Safety Data Sheet

1 PRODUCT AND COMPANY IDENTIFICATION

Product name: UNIPROTECTOR ALUMINUM BASE
Intended use: paint
Manufacture:
Company name: NIPPON PAINT MARINE COATINGS CO., LTD.
Address: 2-1-2 Oyodo-kita, Kita-ku, Osaka, 531-8511 Japan
Telephone No.: +81-6-6455-9590
Facsimile No.: +81-6-6450-4085
24 hours Emergency telephone No.: +81-6-6455-9590

2 HAZARDS IDENTIFICATION

CLASSIFICATION CODE
Flammable liquids: Category 3
Acute toxicity - inhalation: vapour: Category 4
Skin corrosion/irritation: Category 2
Serious eye damage/eye irritation: Category 2
Germ cell mutagenicity: Category 2
Carcinogenicity: Category 2
Toxic to Reproduction: Category 1B
Specific target organ toxicity - single exposure: Category 1, Category 2
Specific target organ toxicity - repeated exposure: Category 1, Category 2
Chronic hazards to the aquatic environment: Category 2

Symbol
Danger
H226 Flammable liquid and vapour
H315 Causes skin irritation
H319 Causes serious eye irritation
H332 Harmful if inhaled
H341 Suspected of causing generic defects
H351 Suspected of causing cancer
H360 May damage fertility or the unborn child
H370 Causes damage to organs
H372 Causes damage to organs through prolonged or repeated exposure
H411 Toxic to aquatic life with long lasting effect

Comment
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
3 COMPOSITION/INFORMATION ON INGREDIENTS

Substance or Preparation: Preparation.
Chemical nature: epoxy resin paint

<table>
<thead>
<tr>
<th>Ingredient Name</th>
<th>CAS No.</th>
<th>Concentration[%]</th>
<th>EC No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>reaction product: bisphenol-A-(epichlorhydrin)</td>
<td>25036-25-3</td>
<td>30-35</td>
<td></td>
</tr>
<tr>
<td>xylene</td>
<td>1330-20-7</td>
<td>10-15</td>
<td>215-535-7</td>
</tr>
<tr>
<td>n-butanol</td>
<td>71-36-3</td>
<td>1-5</td>
<td>200-751-6</td>
</tr>
<tr>
<td>ethylbenzene</td>
<td>100-41-4</td>
<td>1-5</td>
<td>202-849-4</td>
</tr>
<tr>
<td>Stoddard solvent</td>
<td>8052-41-3</td>
<td>1-5</td>
<td>232-489-3</td>
</tr>
<tr>
<td>1,2,4-trimethylbenzene</td>
<td>95-63-6</td>
<td>1-5</td>
<td>202-436-9</td>
</tr>
<tr>
<td>trimethylbenzene (except 1,3,5-trimethylbenzene)</td>
<td>25551-13-7</td>
<td>0.1-1</td>
<td>247-099-9</td>
</tr>
<tr>
<td>mesitylene; 1,3,5-trimethylbenzene</td>
<td>108-67-8</td>
<td>0.1-1</td>
<td>203-604-4</td>
</tr>
</tbody>
</table>
Notes: this product contained the following substances that present a human hazard in accordance with EC No. 1272/2008. ML code is one of manufacturer’s own marks to control the quantity of new material for the countries that regulate the new material.

4 FIRST-AID MEASURES

Inhalation: If inhaled, remove to fresh air.
If not breathing, give artificial respiration.
If breathing is difficult, give oxygen.
Get medical attention immediately.

Skin contact: In case of contact, immediately wash skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Get medical attention immediately.

Eye contact: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes.
If easy to do, remove contact lenses, if worn.
Get medical attention immediately.
Call a physician if irritation develops and persists.

Ingestion: If swallowed, do NOT induce vomiting unless directed to do so by medical personnel.
Never give anything by mouth to an unconscious person.
Get medical attention immediately.

5 FIRE-FIGHTING MEASURES

Do NOT use water jet.
Use water spray or dry chemicals.
Keep adjacent receptacles cool with copious quantities of water.
suitable fire-extinguishing media

[ ] water fog, [ ] CO2, [ ] foam, [ ] dry chemicals, [ ] dry sand.

Notes: Fire will produce dense black smoke.
Decomposition products may be hazardous to health.
Avoid exposure and use breathing apparatus as appropriate.
Cool closed containers exposed to fire by spraying them with water.
Do not allow run off water and contaminants from fire fighting to enter drains or watercourses.
See section 10.

