SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: NIPPON E-MARINE A/C 040 GRAY BASE
Intended Use: 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
(Follow 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 3
Skin corrosion/irritation Category 2
Serious eye damage/irritation Category 1
Respiratory sensitization Category 1
Skin sensitization Category 1
Carcinogenicity Category 1
Specific target organ toxicity:
- Single exposure Category 1
- Repeated exposure Category 1
Aquatic Chronic Category 2

GHS Pictogram

Signal Word
Danger
Hazard statements
H225: Highly flammable liquid and vapour
H315: Causes skin irritation
H317: May cause an allergic skin reaction
H318: Causes serious eye damage
H331: Toxic if inhaled
H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled
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
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>17.1 - 37.6</td>
</tr>
<tr>
<td>Bisphenol-A, Epoxy Resin</td>
<td>25068-38-6</td>
<td>6.9 - 15.2</td>
</tr>
<tr>
<td>Potassium Aluminium Silicate</td>
<td>12001-26-2</td>
<td>3.8 - 8.4</td>
</tr>
<tr>
<td>Poly(Bisphenol A-Co-Epichlorohydrin) Glycidyl End-Capped</td>
<td>25036-25-3</td>
<td>3.7 - 8.1</td>
</tr>
<tr>
<td>Xylene</td>
<td>1330-20-7</td>
<td>3.6 - 7.9</td>
</tr>
<tr>
<td>Phenol, Methylstyrenated</td>
<td>68512-30-1</td>
<td>3.3 - 7.3</td>
</tr>
<tr>
<td>4-Methylpentane-2-One, Iso Butyl Methyl Ketone</td>
<td>108-10-1</td>
<td>2.3 - 5.1</td>
</tr>
<tr>
<td>Isobutanol</td>
<td>78-83-1</td>
<td>2.1 - 4.6</td>
</tr>
<tr>
<td>Petroleum Resin</td>
<td>64742-16-1</td>
<td>1.7 - 3.7</td>
</tr>
<tr>
<td>Substances determined to be non-hazardous</td>
<td>-</td>
<td>Balance</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>100%</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.
- Use only in areas from which all naked lights and other sources of ignition have been excluded.
- 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.
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>
<tr>
<td>Bisphenol-A, Epoxy Resin</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Potassium Aluminium Silicate</td>
<td>-</td>
<td>3.00</td>
<td>-</td>
<td>3.00</td>
</tr>
<tr>
<td>Poly(Bisphenol A-Co-Epichlorohydrin) Glycidyl End-Capped</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Xylene</td>
<td>100</td>
<td>-</td>
<td>100</td>
<td>435.00</td>
</tr>
<tr>
<td>Phenol, Methyl styreneated</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<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>Isobutanol</td>
<td>50</td>
<td>-</td>
<td>50</td>
<td>150.00</td>
</tr>
<tr>
<td>Petroleum Resin</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

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Liquid</td>
</tr>
<tr>
<td>Odour</td>
<td>Aromatic hydrocarbon odour</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>Not available</td>
</tr>
<tr>
<td>pH</td>
<td>Not available</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>Not available</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>Between 108 and 155 °C</td>
</tr>
<tr>
<td>Flash point</td>
<td>24 °C</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Lower flammability or explosive limit</td>
<td>1 % by vol</td>
</tr>
<tr>
<td>Upper flammability or explosive limit</td>
<td>10.9 % by vol</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>Not available</td>
</tr>
<tr>
<td>Vapour density</td>
<td>&gt; 1.00 (Vapour is heavier than air)</td>
</tr>
<tr>
<td>Specific gravity</td>
<td>1.41 - 1.51</td>
</tr>
<tr>
<td>Solubility</td>
<td>Not Miscible in water</td>
</tr>
<tr>
<td>Partition coefficient</td>
<td>Not available</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>&gt; 432 °C</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Not available</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not available</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

