dry chemicals
- Dry sand.

SPECIAL PROTECTIVE ACTIONS FOR FIRE FIGHTERS
- Wear full protective clothing and NIOSH - approved self - contained breathing apparatus.
- Use water spray to cool fire - exposed surfaces and to protect personnel. If a leak or spill has not ignited, use water spray to disperse the vapours.
- If possible, isolate product from heat, electrical equipments, sparks and open flames.
- Avoid spraying water directly into storage containers.
- Closed containers may explode when exposed to extreme heat.
- Avoid spreading burning liquid with water, isolate liquid.
- Do not allow runoff from fire fighting to enter drains or watercourses.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURE
- Wear appropriate protective equipment, e.g. respirators, eye protection, gloves and safety shoes.
- Avoid substance contact with eyes. Do not inhale vapours.
- Ensure supply of fresh air in enclosed rooms.

ENVIRONMENTAL PRECAUTIONS
- Eliminate sources of ignition.
- Keep public away.
- Contain spilled liquid with sand or other non-combustible absorbent materials.
- Wash area and prevent runoff into drains and sewerage system.
- Advise authorities if substance has entered a watercourse or sewer or has contaminated soil or vegetation.

METHODS AND MATERIALS FOR CONTAINMENTS AND CLEANING UP
- Clean up all spills immediately.
- Absorb spill with absorbent and inert material, then place in container.
- Disposal in accordance to local/national regulations.

7. HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING
- Use appropriate personal protective equipment.
- Keep out of reach of children.
- Handle containers with care. Open slowly in order to control possible pressure release.
- Do not pressurize containers.
- Do not ingest. Do not breathe in gas/fumes/vapour. Avoid contact with skin and eyes.
- For personal protection, see section 8.
- Take precautionary measures against static discharge.
- Protect from frost and extremes of temperature.

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES
- Keep containers tightly closed.
- Containers that are opened should be properly resealed and kept upright to prevent leakage.
- Store in cool, dry and well - ventilated place at temperature between 20°C to 40°C away from heat and sources of ignition.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

CONTROL PARAMETERS/OCCUPATIONAL LIMITS

<table>
<thead>
<tr>
<th>Substances</th>
<th>ACGIH TLV-TWA ppm</th>
<th>ACGIH TLV-TWA mg/m³</th>
<th>OSHA PEL-TWA ppm</th>
<th>OSHA PEL-TWA mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-Methylpentane-2-One, Iso Butyl Methyl Ketone</td>
<td>20</td>
<td>-</td>
<td>50</td>
<td>205.00</td>
</tr>
<tr>
<td>Alkyl Glycidyl Ether</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Toluene</td>
<td>50</td>
<td>188.00</td>
<td>100</td>
<td>375.00</td>
</tr>
</tbody>
</table>
### Substances

<table>
<thead>
<tr>
<th>Substances</th>
<th>ACGIH TLV-TWA ppm</th>
<th>mg/m³</th>
<th>OSHA PEL-TWA ppm</th>
<th>mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzyl Alcohol</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Petroleum Resin</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fatty Acid, C-18, Unsatd. Trimers, Compd. With 9-Octadecen-1-Amine</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Solvent Naphtha, Petroleum, Light Aromatic</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### APPROPRIATE ENGINEERING CONTROL MEASURES
- Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapours below their respective occupational exposure limits.
- Ensure eyewash stations and safety showers are close to the workstation location.

### PERSONAL PROTECTION

#### Respiratory Protection:
Use of NIOSH - approved respirators with organic vapour cartridges is recommended.

#### Hand Protection:
Use of solvent resistance type or chemical resistant type of protective gloves is recommended.

#### Eye Protection:
Use of safety glasses or goggles with side shields is recommended.

#### Skin / Body Protection:
Wear chemical resistant clothes and safety shoes when handling product.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

- **Appearance**: Liquid
- **Odour**: Aromatic hydrocarbon odour
- **Odour threshold**: Not available
- **pH**: Not available
- **Melting point/freezing point**: Not available
- **Initial boiling point and boiling range**: Between 111 and 266 °C
- **Flash point**: 6 °C
- **Evaporation rate**: Not available
- **Flammability (solid, gas)**: Not applicable
- **Lower flammability or explosive limit**: 0.9 % by vol
- **Upper flammability or explosive limit**: 6.7 % by vol
- **Vapour pressure**: Not available
- **Vapour density**: > 1.00 (Vapour is heavier than air)
- **Specific gravity**: 0.90 - 0.96
- **Solubility**: Not Miscible in water
- **Partition coefficient**: Not available
- **Auto-Ignition temperature**: > 436.1 °C
- **Decomposition temperature**: Not available
- **Viscosity**: Not available