6 ACCIDENTAL RELEASE MEASURES

Avoid all sources of ignition (e.g. naked lights, unprotected light bulbs, electric handtools).
Ventilate the area and avoid breathing vapors.
Wear protective clothing and self-contained breathing apparatus when dealing with spillage or fire.
Collect spillage, where practical, for safe disposal.
Should be disposed of wastes and empty containers in accordance with regulations made under the control of pollution acts and the environmental protection acts.
Collect spillage using absorbent material and dispose of spillage on the floor in a safe manner.
Keep away from drains, surface- and ground-water and soil.
Do not allow spillage to enter drains or water courses.
Refer to headings 8 and 13.

7 HANDLING AND STORAGE

Handling:
- Keep away from heat, sparks and flame.
- Keep container closed.
- The product can charge static electricity.
- Operators should wear non-static clothing (at least 60% natural fiber content) and anti-static clothing.
- Do not breath (dust, vapor, mist, gas).
- Use only in a well ventilated space.
- Do not get in eyes, on skin, or on clothing.
- Avoid prolonged or repeated contact with skin.
- Wash thoroughly after handling.
- Do not ingest.
- Do not eat or swallow.
- Avoid release to the environment.
- Protection as shown in section 8.

Storage:
- Keep container closed.
- Avoid prolonged or repeated contact with skin and inhalation.
- Keep away from heat, sparks and flame.
- Store in a well-ventilated, dry place away from sources of heat and direct sunshine.
- Do not store above 40 deg.C. (104 deg.F.).
- Avoid prolonged or repeated contact with skin.
- Keep locked up.
- Do not ingest.
- Do not eat or swallow.
- Avoid release to the environment.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Measures:
- Ensure adequate ventilation during and after use to prevent vaporization.
- An eye wash facility should be readily available.
- The product should not be allowed to enter the environment.
- Facilities storing or utilizing this material should be equipped with an eye wash facility and a safety shower.

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>EU TLV(TWA)</th>
<th>ACGIH TLV(TWA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>reaction product:bisphenol-A-(epichlorhydrin)</td>
<td>not est.</td>
<td>not est.</td>
</tr>
<tr>
<td>xylene</td>
<td>50 ppm</td>
<td>100 ppm</td>
</tr>
<tr>
<td>n-butanol</td>
<td>not est.</td>
<td>20 ppm</td>
</tr>
<tr>
<td>ethylbenzene</td>
<td>100 ppm</td>
<td>20 ppm</td>
</tr>
<tr>
<td>Stoddard solvent</td>
<td>not est.</td>
<td>100 ppm</td>
</tr>
<tr>
<td>1,2,4-trimethylbenzene</td>
<td>20 ppm</td>
<td>not est.</td>
</tr>
<tr>
<td>trimethylbenzene (except 1,3,5-trimethylbenzene)</td>
<td>not est.</td>
<td>25 ppm</td>
</tr>
</tbody>
</table>
mesitylene ; 1,3,5-trimethylbenzene  
20 ppm  
25 ppm

Notes: (RD)=respirable dust. (c)=ceiling limit. (Skin)=skin penetrative.  
Mppcf=millions of particles per cubic foot.

Personal protection:  
Respiratory protection: Wear appropriate equipment shown in EU directive 89/656/EC.  
Hand protection: Wear impervious glove.  
Eye protection: Wear chemical splash goggles and face shield when eye and face contact is possible due to splashing or spraying of material.  
Skin protection: Wear chemical resistant clothing such as gloves, apron, boots or whole bodysuits made from neoprene, as appropriate.

Environmental exposure control: Do NOT let this product enter the environment.

9 PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Physical state:</th>
<th>Liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>color:</td>
<td>silver</td>
</tr>
<tr>
<td>odor:</td>
<td>solvent odor</td>
</tr>
<tr>
<td>pH:</td>
<td>no data.</td>
</tr>
<tr>
<td>boiling point(range):</td>
<td>118 - 210[deg.C](244 - 410[deg.F])</td>
</tr>
<tr>
<td>flash point:</td>
<td>24<a href="75.2%5Bdeg.F%5D">deg.C</a></td>
</tr>
<tr>
<td>ignition temperature:</td>
<td>288<a href="550%5Bdeg.F%5D">deg.C</a></td>
</tr>
<tr>
<td>lower explosive limit:</td>
<td>0.6[%]</td>
</tr>
<tr>
<td>higher explosive limit:</td>
<td>11.25[%]</td>
</tr>
<tr>
<td>vapor pressure:</td>
<td>1333[Pa]</td>
</tr>
<tr>
<td>specific density:</td>
<td>1.31/23<a href="73%5Bdeg.F%5D">deg.C</a></td>
</tr>
<tr>
<td>vapor density:</td>
<td>The vapor and the gas are heavier than air.</td>
</tr>
<tr>
<td>solubility in water:</td>
<td>None or poor in water</td>
</tr>
<tr>
<td>percentage volatile:</td>
<td>27.3[%]</td>
</tr>
</tbody>
</table>

10 STABILITY AND REACTIVITY

Stability: 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.