<table>
<thead>
<tr>
<th>Substances</th>
<th>Oral LD50(Rat), mg/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium Silicate Hydrate</td>
<td>Data not available</td>
</tr>
<tr>
<td>Bisphenol-A, Epoxy Resin</td>
<td>11400</td>
</tr>
<tr>
<td>Potassium Aluminium Silicate</td>
<td>Data not available</td>
</tr>
<tr>
<td>Poly(Bisphenol A-Co-Epichlorohydrin) Glycidyl End-Capped</td>
<td>Data not available</td>
</tr>
<tr>
<td>Xylene</td>
<td>5000</td>
</tr>
<tr>
<td>Phenol, Methylstyrenated</td>
<td>2000</td>
</tr>
<tr>
<td>4-Methylpentane-2-One,Iso Butyl Methyl Ketone</td>
<td>2080</td>
</tr>
<tr>
<td>Isobutanol</td>
<td>2460</td>
</tr>
<tr>
<td>Petroleum Resin</td>
<td>5001</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>Magnesium Silicate Hydrate</td>
<td>Data not available</td>
</tr>
<tr>
<td>Bisphenol-A, Epoxy Resin</td>
<td>Data not available</td>
</tr>
<tr>
<td>Potassium Aluminium Silicate</td>
<td>Data not available</td>
</tr>
<tr>
<td>Poly(Bisphenol A-Co-Epichlorohydrin) Glycidyl End-Capped</td>
<td>Data not available</td>
</tr>
<tr>
<td>Xylene</td>
<td>4350</td>
</tr>
<tr>
<td>Phenol, Methylstyrenated</td>
<td>2000</td>
</tr>
<tr>
<td>4-Methylpentane-2-One,Iso Butyl Methyl Ketone</td>
<td>16000</td>
</tr>
<tr>
<td>Isobutanol</td>
<td>3400</td>
</tr>
<tr>
<td>Petroleum Resin</td>
<td>2000</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>Magnesium Silicate Hydrate</td>
<td>Data not available</td>
</tr>
<tr>
<td>Bisphenol-A, Epoxy Resin</td>
<td>Data not available</td>
</tr>
<tr>
<td>Potassium Aluminium Silicate</td>
<td>Data not available</td>
</tr>
<tr>
<td>Poly(Bisphenol A-Co-Epichlorohydrin) Glycidyl End-Capped</td>
<td>Data not available</td>
</tr>
<tr>
<td>Xylene</td>
<td>8000</td>
</tr>
<tr>
<td>Phenol, Methylstyrenated</td>
<td>4.9</td>
</tr>
<tr>
<td>4-Methylpentane-2-One,Iso Butyl Methyl Ketone</td>
<td>8.2</td>
</tr>
<tr>
<td>Isobutanol</td>
<td>6.5</td>
</tr>
<tr>
<td>Petroleum Resin</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**
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

**Asphyxiating 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>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>Poly(Bisphenol A-Co-Epichlorohydrin) Glycidyl End-Capped</td>
<td>5</td>
<td>48</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>
<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>
</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:** 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.: 07-10-2016 /01

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 060 GRAY BASE
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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)
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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
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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
P271: Use only outdoors or in a well-ventilated area
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
P285: In case of inadequate ventilation wear respiratory protection
Response
P301: Immediately call a POISON CENTER or doctor/physician
P310: If exposed: Call a POISON CENTER or doctor/physician
P311: Call a POISON CENTER or doctor/physician
P312: If other professional help is needed, show them this safety data sheet.
P314: Get medical advice/attention if you feel unwell
P315: If一旦 you feel unwell, immediately call a doctor or poison center/physician.
P331: Take steps to ensure that anyone who might have been exposed receives proper medical attention.
P360: Take appropriate action if you are in a closed space.
P362: Take off contaminated clothing and wash before reuse
P363: Wash contaminated clothing before reuse
P364: Change clothing after each use.
P365: Replace or clean work clothing regularly.
Storage
P405: Store locked up
P405: Store in a cool place.
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>Bisphenol-A, Epoxy Resin</td>
<td>25068-38-6</td>
<td>5 - 20</td>
</tr>
<tr>
<td>Potassium Aluminium Silicate</td>
<td>12001-26-2</td>
<td>1 – 10</td>
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<td>25036-25-3</td>
<td>1 – 10</td>
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<tr>
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<td>68512-30-1</td>
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<tr>
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<td>108-10-1</td>
<td>1 – 10</td>
</tr>
<tr>
<td>Isobutanol</td>
<td>78-83-1</td>
<td>1 – 10</td>
</tr>
<tr>
<td>Petroleum Resin</td>
<td>64742-16-1</td>
<td>1 – 5</td>
</tr>
<tr>
<td>Substances determined to be non-hazardous</td>
<td>-</td>
<td>Balance</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.
- Use only in areas from which all naked lights and other sources of ignition have been excluded.
- 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.
8. EXPOSURE CONTROLS / PERSONAL PROTECTION