### 10. STABILITY AND REACTIVITY

- **Stability**: Stable under recommended storage and handling conditions (see section 7). When exposed to high temperature, may produce hazardous decomposition products such as carbon monoxide, carbon dioxide, oxides of nitrogen and smoke.
- **Hazardous reaction**: Hazardous reaction will not occur.
- **Condition to avoid**: Avoid heating temperatures above 40 deg.C.
- **Materials to avoid**: Keep away from oxidizing agents, strongly alkaline and strongly acid materials in order to avoid possible exothermic reactions.
- **Hazardous decomposition**: The products decomposed on heating producing their oxide or monomers.

### 11. TOXICOLOGICAL INFORMATION

There is no data available on the product itself.

**Toxicological information of substances:**

**Acute oral toxicity**
Harmful if swallowed

<table>
<thead>
<tr>
<th>Substances</th>
<th>Oral LD50(Rat), mg/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-Methylpentane-2-One, Iso Butyl Methyl Ketone</td>
<td>2080</td>
</tr>
<tr>
<td>Alkyl Glycidyl Ether</td>
<td>17100</td>
</tr>
<tr>
<td>Toluene</td>
<td>2600</td>
</tr>
<tr>
<td>Benzyl Alcohol</td>
<td>1230</td>
</tr>
<tr>
<td>Petroleum Resin</td>
<td>5001</td>
</tr>
<tr>
<td>Fatty Acid, C-18, Unsatd. Trimers, Compd. With 9-Octadecen-1-Amine</td>
<td>Data not available</td>
</tr>
<tr>
<td>Solvent Naptha, Petroleum, Light Aromatic</td>
<td>400</td>
</tr>
</tbody>
</table>

**Acute dermal/skin toxicity**

May be harmful if in contact with skin

<table>
<thead>
<tr>
<th>Substances</th>
<th>Dermal LD50 (Rabbit), mg/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-Methylpentane-2-One, Iso Butyl Methyl Ketone</td>
<td>16000</td>
</tr>
<tr>
<td>Alkyl Glycidyl Ether</td>
<td>Data not available</td>
</tr>
<tr>
<td>Toluene</td>
<td>12000</td>
</tr>
<tr>
<td>Benzyl Alcohol</td>
<td>2000</td>
</tr>
<tr>
<td>Petroleum Resin</td>
<td>2000</td>
</tr>
<tr>
<td>Fatty Acid, C-18, Unsatd. Trimers, Compd. With 9-Octadecen-1-Amine</td>
<td>Data not available</td>
</tr>
<tr>
<td>Solvent Naptha, Petroleum, Light Aromatic</td>
<td>3481</td>
</tr>
</tbody>
</table>

**Acute inhalation toxicity**

Vapour concentrations above the recommended exposure levels may be irritating to the eyes and the respiratory tract, may cause headaches and dizziness, could be anesthetic and may have other central nervous system effects.

<table>
<thead>
<tr>
<th>Substances</th>
<th>Inhalation Vapor LC50 (Rat), mg/L/4hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-Methylpentane-2-One, Iso Butyl Methyl Ketone</td>
<td>8.2</td>
</tr>
<tr>
<td>Alkyl Glycidyl Ether</td>
<td>Data not available</td>
</tr>
<tr>
<td>Toluene</td>
<td>12.5</td>
</tr>
<tr>
<td>Benzyl Alcohol</td>
<td>8.8</td>
</tr>
<tr>
<td>Petroleum Resin</td>
<td>Data not available</td>
</tr>
<tr>
<td>Fatty Acid, C-18, Unsatd. Trimers, Compd. With 9-Octadecen-1-Amine</td>
<td>Data not available</td>
</tr>
<tr>
<td>Solvent Naptha, Petroleum, Light Aromatic</td>
<td>Data not available</td>
</tr>
</tbody>
</table>

**Skin corrosion or irritation**

Causes skin irritation. Frequent or prolonged contact may dry the skin, leading to discomfort and dermatitis