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 products: The products decomposed on heating producing their oxide or monomers.

11 TOXICOLOGICAL INFORMATION

There are no data available on the product itself.

Toxicological information of ingredients:  
acute toxicity:  
ethylbenzene  
LC50(inhalation:vapour, rat)=4000[ppm/1H]  
LD50(oral, rat)=3500[mg/kg]
mesitylene; 1,3,5-trimethylbenzene
LD50(oral, rat) = 5000 [mg/kg]
xylene
LC50 (inhalation: vapour, rat) = 6350 [ppm/1H]
LD50 (skin, rabbit) = 1700 [mg/kg]
LD50 (oral, rat) = 3500 [mg/kg]
n-butanol
LD50 (skin, rabbit) = 3400 [mg/kg]
LD50 (oral, rat) = 2100 [mg/kg]
1,2,4-trimethylbenzene
LD50 (oral, rat) = 5000 [mg/kg]

local effects:
- eye irritant
  - ethylbenzene
  - mesitylene; 1,3,5-trimethylbenzene
  - xylene
  - reaction product: bisphenol-A-(epichlorhydrin)
  - trimethylbenzene (except 1,3,5-trimethylbenzene)
  - n-butanol
- skin irritant
  - ethylbenzene
  - mesitylene; 1,3,5-trimethylbenzene
  - xylene
  - trimethylbenzene (except 1,3,5-trimethylbenzene)
  - n-butanol
  - Stoddard solvent

sensitization:
- No data.

chronically long term effect:
- xylene
  - reaction product: bisphenol-A-(epichlorhydrin)
  - n-butanol

specific effects
- carcinogenic:
  - ethylbenzene
  - Carcinogenic (IARC); Class: 2B
  - Carcinogenic (OSHA)
  - Carcinogenic (CLP)
  - xylene
  - Carcinogenic (NTP); Known to be human carcinogen
- toxic for reproduction
  - ethylbenzene
  - Toxic for reproduction (CLP)
  - xylene
  - Toxic for reproduction (CLP)

12 ECOLOGICAL INFORMATION

For spillage or waste, take care to avoid contaminating the environment.
Prevent leakage into the sewer, waterway or legal areas to avoid pollution.
There are no data available on the product itself.
Ecological information of ingredients
13 DISPOSAL CONSIDERATIONS

The product should not be allowed to release into the drains and watercourses. All notification, clean-up and disposal should be carried out in accordance with European Union, governmental and local regulations. Preferred method of waste disposal are incineration or biological treatment in federal/state approved facility. Wastes and empty containers should be disposed of in accordance with regulations made under the control of pollution acts and the environmental protection acts. Empty containers should be recycled or disposed of through an approved waste management facility. It is strongly advised not to let the chemical enter into the environment. It may be toxic or harmful to aquatic organisms.

14 TRANSPORT INFORMATION

UN regulation

UN 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)

UN identification number: 1263

UN Class: class 3 Flammable liquids.

UN Packaging group: III

IMDG Class: class 3.3 High flashpoint group.

storage temperature Store below 40 deg.C.(104deg.F.). See section 7, Handling and storage.

UN MARINE POLLUTANT MARINE POLLUTANT. Paste the label of "MARINE POLLUTANT".

15 REGULATORY INFORMATION

The information on the SDS is based on the present state of our knowledge and on current EU laws. Please refer to any other national measures that may be relevant.

16 OTHER INFORMATION

This information contained in this data sheet represents the best information currently available to us. However, no warranty is made with respect to its completeness and we assume no liability resulting from it. It is advised to make their own tests to determinate the safety and suitability of each such product or combination for their own.
Ensure this material in compliance with federal requirements and ensure conformity to local regulations.
The product should not be used for purposes other than shown in the safety data sheet without first obtaining written advice.
Safety Data Sheet

1 PRODUCT AND COMPANY IDENTIFICATION

Product name: UNIPROTECTOR BRONZE BASE
Intended use: paint
Manufacture:
Company name: NIPPON PAINT MARINE COATINGS CO., LTD.
Address: 2-1-2 Oyodo-kita, Kita-ku, Osaka, 531-8511 Japan
Telephone No.: +81-6-6455-9590
Facsimile No.: +81-6-6450-4085
24 hours Emergency telephone No.: +81-6-6455-9590