CONTROL PARAMETERS/OCCUPATIONAL LIMITS

<table>
<thead>
<tr>
<th>Substances</th>
<th>ACGIH TLV-TWA</th>
<th>OSHA PEL-TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ppm</td>
<td>mg/m3</td>
</tr>
<tr>
<td>Magnesium Silicate Hydrate</td>
<td>-</td>
<td>2.00</td>
</tr>
<tr>
<td>Bisphenol-A, Epoxy Resin</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Potassium Aluminium Silicate</td>
<td>-</td>
<td>3.00</td>
</tr>
<tr>
<td>Poly(Bisphenol A-Co-Epichlorohydrin) Glycidyl End-Capped</td>
<td>100</td>
<td>-</td>
</tr>
<tr>
<td>Xylene</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Phenol, Methyl styrene</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4-Methylpentane-2-One, Iso Butyl Methyl Ketone</td>
<td>20</td>
<td>-</td>
</tr>
<tr>
<td>Isobutanol</td>
<td>50</td>
<td>-</td>
</tr>
<tr>
<td>Petroleum Resin</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 108 and 155 °C
- Flash point: 24 °C
- Evaporation rate: Not available
- Flammability (solid, gas): Not applicable
- Lower flammability or explosive limit: 1 % by vol
- Upper flammability or explosive limit: 10.9 % by vol
- Vapour pressure: Not available
- Vapour density: > 1.00 (Vapour is heavier than air)
- Specific gravity: 1.41 - 1.51
- Solubility: Not Miscible in water
- Partition coefficient: Not available
- Auto-ignition temperature: > 432 °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.
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>Magnesium Silicate Hydrate</td>
<td>Data not available</td>
</tr>
<tr>
<td>Bisphenol-A, Epoxy Resin</td>
<td>11400</td>
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<tr>
<td>Potassium Aluminium Silicate</td>
<td>Data not available</td>
</tr>
<tr>
<td>Poly(Bisphenol A-Co-Epichlorohydrin) Glycidyl End-Capped</td>
<td>Data not available</td>
</tr>
<tr>
<td>Xylene</td>
<td>5000</td>
</tr>
<tr>
<td>Phenol, Methylstyrenated</td>
<td>2000</td>
</tr>
<tr>
<td>4-Methylpentane-2-One,Iso Butyl Methyl Ketone</td>
<td>2080</td>
</tr>
<tr>
<td>Isobutanol</td>
<td>2460</td>
</tr>
<tr>
<td>Petroleum Resin</td>
<td>5001</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>Magnesium Silicate Hydrate</td>
<td>Data not available</td>
</tr>
<tr>
<td>Bisphenol-A, Epoxy Resin</td>
<td>Data not available</td>
</tr>
<tr>
<td>Potassium Aluminium Silicate</td>
<td>Data not available</td>
</tr>
<tr>
<td>Poly(Bisphenol A-Co-Epichlorohydrin) Glycidyl End-Capped</td>
<td>Data not available</td>
</tr>
<tr>
<td>Xylene</td>
<td>4350</td>
</tr>
<tr>
<td>Phenol, Methylstyrenated</td>
<td>2000</td>
</tr>
<tr>
<td>4-Methylpentane-2-One,Iso Butyl Methyl Ketone</td>
<td>16000</td>
</tr>
<tr>
<td>Isobutanol</td>
<td>3400</td>
</tr>
<tr>
<td>Petroleum Resin</td>
<td>2000</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>Magnesium Silicate Hydrate</td>
<td>Data not available</td>
</tr>
<tr>
<td>Bisphenol-A, Epoxy Resin</td>
<td>Data not available</td>
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<tr>
<td>Potassium Aluminium Silicate</td>
<td>Data not available</td>
</tr>
<tr>
<td>Poly(Bisphenol A-Co-Epichlorohydrin) Glycidyl End-Capped</td>
<td>Data not available</td>
</tr>
<tr>
<td>Xylene</td>
<td>8000</td>
</tr>
<tr>
<td>Phenol, Methylstyrenated</td>
<td>4.9</td>
</tr>
<tr>
<td>4-Methylpentane-2-One,Iso Butyl Methyl Ketone</td>
<td>8.2</td>
</tr>
<tr>
<td>Isobutanol</td>
<td>6.5</td>
</tr>
<tr>
<td>Petroleum Resin</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**
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>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>Poly(Bisphenol A-Co-Epichlorohydrin) Glycidyl End-Capped</td>
<td>5</td>
<td>48</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>
<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>
</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: 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.: 27-10-2016 /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 070 LIGHT GRAY BASE
Intended Use: 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
(Written 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 3
Skin corrosion/irritation Category 2
Serious eye damage/irritation Category 1
Respiratory sensitization Category 1
Skin sensitization Category 1
Carcinogenicity Category 1
Specific target organ toxicity:
- Single exposure Category 1
- Repeated exposure Category 1
Aquatic Chronic Category 2