**Serious eye damage or irritation**

May be an eye irritant

**Respiratory or skin sensitisation**

Vapour concentrations above the recommended exposure levels may be irritating to the eyes and the respiratory tract

**Germ cell mutagenicity**

No information available on the product

**Carcinogenicity**

No information available on the product

**Reproductive toxicity**

No information available on the product

**Specific Target Organ Toxicity (STOT)-single exposure**

No information available on the product

**Specific Target Organ Toxicity (STOT)-repeated exposure**

No information available on the product

**Asphyxiation hazard**

May be harmful if swallowed and enters airways
12. ECOLOGICAL INFORMATION

For spills or waste, take care to avoid contaminating environment.
Prevent spills and wastewater from entering sewers, water courses or law areas to avoid pollution.
There are no data available on the product itself. Ecological information of ingredients

**Toxicity**

<table>
<thead>
<tr>
<th>Substances name</th>
<th>LC 50(fish) mg/l</th>
<th>Exposure hours</th>
<th>EC 50(for crustacea) mg/l</th>
<th>Exposure hours</th>
<th>ErC50(for algae or other aquatic plants) mg/l</th>
<th>Exposure hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetraethylenepentamine</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Fatty Acid, C-18, Unsatd. Trimers, Compd. With 9-Octadecen-1-Amine</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Petroleum Resin</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Alkyl Glycidyl Ether</td>
<td>N/A</td>
<td>N/A</td>
<td>10</td>
<td>48</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Persistence and degradability**

Biodegradation -No data available

**Bioaccumulative potential**

No data available

**Mobility in soil**

No data available

**Result of PBT and vPvB assessment**

No data available

**Other adverse effects**

There is no ecotoxicological test data available on the product itself.
The product should not be allowed to enter drains or water courses.

13. DISPOSAL CONSIDERATIONS

The product should not be allowed to enter drains and watercourses.
Preferred methods of waste disposal are incineration or biological treatment in federal/state approved facility. Empty containers should be recycled or disposed through an approved waste management facility or licensed contractor. All federal, state and local environmental regulations shall be observed.

14. TRANSPORT INFORMATION

Transport to be in accordance with ADR/RID for road/rail, IMDG for sea and IATA for Air.

**LAND TRANSPORT**

Classified as Dangerous Goods by the criteria of the European Agreement concerning the international carriage of Dangerous Goods (ADR) by Road & Regulations concerning the international carriage of Dangerous goods (RID) by Rail

UN Number: 1993
Proper shipping name: Flammable Liquid N.O.S
Class: Class 3
Packaging Group: II

**SEA TRANSPORT**

Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport of Sea

UN Number: 1993
Proper shipping name: Flammable Liquid N.O.S
Class: Class 3
Packaging Group: II
Marine Pollutant: No

**SEA (ANNEX II OF MARPOL 73/78 AND THE IBC CODE)**

Not applicable

**AIR TRANSPORT**
15. REGULATORY INFORMATION

Applicable national regulations:

- Standards on Hazard communication for hazardous chemicals and dangerous goods
- MOM: Workplace Safety and Health Act & Workplace Safety and Health (General Provisions) Regulations
  - This product is subject to SDS, labelling, PEL and other requirements in the Acts/Regulations.
- NEA: Environmental Protection and Management Act & Environmental Protection and Management
  - Hazardous Substances) Regulations
  - This product is not subject to control under this Acts/Regulations.
- SCDF: Fire Safety Act & Fire Safety (Petroleum and Flammable Materials) Regulations
  - This product is subject to the requirement of this Acts/Regulations.
- SPF: The Arms and Explosive Act, the Arms and Explosives (Explosives) Rules, and the Arms and Explosives
  - Explosive Precursors) Rules
  - This product is not subject to the requirement of this Acts/Regulations.

16. OTHER INFORMATION

Previous Revision Date /Version No.: 26-06-2019 /04

Abbreviation
ACGIH American Conference of Governmental Industrial Hygienists
TLV Threshold limit value
TWA Time-Weighted Average
OSHA Occupational Safety and Health Administration
PEL Permissible Exposure Limit
LD50 Lethal Dose
LC50 Median lethal concentration
IACR International Agency for Research in Cancer

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conditions of handling, storage, use and disposal are beyond our control and may be beyond our knowledge, for
this and other reasons, we make no guarantee of results and assume no liability for damages incurred by the use of
this product. Please be reminded that all chemicals may present unknown health hazards and should be used with
caution.