2 HAZARDS IDENTIFICATION

CLASSIFICATION CODE
Flammable liquids: Category 3
Acute toxicity - inhalation: vapour: Category 4
Skin corrosion/irritation: Category 2
Serious eye damage/eye irritation: Category 2
Carcinogenicity: Category 2
Toxic to Reproduction: Category 1B
Specific target organ toxicity - single exposure: Category 1, Category 2
Specific target organ toxicity - repeated exposure: Category 1, Category 2
Chronic hazards to the aquatic environment: Category 2

Symbol
Danger
H226 Flammable liquid and vapour
H315 Causes skin irritation
H319 Causes serious eye irritation
H332 Harmful if inhaled
H351 Suspected of causing cancer
H360 May damage fertility or the unborn child
H370 Causes damage to organs
H372 Causes damage to organs through prolonged or repeated exposure
H411 Toxic to aquatic life with long lasting effect

Comment
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.
3 COMPOSITION/INFORMATION ON INGREDIENTS

Substance or Preparation: Preparation.
Chemical nature: epoxy resin paint

<table>
<thead>
<tr>
<th>Ingredient Name</th>
<th>CAS No.</th>
<th>Concentration[%]</th>
<th>EC No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>reaction product: bisphenol-A- (epichlorhydrin)</td>
<td>25036-25-3</td>
<td>30-35</td>
<td></td>
</tr>
<tr>
<td>xylene</td>
<td>1330-20-7</td>
<td>10-15</td>
<td>215-535-7</td>
</tr>
<tr>
<td>n-butanol</td>
<td>71-36-3</td>
<td>1-5</td>
<td>200-751-6</td>
</tr>
<tr>
<td>iron hydroxide oxide</td>
<td>20344-49-4</td>
<td>1-5</td>
<td>243-746-4</td>
</tr>
<tr>
<td>ethylbenzene</td>
<td>100-41-4</td>
<td>1-5</td>
<td>202-849-4</td>
</tr>
<tr>
<td>Stoddard solvent</td>
<td>8052-41-3</td>
<td>1-5</td>
<td>232-489-3</td>
</tr>
<tr>
<td>trimethylbenzene (except 1,3,5- trimethylbenzene)</td>
<td>25551-13-7</td>
<td>1-5</td>
<td>247-099-9</td>
</tr>
<tr>
<td>1,2,4-trimethylbenzene</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>mesitylene ; 1,3,5- trimethylbenzene</td>
<td>95-63-6</td>
<td>0.1-1</td>
<td>202-436-9</td>
</tr>
<tr>
<td></td>
<td>108-67-8</td>
<td>0.1-1</td>
<td>203-604-4</td>
</tr>
</tbody>
</table>

Notes: this product contained the following substances that present a human hazard in accordance with
EC No. 1272/2008.
ML code is one of manufacturer's own marks to control the quantity of new material for the countries that regulate the new material.

### 4 FIRST-AID MEASURES

**Inhalation:**
- If inhaled, remove to fresh air.
- If not breathing, give artificial respiration.
- If breathing is difficult, give oxygen.
- Get medical attention immediately.

**Skin contact:**
- In case of contact, immediately wash skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- Get medical attention immediately.

**Eye contact:**
- In case of contact, immediately flush eyes with plenty of water for at least 15 minutes.
- If easy to do, remove contact lenses, if worn.
- Get medical attention immediately.
- Call a physician if irritation develops and persists.

**Ingestion:**
- If swallowed, do NOT induce vomiting unless directed to do so by medical personnel.
- Never give anything by mouth to an unconscious person.
- Get medical attention immediately.

### 5 FIRE-FIGHTING MEASURES

Do NOT use water jet.
- Use water spray or dry chemicals.
- Keep adjacent receptacles cool with copious quantities of water.

**suitable fire-extinguishing media**
- [ OK ] water fog,
- [ OK ] CO2,
- [ OK ] foam,
- [ OK ] dry chemicals,
- [ OK ] dry sand.

**Notes:**
- Fire will produce dense black smoke.
- Decomposition products may be hazardous to health.
- Avoid exposure and use breathing apparatus as appropriate.
- Cool closed containers exposed to fire by spraying them with water.
- Do not allow run off water and contaminants from fire fighting to enter drains or watercourses.
- See section 10.