GHS Pictogram

Signal Word
Danger
Hazard statements
H225: Highly flammable liquid and vapour
H315: Causes skin irritation
H317: May cause an allergic skin reaction
H318: Causes serious eye damage
H331: Toxic if inhaled
H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled
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
3. COMPOSITION / INFORMATION ON INGREDIENTS

Substance or Preparation: Preparation

Chemical nature: Epoxy resin paint

<table>
<thead>
<tr>
<th>Substances</th>
<th>CAS No.</th>
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<tr>
<td>Isobutanol</td>
<td>78-83-1</td>
<td>1 - 5</td>
</tr>
<tr>
<td>Petroleum Resin</td>
<td>64742-16-1</td>
<td>1 - 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 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.
   - Use only in areas from which all naked lights and other sources of ignition have been excluded.
   - 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

<table>
<thead>
<tr>
<th>Substances</th>
<th>ACGIH TLV-TWA</th>
<th>OSHA PEL-TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ppm</td>
<td>mg/m3</td>
</tr>
<tr>
<td>Magnesium Silicate Hydrate</td>
<td>-</td>
<td>2.00</td>
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<tr>
<td>Bisphenol-A, Epoxy Resin</td>
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<tr>
<td>Potassium Aluminium Silicate</td>
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<td>3.00</td>
</tr>
<tr>
<td>Poly(Bisphenol A-Co-Epichlorohydrin) Glycidyl End-Capped</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Xylene</td>
<td>100</td>
<td>-</td>
</tr>
<tr>
<td>Phenol, Methylstyrenated</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4-Methylpentane-2-One, Iso Butyl Methyl Ketone</td>
<td>20</td>
<td>-</td>
</tr>
<tr>
<td>Isobutanol</td>
<td>50</td>
<td>-</td>
</tr>
<tr>
<td>Petroleum Resin</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 108 and 155 °C
- Flash point: 24 °C
- Evaporation rate: Not available
- Flammability (solid, gas): Not applicable
- Lower flammability or explosive limit: 1 % by vol
- Upper flammability or explosive limit: 10.9 % by vol
- Vapour pressure: Not available
- Vapour density: > 1.00 (Vapour is heavier than air)
- Specific gravity: 1.41 - 1.51
- Solubility: Not Miscible in water
- Partition coefficient: Not available
- Auto-ignition temperature: > 432 °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>Magnesium Silicate Hydrate</td>
<td>Data not available</td>
</tr>
<tr>
<td>Bisphenol-A, Epoxy Resin</td>
<td>11400</td>
</tr>
<tr>
<td>Potassium Aluminium Silicate</td>
<td>Data not available</td>
</tr>
<tr>
<td>Poly(Bisphenol A-Co-Epichlorohydrin) Glycidyl End-Capped</td>
<td>Data not available</td>
</tr>
<tr>
<td>Xylene</td>
<td>5000</td>
</tr>
<tr>
<td>Phenol, Methylsyrenated</td>
<td>2000</td>
</tr>
<tr>
<td>4-Methylpentane-2-One, Iso Butyl Methyl Ketone</td>
<td>2080</td>
</tr>
<tr>
<td>Isobutanol</td>
<td>2460</td>
</tr>
<tr>
<td>Petroleum Resin</td>
<td>5001</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>Magnesium Silicate Hydrate</td>
<td>Data not available</td>
</tr>
<tr>
<td>Bisphenol-A, Epoxy Resin</td>
<td>Data not available</td>
</tr>
<tr>
<td>Potassium Aluminium Silicate</td>
<td>Data not available</td>
</tr>
<tr>
<td>Poly(Bisphenol A-Co-Epichlorohydrin) Glycidyl End-Capped</td>
<td>Data not available</td>
</tr>
<tr>
<td>Xylene</td>
<td>4350</td>
</tr>
<tr>
<td>Phenol, Methylsyrenated</td>
<td>2000</td>
</tr>
<tr>
<td>4-Methylpentane-2-One, Iso Butyl Methyl Ketone</td>
<td>16000</td>
</tr>
<tr>
<td>Isobutanol</td>
<td>3400</td>
</tr>
<tr>
<td>Petroleum Resin</td>
<td>2000</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>Magnesium Silicate Hydrate</td>
<td>Data not available</td>
</tr>
<tr>
<td>Bisphenol-A, Epoxy Resin</td>
<td>Data not available</td>
</tr>
<tr>
<td>Potassium Aluminium Silicate</td>
<td>Data not available</td>
</tr>
<tr>
<td>Poly(Bisphenol A-Co-Epichlorohydrin) Glycidyl End-Capped</td>
<td>Data not available</td>
</tr>
<tr>
<td>Xylene</td>
<td>8000</td>
</tr>
<tr>
<td>Phenol, Methylsyrenated</td>
<td>4.9</td>
</tr>
<tr>
<td>4-Methylpentane-2-One, Iso Butyl Methyl Ketone</td>
<td>8.2</td>
</tr>
<tr>
<td>Isobutanol</td>
<td>6.5</td>
</tr>
<tr>
<td>Petroleum Resin</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**

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>
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<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>Poly(Bisphenol A-Co-Epichlorohydrin) Glycidyl End-Capped</td>
<td>5</td>
<td>48</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>
<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>
</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: | 1263 |
| Class: | Class 3 |
| Packaging Group: | III |

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)

### 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 |
| 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 |
| Class: | Class 3 |
| Packaging Group: | III |

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.: 19-10-2018 /01

Abbreviation
ACGIH American Conference of Governmental Industrial Hygienists
TLV Threshold limit value
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 RED OXIDE BASE
Intended Use: 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 3
Skin corrosion/irritation Category 2
Serious eye damage/irritation Category 1
Respiratory sensitization Category 1
Skin sensitization Category 1
Carcinogenicity Category 1
Specific target organ toxicity:
- Single exposure Category 1
- Repeated exposure Category 1
Aquatic Chronic Category 2

GHS Pictogram

Signal Word
Danger
Hazard statements
H225: Highly flammable liquid and vapour
H315: Causes skin irritation
H317: May cause an allergic skin reaction
H318: Causes serious eye damage
H331: Toxic if inhaled
H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled
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
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
P271: Use only outdoors or in a well-ventilated area
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
P285: In case of inadequate ventilation wear respiratory protection
P301: Immediately call a POISON CENTER or doctor/physician
P310: Call a POISON CENTER or doctor/physician
P311: Call a POISON CENTER or doctor/physician
P313: Get medical advice/attention if you feel unwell
P314: Get medical advice/attention if you feel unwell
P315: Get medical advice/attention if you feel unwell
P317: Get medical advice/attention if you feel unwell
P318: Get medical advice/attention if you feel unwell
P319: Get medical advice/attention if you feel unwell
P330: Get medical advice/attention if you feel unwell
P332: If skin irritation occurs: Get medical advice/attention
P333: If skin irritation or a rash occurs: Get medical advice/attention
P334: If skin irritation occurs: Get medical advice/attention
P335: If skin irritation or a rash occurs: Get medical advice/attention
P336: If skin irritation occurs: Get medical advice/attention
P337: If skin irritation or a rash occurs: Get medical advice/attention
P338: If skin irritation occurs: Get medical advice/attention
P339: If skin irritation or a rash occurs: Get medical advice/attention
P341: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing
P342: If skin irritation occurs: Get medical advice/attention
P343: If skin irritation or a rash occurs: Get medical advice/attention
P344: If skin irritation occurs: Get medical advice/attention
P345: If skin irritation or a rash occurs: Get medical advice/attention
P346: If skin irritation occurs: Get medical advice/attention
P347: If skin irritation or a rash occurs: Get medical advice/attention
P348: If skin irritation occurs: Get medical advice/attention
P349: If skin irritation or a rash occurs: Get medical advice/attention
P350: If skin irritation occurs: Get medical advice/attention
P351: If skin irritation or a rash occurs: Get medical advice/attention
P352: If skin irritation occurs: Get medical advice/attention
P353: If skin irritation or a rash occurs: Get medical advice/attention