### 6 ACCIDENTAL RELEASE MEASURES

Avoid all sources of ignition (e.g. naked lights, unprotected light bulbs, electric hand tools).
- Ventilate the area and avoid breathing vapors.
- Wear protective clothing and self-contained breathing apparatus when dealing with spillage or fire.
- Collect spillage, where practicable, for safe disposal.
- Should be disposed of wastes and empty containers in accordance with regulations made under the control of pollution acts and the environmental protection acts.
- Collect spillage, where practicable, using absorbent material, and dispose of spillage on the floor in a safe manner.
- Keep away from drains, surface- and ground-water and soil.
- Do not allow spills to enter drains or water courses.
Refer to headings 8 and 13.

7 HANDLING AND STORAGE

Handling:
- Keep away from heat, sparks, and flame.
- Keep container closed.
- The product may charge electro statically.
- Operators should wear clothing which dose not generate static (at least 60% natural fiber) and antistatic food wear.
- Do not breath (dust, vapor, mist, gas).
- Use only with ventilation.
- Do not get in eyes, on skin, or on clothing.
- Avoid prolonged or repeated contact with skin.
- Wash thoroughly after handling.
- Do not take internally.
- Do not taste or swallow.
- Avoid release to environment.
- Protection as shown in section 8.

Storage:
- Keep container closed.
- Avoid prolonged or repeated contact with skin and inhalation.
- Keep away from heat, sparks and flame.
- Store in a well-ventilated, dry place away from sources of heat and direct sunshine.
- Do not store above 40 deg.C. (104 deg.F.).
- Avoid prolonged or repeated contact with skin.
- Keep locked up.
- Do not take internally.
- Do not taste or swallow.
- Do not allow to environment.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Measures: Prevent vapor build up by providing adequate ventilation during and after use.
- An eye wash facility should be readily available.
- The product should not be allowed to enter environment.
- Facilities storing or utilizing this material should be equipped with an eye wash facility and a safety shower.

Exposure limit:

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>EU TLV(TWA)</th>
<th>ACGIH TLV(TWA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>reaction product:bisphenol-A-(epichlorhydrin)</td>
<td>not est.</td>
<td>not est.</td>
</tr>
<tr>
<td>xylene</td>
<td>50 ppm</td>
<td>100 ppm</td>
</tr>
<tr>
<td>n-butanol</td>
<td>not est.</td>
<td>20 ppm</td>
</tr>
<tr>
<td>iron hydroxide oxide</td>
<td>not est.</td>
<td>10 mg/m3</td>
</tr>
<tr>
<td>ethylbenzene</td>
<td>100 ppm</td>
<td>100 ppm</td>
</tr>
<tr>
<td>Stoddard solvent</td>
<td>not est.</td>
<td>100 ppm</td>
</tr>
<tr>
<td>trimethylbenzene (except 1,3,5-trimethylbenzene)</td>
<td>not est.</td>
<td>25 ppm</td>
</tr>
</tbody>
</table>
1,2,4-trimethylbenzene 20 ppm not est.
mesitylene ; 1,3,5-trimethylbenzene 20 ppm 25 ppm

Notes: (RD)=respirable dust. (c)=ceiling limit. (Skin)=skin penetrative.

Personal protection:
Respiratory protection: Wear appropriate equipment shown in EU directive 89/656/EC.
Hand protection: Wear impervious gloves.
Eye protection: Wear chemical splash goggles and face shield when eye and face contact is possible due to splashing or spraying of material.
Skin protection: Wear chemical resistant clothing such as gloves, apron, boots or whole bodysuits made from neoprene, as appropriate.

Environmental exposure control: Do NOT let this product enter the environment.

9 PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Liquid
color: brown
odor: solvent odor
pH: no data.
boiling point(range): 118 - 210[deg.C](244 - 410[deg.F])
flash point: 24[deg.C](75.2[deg.F])
ignition temperature: 288[deg.C](550[deg.F])
lower explosive limit: 0.6[%]
higher explosive limit: 11.25[%]
vapor pressure: 1333[Pa]
specific density: 1.32/20[deg.C](68[deg.F])
vapor density: The vapor and the gas are heavier than air.
solubility in water: None or poor in water
percentage volatile: 26.9[%]

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 products: The products decomposed on heating producing their oxide or monomers.

11 TOXICOLOGICAL INFORMATION

There are no data available on the product itself.