P362: Take off contaminated clothing and wash before reuse
P363: Wash contaminated clothing before reuse
P391: Collect spillage
P405: Store locked up
P403+233: Store in a well ventilated place. Keep container tightly closed
P403+235: Store in a well ventilated place. Keep cool
P448: Use non-flammable antifoam
P450: Use non-flammable antifoam
P451: Use non-flammable antifoam
P452: Use non-flammable antifoam
P453: Use non-flammable antifoam
P454: Use non-flammable antifoam
P455: Use non-flammable antifoam
P456: Use non-flammable antifoam
P457: Use non-flammable antifoam
P458: Use non-flammable antifoam
P459: Use non-flammable antifoam
P460: Use non-flammable antifoam
P461: Use non-flammable antifoam
P462: Use non-flammable antifoam
P463: Use non-flammable antifoam
P464: Use non-flammable antifoam
P465: Use non-flammable antifoam
P466: Use non-flammable antifoam
P467: Use non-flammable antifoam
P468: Use non-flammable antifoam
P469: Use non-flammable antifoam
P470: Use non-flammable antifoam
P471: Use non-flammable antifoam
P472: Use non-flammable antifoam
P473: Use non-flammable antifoam
P474: Use non-flammable antifoam
P475: Use non-flammable antifoam
P476: Use non-flammable antifoam
P477: Use non-flammable antifoam
P478: Use non-flammable antifoam
P479: Use non-flammable antifoam
P480: Use non-flammable antifoam
P481: Use non-flammable antifoam
P482: Use non-flammable antifoam
P483: Use non-flammable antifoam
P484: Use non-flammable antifoam
P485: Use non-flammable antifoam
P486: Use non-flammable antifoam
P487: Use non-flammable antifoam
P488: Use non-flammable antifoam
P489: Use non-flammable antifoam
P490: Use non-flammable antifoam
P491: Use non-flammable antifoam
P492: Use non-flammable antifoam
P493: Use non-flammable antifoam
P494: Use non-flammable antifoam
P495: Use non-flammable antifoam
P496: Use non-flammable antifoam
P497: Use non-flammable antifoam
P498: Use non-flammable antifoam
P499: Use non-flammable antifoam
P500: Use non-flammable antifoam
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>Bisphenol-A, Epoxy Resin</td>
<td>25068-38-6</td>
<td>5 - 15.0</td>
</tr>
<tr>
<td>Xylene</td>
<td>1330-20-7</td>
<td>1 - 10</td>
</tr>
<tr>
<td>Potassium Aluminium Silicate</td>
<td>12001-26-2</td>
<td>1 - 10</td>
</tr>
<tr>
<td>Poly(Bisphenol A-Co-Epichlorohydrin) Glycidyl End-Capped</td>
<td>25036-25-3</td>
<td>1 - 10</td>
</tr>
<tr>
<td>Phenol, Methylstyrenated</td>
<td>68512-30-1</td>
<td>1 - 10</td>
</tr>
<tr>
<td>4-Methylpentane-2-One, Iso Butyl Methyl Ketone</td>
<td>108-10-1</td>
<td>1 - 5.0</td>
</tr>
<tr>
<td>Isobutanol</td>
<td>78-83-1</td>
<td>1 - 5.0</td>
</tr>
<tr>
<td>Petroleum Resin</td>
<td>64742-16-1</td>
<td>1 - 5.0</td>
</tr>
<tr>
<td>Substances determined to be non-hazardous</td>
<td></td>
<td>Balance</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 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.
   - Use only in areas from which all naked lights and other sources of ignition have been excluded.
   - 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.
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>
<tr>
<td>Bisphenol-A, Epoxy Resin</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Xylene</td>
<td>100</td>
<td>435.00</td>
<td>100</td>
<td>435.00</td>
</tr>
<tr>
<td>Potassium Aluminium Silicate</td>
<td>-</td>
<td>3.00</td>
<td>-</td>
<td>3.00</td>
</tr>
<tr>
<td>Poly(Bisphenol A-Co-Epichlorohydrin) Glycidyl End-Capped</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Phenol, Methylstyrenated</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4-Methylpentane-2-One, Iso Butyl Methyl Ketone</td>
<td>20</td>
<td>50</td>
<td>205.00</td>
<td></td>
</tr>
<tr>
<td>Isobutanol</td>
<td>50</td>
<td>50</td>
<td>150.00</td>
<td></td>
</tr>
<tr>
<td>Petroleum Resin</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

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Liquid</td>
</tr>
<tr>
<td>Odour</td>
<td>Aromatic hydrocarbon odour</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>Not available</td>
</tr>
<tr>
<td>pH</td>
<td>Not available</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>Not available</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>Between 108 and 155 °C</td>
</tr>
<tr>
<td>Flash point</td>
<td>24 °C</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Lower flammability or explosive limit</td>
<td>1 % by vol</td>
</tr>
<tr>
<td>Upper flammability or explosive limit</td>
<td>10.9 % by vol</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>Not available</td>
</tr>
<tr>
<td>Vapour density</td>
<td>&gt; 1.00 (Vapour is heavier than air)</td>
</tr>
<tr>
<td>Specific gravity</td>
<td>1.40 - 1.50</td>
</tr>
<tr>
<td>Solubility</td>
<td>Not Miscible in water</td>
</tr>
<tr>
<td>Partition coefficient</td>
<td>Not available</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>&gt; 432 °C</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Not available</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not available</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.
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>Magnesium Silicate Hydrate</td>
<td>Data not available</td>
</tr>
<tr>
<td>Bisphenol-A, Epoxy Resin</td>
<td>11400</td>
</tr>
<tr>
<td>Xylene</td>
<td>5000</td>
</tr>
<tr>
<td>Potassium Aluminium Silicate</td>
<td>Data not available</td>
</tr>
<tr>
<td>Poly(Bisphenol A-Co-Epichlorohydrin) Glycidyl End-Capped</td>
<td>Data not available</td>
</tr>
<tr>
<td>Phenol, Methylstyrenated</td>
<td>2000</td>
</tr>
<tr>
<td>4-Methylpentane-2-One, Iso Butyl Methyl Ketone</td>
<td>2080</td>
</tr>
<tr>
<td>Isobutanol</td>
<td>2460</td>
</tr>
<tr>
<td>Petroleum Resin</td>
<td>5001</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>Magnesium Silicate Hydrate</td>
<td>Data not available</td>
</tr>
<tr>
<td>Bisphenol-A, Epoxy Resin</td>
<td>Data not available</td>
</tr>
<tr>
<td>Xylene</td>
<td>4350</td>
</tr>
<tr>
<td>Potassium Aluminium Silicate</td>
<td>Data not available</td>
</tr>
<tr>
<td>Poly(Bisphenol A-Co-Epichlorohydrin) Glycidyl End-Capped</td>
<td>Data not available</td>
</tr>
<tr>
<td>Phenol, Methylstyrenated</td>
<td>2000</td>
</tr>
<tr>
<td>4-Methylpentane-2-One, Iso Butyl Methyl Ketone</td>
<td>16000</td>
</tr>
<tr>
<td>Isobutanol</td>
<td>3400</td>
</tr>
<tr>
<td>Petroleum Resin</td>
<td>2000</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>Magnesium Silicate Hydrate</td>
<td>Data not available</td>
</tr>
<tr>
<td>Bisphenol-A, Epoxy Resin</td>
<td>Data not available</td>
</tr>
<tr>
<td>Xylene</td>
<td>8000</td>
</tr>
<tr>
<td>Potassium Aluminium Silicate</td>
<td>Data not available</td>
</tr>
<tr>
<td>Poly(Bisphenol A-Co-Epichlorohydrin) Glycidyl End-Capped</td>
<td>Data not available</td>
</tr>
<tr>
<td>Phenol, Methylstyrenated</td>
<td>4.9</td>
</tr>
<tr>
<td>4-Methylpentane-2-One, Iso Butyl Methyl Ketone</td>
<td>8.2</td>
</tr>
<tr>
<td>Isobutanol</td>
<td>6.5</td>
</tr>
<tr>
<td>Petroleum Resin</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**
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>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>Poly(Bisphenol A-Co-Epichlorohydrin) Glycidyl End-Capped</td>
<td>5</td>
<td>48</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>
<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>
</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: 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.: 27-10-2016 /02

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 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
Skin corrosion/irritation Category 1
Serious eye damage/irritation Category 1
Skin sensitization Category 1
Carcinogenicity Category 2
Specific target organ toxicity:
- Single exposure Category 2
- Repeated exposure Category 1
Not classified as an environmental hazard under GHS criteria

GHS Pictogram

Signal Word
Danger
Hazard statements
H225: Highly flammable liquid and vapour
H314: Causes severe skin burns and eye damage
H317: May cause an allergic skin reaction
H318: Causes serious eye damage
H351: Suspected of causing cancer
H371: May cause damage to organs
H372: Causes damage to organs through prolonged or repeated exposure