Toxicological information of ingredients:
acute toxicity:
ethylbenzene
LC50(inhalation:vapour, rat)=4000[ppm/1H]
LD50(oral,rat)=3500[mg/kg]
xylene
LC50(inhalation:vapour,rat)=6700[ppm/1H]
LD50(oral,rat)=3500[mg/kg]
n-butanol
LD50(skin,rabbit)=3636[mg/kg]
LD50(oral,rat)=1227[mg/kg]
1,2,4-trimethylbenzene
LD50(oral,rat)=5000[mg/kg]

Local effects:
- eye irritant
  - ethylbenzene
- mesitylene ; 1,3,5-trimethylbenzene
  - xylene
  - reaction product: bisphenol-A-(epichlorhydrin)
- trimethylbenzene (except 1,3,5-trimethylbenzene)
  - n-butanol

Skin irritant
- ethylbenzene
  - mesitylene ; 1,3,5-trimethylbenzene
  - xylene
  - trimethylbenzene (except 1,3,5-trimethylbenzene)
  - n-butanol
  - Stoddard solvent

Sensitization:
- No data.

Chronically long term effect:
- xylene
- iron hydroxide oxide
- reaction product: bisphenol-A-(epichlorhydrin)
- n-butanol

Specific effects
- Carcinogenic:
  - ethylbenzene
    - Carcinogenic(IARC); Class: 2B
    - Carcinogenic(CLP)
  - Toxic for reproduction:
    - ethylbenzene
      - Toxic for reproduction(CLP)
    - xylene
      - Toxic for reproduction(CLP)

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

Acute toxicity
- n-butanol TLm24(goldenfish)=1900mg/L
- 1,2,4-trimethylbenzene LC50(48h, oryzias latipes)=18mg/L
- mesitylene ; 1,3,5-trimethylbenzene LC50(48h, oryzias latipes)=8.6mg/L

Persistence
- ethylbenzene biodegradable: 81-100% (2week/ )
13 DISPOSAL CONSIDERATIONS

The product should not be allowed to inter drains and watercourses.
All notification, clean-up and disposal should be carried out in accordance with European Union, governmental and local regulations
Preferred method of waste disposal are incineration or biological treatment in federal/state approved facility
Wastes and empty containers should be disposed of in accordance with regulations made under the control of pollution acts and the environmental protection acts
Empty containers should be recycled or disposed of through an approved waste management facility.
It is strongly advised not to let the chemical enter into the environment.
It may be toxic or harmful to aquatic organisms.

14 TRANSPORT INFORMATION

UN regulation
UN 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)
UN identification number: 1263
UN Class: class 3 Flammable liquids.
UN Packaging group: III
IMDG Class: class 3.3 High flashpoint group.
storage temperature Store below 40 deg.C.(104deg.F.).
See section 7,Handling and storage.
UN MARINE POLLUTANT MARINE POLLUTANT. Paste the label of "MARINE POLLUTANT".

15 REGULATORY INFORMATION

The information on the SDS is based on the present state of our knowledge and on current EU laws.
Please refer to any other national measures that may be relevant.

16 OTHER INFORMATION

R20:Harmful by inhalation
R36/38:Irritating to eyes and skin
R39/24:Toxic-danger of very serious irreversible effects in contact with skin.
R39/24/25:Toxic-danger of very serious irreversible effects in contact with skin and if swallowed.
R40:Possible risk of irreversible effects
R51/53:Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R60:May impair fertility
R61:May cause harm to the unborn child
S16: Keep away from sources of ignition -- No smoking
S23: Do not breathe gas/fumes/vapor/spray (appropriate wording to be specified by the manufacturer).
S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical.
S28: After contact with skin, wash immediately with plenty of WATER and SOAP.
S29: Do not empty into drains.
S33: Take precautionary measures against static
S36/37/39: Wear suitable protective clothing and gloves and eye/face protection.
S37: Wear suitable gloves
S45: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S53: Avoid exposure-obtain special instruction

This information contained in this data sheet represents the best information currently available to us. However, no warranty is made with respect to its completeness and we assume no liability resulting from its. It is advised to make their own tests to determine the safety and suitability of each such product or combination for their own. Ensure this material in compliance with federal requirements and ensure conformity to local regulations. The product should not be used for purposes other than shown in the safety data sheet without first obtaining written advice.
1 PRODUCT AND COMPANY IDENTIFICATION

Product name: UNIPROTECTOR HARDENER
Intended use: hardener for paint
Manufacture:
  Company name: NIPPON PAINT MARINE COATINGS CO., LTD.
  Address: 2-1-2 Oyodo-ku, Kita-ku, Osaka, 531-8511 Japan
  Telephone No.: +81-6-6455-9590
  Facsimile No.: +81-6-6450-4085
  24 hours Emergency telephone No.: +81-6-6455-9590

2 HAZARDS IDENTIFICATION

CLASSIFICATION CODE
- Flammable liquids: Category 3
- Acute toxicity - inhalation: vapour: Category 4
- Skin corrosion/irritation: Category 2
- Serious eye damage/eye irritation: Category 2
- Carcinogenicity: Category 2
- Toxic to Reproduction: Category 1B
- Specific target organ toxicity - single exposure: Category 1, Category 2, Category 3
- Specific target organ toxicity - repeated exposure: Category 1
- Chronic hazards to the aquatic environment: Category 2

Symbol
- Danger
- Symbol
- Hazard statement
  - H226 Flammable liquid and vapour
  - H315 Causes skin irritation
  - H319 Causes serious eye irritation
  - H332 Harmful if inhaled
  - H351 Suspected of causing cancer
  - H360 May damage fertility or the unborn child
  - H370 Causes damage to organs
  - H372 Causes damage to organs through prolonged or repeated exposure
  - H411 Toxic to aquatic life with long lasting effect

Comment
- P201 Obtain special instructions before use.
- P202 Do not handle until all safety precautions have been read and understood.
- P233 Keep container tightly closed.
3 COMPOSITION/INFORMATION ON INGREDIENTS

Substance or Preparation: Preparation.
Chemical nature: Polyamideamine resin solution

<table>
<thead>
<tr>
<th>Ingredient Name</th>
<th>CAS No.</th>
<th>Concentration[%]</th>
<th>EC No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>xylene</td>
<td>1330-20-7</td>
<td>35-40</td>
<td>215-535-7</td>
</tr>
<tr>
<td>n-butanol</td>
<td>71-36-3</td>
<td>10-15</td>
<td>200-751-6</td>
</tr>
<tr>
<td>ethylbenzene</td>
<td>100-41-4</td>
<td>1-5</td>
<td>202-849-4</td>
</tr>
</tbody>
</table>

Notes: this product contained the following substances that present a human hazard in accordance with EC No. 1272/2008.

ML code is one of manufacturer's own marks to control the quantity of new material for the countries that regulate the new material.

4 FIRST-AID MEASURES
Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Skin contact: In case of contact, immediately wash skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately.

Eye contact: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lenses, if worn. Get medical attention immediately. Call a physician if irritation develops and persists.

Ingestion: If swallowed, do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

5 FIRE-FIGHTING MEASURES

Do NOT use water jet. Use water spray or dry chemicals. Keep adjacent receptacles cool with copious quantities of water. Suitable fire-extinguishing media

- [ OK ] water fog,
- [ OK ] CO2,
- [ OK ] foam,
- [ OK ] dry chemicals,
- [ OK ] dry sand.

Notes:
- Fire will produce dense black smoke.
- Decomposition products may be hazardous to health.
- Avoid exposure and use breathing apparatus as appropriate.
- Cool closed containers exposed to fire by spraying them with water.
- Do not allow run off water and contaminants from fire fighting to enter drains or watercourses.
- See section 10.

6 ACCIDENTAL RELEASE MEASURES

Avoid all sources of ignition(e.g., naked lights, unprotected light bulbs, electric handtools). Ventilate the area and avoid breathing vapors. Wear protective clothing and self-contained breathing apparatus when dealing with spillage or fire. Collect spillage, where practicable, for safe disposal. Should be disposed of wastes and empty containers in accordance with regulations made under the control of pollution acts and the environmental protection acts. Collect spillage, where practicable, using absorbent material, and dispose of spillage on the floor in a safe manner. Keep away from drains, surface- and ground-water and soil. Do not allow spills to enter drains or water courses. Refer to headings 8 and 13.

7 HANDLING AND STORAGE

Handling:
- Keep away from heat, sparks, and flame.
- Keep container closed.
The product may charge electrostatically. Operators should wear clothing which does not generate static (at least 60% natural fiber) and antistatic footwear.

Do not breath (dust, vapor, mist, gas).
Use only with ventilation.
Do not get in eyes, on skin, or on clothing.
Avoid prolonged or repeated contact with skin.
Wash thoroughly after handling.
Do not take internally.
Do not taste or swallow.
Avoid release to environment.
Protection as shown in section 8.

Storage:
Keep container closed.
Avoid prolonged or repeated contact with skin and inhalation.
Keep away from heat, sparks, and flame.
Store in a well-ventilated, dry place away from sources of heat and direct sunshine.
Do not store above 40 deg.C. (104 deg. F.).
Avoid prolonged or repeated contact with skin.
Keep locked up.
Do not take internally.
Do not taste or swallow.
Do not allow to environment.