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
P280: Wear protective gloves/protective clothing/eye protection/face protection
P281: Use personal protective equipment as required
Response
P310: Immediately call a POISON CENTER or doctor/physician
P314: Get medical advice/attention if you feel unwell
P321: Specific treatment (see Section 4 of SDS)
P363: Wash contaminated clothing before reuse  
P302+352: IF ON SKIN: Wash with soap and water  
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  
P333+313: IF skin irritation or a rash occurs: Get medical advice/attention  
P370+378: In case of fire: Use appropriate media for extinction  
P301+330+331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting  
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: Polyamideamine resin solution  

<table>
<thead>
<tr>
<th>Substances</th>
<th>CAS No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xylene</td>
<td>1330-20-7</td>
<td>10 - 30</td>
</tr>
<tr>
<td>2,4,6-Tris(dimethylaminomethyl)phenol</td>
<td>90-72-2</td>
<td>5 - 20</td>
</tr>
<tr>
<td>Isobutanol</td>
<td>78-83-1</td>
<td>1 - 10</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>100-41-4</td>
<td>0.5 - 2.0</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 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</th>
<th>OSHA PEL-TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ppm</td>
<td>mg/m3</td>
</tr>
<tr>
<td>Xylene</td>
<td>100</td>
<td>-</td>
</tr>
<tr>
<td>2,4,6-Tris(dimethylaminomethyl)phenol</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Isobutanol</td>
<td>50</td>
<td>-</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>20</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

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<tr>
<th>Property</th>
<th>Value</th>
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</thead>
<tbody>
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<td>Liquid</td>
</tr>
<tr>
<td>Odour</td>
<td>Aromatic hydrocarbon odour</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>Not available</td>
</tr>
<tr>
<td>pH</td>
<td>Not available</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>Not available</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>Between 108 and 155 °C</td>
</tr>
<tr>
<td>Flash point</td>
<td>31 °C</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Lower flammability or explosive limit</td>
<td>1 % by vol</td>
</tr>
<tr>
<td>Upper flammability or explosive limit</td>
<td>10.9 % by vol</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>Not available</td>
</tr>
<tr>
<td>Vapour density</td>
<td>&gt; 1.00 (Vapour is heavier than air)</td>
</tr>
<tr>
<td>Specific gravity</td>
<td>0.90 - 0.96</td>
</tr>
<tr>
<td>Solubility</td>
<td>Not Miscible in water</td>
</tr>
<tr>
<td>Partition coefficient</td>
<td>Not available</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>&gt; 432 °C</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Not available</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not available</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stability</td>
<td>Stable under recommended storage and handing 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>
</tr>
<tr>
<td>Hazardous reaction</td>
<td>Hazardous reaction will not occur.</td>
</tr>
<tr>
<td>Condition to avoid</td>
<td>Avoid heating temperatures above 40 deg.C.</td>
</tr>
<tr>
<td>Materials to avoid</td>
<td>Keep away from oxidizing agents, strongly alkaline and strongly acid materials in order to avoid possible exothermic reactions.</td>
</tr>
<tr>
<td>Hazardous decomposition</td>
<td>The products decomposed on heating producing their oxide or monomers.</td>
</tr>
</tbody>
</table>

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>Substance</th>
<th>Oral LD50(Rat), mg/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xylene</td>
<td>5000</td>
</tr>
<tr>
<td>2,4,6-Tris(dimethylaminomethyl)phenol</td>
<td>2169</td>
</tr>
<tr>
<td>Isobutanol</td>
<td>2460</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>3500</td>
</tr>
</tbody>
</table>

**Acute dermal/skin toxicity**

May be harmful if in contact with skin

<table>
<thead>
<tr>
<th>Substance</th>
<th>Dermal LD50 (Rabbit), mg/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xylene</td>
<td>4350</td>
</tr>
<tr>
<td>2,4,6-Tris(dimethylaminomethyl)phenol</td>
<td>Data not available</td>
</tr>
<tr>
<td>Isobutanol</td>
<td>3400</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>15400</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>Xylene</td>
<td>8000</td>
</tr>
<tr>
<td>2,4,6-Tris(dimethylaminomethyl)phenol</td>
<td>Data not available</td>
</tr>
<tr>
<td>Isobutanol</td>
<td>6.5</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>17.2</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**
Ethylbenzene
The International Agency for Research on Cancer (IARC) has classified Ethylbenzene as possibly carcinogenic to humans (Group 2) based on inadequate 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>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>
</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: 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: 1993
Proper shipping name: Flammable Liquid N.O.S
Class: Class 3
Packaging Group: III
Marine Pollutant: No

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: 1993
Proper shipping name: Flammable Liquid N.O.S
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.: 28-05-2019 /02
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.