8 EXPOSURE CONTROLS/PERSOHAL PROTECTION

Engineering Measures:  Prevent vapor build up by providing adequate ventilation during and after use.
An eye wash facility should be readily available.
The product should not be allowed to enter environment.
Facilities storing or utilizing this material should be equipped with an eye wash facility and a safety shower.

Exposure limit:

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>EU TLV(TWA)</th>
<th>ACGIH TLV(TWA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>xylene</td>
<td>50 ppm</td>
<td>100 ppm</td>
</tr>
<tr>
<td>n-butanol</td>
<td>not est.</td>
<td>20 ppm</td>
</tr>
<tr>
<td>ethylbenzene</td>
<td>100 ppm</td>
<td>100 ppm</td>
</tr>
</tbody>
</table>

Notes: (RD)=respirable dust. (c)=ceiling limit. (Skin)=skin penetrative.
Mppcf=millions of particles per cubic foot.

Personal protection:
Respiratory protection: Wear appropriate equipment shown in EU directive 89/656/EC.
Hand protection: Wear impervious gloves.
Eye protection: Wear chemical splash goggles and face shield when eye and face contact is possible due to splashing or spraying of material.
Skin protection: Wear chemical resistant clothing such as gloves, apron, boots or whole bodysuits made from neoprene, as appropriate.
Environmental exposure control: Do NOT let this product enter the environment.
9 PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Liquid</td>
</tr>
<tr>
<td>color</td>
<td>brown</td>
</tr>
<tr>
<td>odor</td>
<td>amine odor</td>
</tr>
<tr>
<td>pH</td>
<td>no data.</td>
</tr>
<tr>
<td>boiling point (range)</td>
<td>118 - 144[deg.C](244 - 291[deg.F])</td>
</tr>
<tr>
<td>flash point</td>
<td>28<a href="82.4%5Bdeg.F%5D">deg.C</a></td>
</tr>
<tr>
<td>ignition temperature</td>
<td>367<a href="693%5Bdeg.F%5D">deg.C</a></td>
</tr>
<tr>
<td>lower explosive limit</td>
<td>1.1[%]</td>
</tr>
<tr>
<td>higher explosive limit</td>
<td>11.25[%]</td>
</tr>
<tr>
<td>vapor pressure</td>
<td>1333[Pa]</td>
</tr>
<tr>
<td>specific density</td>
<td>0.94/20<a href="68%5Bdeg.F%5D">deg.C</a></td>
</tr>
<tr>
<td>vapor density</td>
<td>The vapor and the gas are heavier than air.</td>
</tr>
<tr>
<td>solubility in water</td>
<td>None or poor in water</td>
</tr>
<tr>
<td>percentage volatile</td>
<td>47.9[%]</td>
</tr>
</tbody>
</table>

10 STABILITY AND REACTIVITY

Stability: 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.

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 products: The products decomposed on heating producing their oxide or monomers.

11 TOXICOLOGICAL INFORMATION

There are no data available on the product itself.

Toxicological information of ingredients:

- **Acute toxicity:**
  
  - ethylbenzene
    
    LC50(inhalation:vapour, rat)=4000[ppm/1H]
    
    LD50(oral, rat)=3500[mg/kg]
  
  - xylene
    
    LC50(inhalation:vapour, rat)=6700[ppm/1H]
    
    LD50(oral, rat)=3500[mg/kg]
  
  - n-butanol
    
    LD50(skin, rabbit)=3636[mg/kg]
    
    LD50(oral, rat)=1227[mg/kg]

- **Local effects:**
  
  - eye irritant
    
    ethylbenzene
    
    xylene
    
    n-butanol
    
    skin irritant
    
    ethylbenzene
    
    xylene
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
acute toxicity  n-butanol TLm24(goldenfish)=1900mg/L
persistence  ethylbenzene biodegradable:81-100%(2week/ )
Data are based on "Biological and Bioaccumulation Data of Existing Chemicals Based on the SCSL Japan" Complied under the supervision of METI(MITI) Japan.

13 DISPOSAL CONSIDERATIONS

The product should not be allowed to inter drains and watercourses.
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It may be toxic or harmful to aquatic organisms.

14 TRANSPORT INFORMATION

UN regulation
UN Shipping name:  FLAMMABLE LIQUID, N.O.S.
UN identification number:  1993
UN Class:  class 3 Flammable liquids.
UN Packaging group:  III
IMDG Class:  class 3.3 High flashpoint group.
storage temperature  Store below 40 deg.C.(104deg.F.).
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The information on the SDS is based on the present state of our knowledge and on current EU laws. Please refer to any other national measures that may be relevant.

16 OTHER INFORMATION

R20:Harmful by inhalation
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