



SAFETY DATA SHEET

Version No: 003

Revision Date/Version No.: 04-04-2017 /3/1.1.1

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

Product Name: **HI-PON 80-12 VINYL ESTER LINING BASE**
Intended Use: Solvent-Free Protective Paint
Manufacturer: Nippon Paint (S) Co. Pte Ltd
No. 1 First Lok Yang Road
Jurong Singapore 629728
Emergency Phone Number: (65) 6 265 5355
Fax Numbers: (65) 6 264 1603

2. HAZARDS IDENTIFICATION

GHS Classification:

Physical Hazard

Flammable Hazard Category 3

Health Hazard

Skin corrosion/Irritation Category 2
Serious eye damage/irritation Category 2
Carcinogenicity Category 2

Environment Hazard

Acute (Short-term) hazard Category 3

GHS Pictogram



Signal Word

Warning

Hazard statements

H226 Flammable Liquid and vapour
H315 Causes skin irritation
H319 Causes serious eye irritation
H351 Suspected of causing cancer

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

HI-PON 80-12 VINYL ESTER LINING BASE

P243: Take precautionary measures against static discharge
P264: Wash hands thoroughly after handling
P280: Wear protective gloves/protective clothing/eye protection/face protection
P281: Use personal protective equipment as required

Response

P321: Specific treatment (see Section 4 of SDS)
P362: Take off contaminated clothing and wash before reuse
P302+352: IF ON SKIN: Wash with soap and water
P308+313: IF exposed or concerned: Get medical advice/attention
P332+313: If skin irritation occurs: Get medical advice/attention
P337+313: If eye irritation persists: Get medical advice/attention
P370+378: In case of fire: Use appropriate media for extinction
P303+361+353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P305+351+338: IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing

Storage

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

Disposal

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

3. COMPOSITION / INFORMATION ON INGREDIENTS

<u>Ingredient</u>	<u>CAS No.</u>	<u>%</u>
Bisphenol A Vinyl ester resin	-	50-60
Styrene monomer	100-42-5	40-50
Substances determined to be non-hazardous	-	<u>Balance</u>
		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

- Alcohol-resistant foam, Carbon dioxide, or dry chemical type

SPECIFIC HAZARDS ARISING FROM THE CHEMICAL

- Combustion products may include and are not limited to: Carbon monoxide and Carbon dioxide.

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 run-off 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

HI-PON 80-12 VINYL ESTER LINING BASE

CONTROL PARAMETERS/OCCUPATIONAL LIMITS

<u>Substances</u>	<u>ACGIH TLV-TWA</u>		<u>OSHA PEL-TWA</u>	
	<u>ppm</u>	<u>mg/m3</u>	<u>ppm</u>	<u>mg/m3</u>
Styrene	20	-	40	-

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	:	Viscous yellowish brown liquid
Odour	:	Aromatic odour
Odour threshold	:	Not available
pH	:	Not available
Melting point/freezing point	:	Not available
Initial boiling point and boiling range	:	145 °C
Flash point	:	33 °C
Evaporation rate	:	Not available
Flammability (solid, gas)	:	Not applicable
Lower flammability or explosive limit	:	1.1 vol% (Styrene)
Upper flammability or explosive limit	:	6.1 vol% (Styrene)
Vapour pressure	:	600Pa (at 20°C) (Styrene)
Vapour density	:	3.6 (Styrene) (Vapour is heavier than air)
Relative density	:	1.0 – 1.1 (at 25°C)
Solubility	:	Not Miscible in water
Partition coefficient	:	Not available
Auto-ignition temperature	:	Not available
Decomposition temperature	:	Not available
Viscosity	:	Not available

10. STABILITY AND REACTIVITY

REACTIVITY

- No dangerous reaction known under condition of normal use.

CHEMICAL STABILITY

- The product is stable under recommended storage and handling conditions. (see section 7)

POSSIBILITY OF HAZARDOUS REACTION

- Under normal conditions of storage and use, hazardous reaction will not occur.

CONDITIONS TO AVOID

- Keep away from oxidising agents, strongly alkaline and strongly acidic materials in order to avoid exothermic reactions. Avoid all possible sources of ignition (spark or flame). Do

not pressurize, cut, weld, braze, drill, grind or expose containers to heat or sources of ignition.

HAZARDOUS DECOMPOSITION PRODUCTS

- When exposed to high temperatures may produce hazardous decomposition products such as carbon monoxide, carbon dioxide, oxides of nitrogen and smoke.

11. TOXICOLOGICAL INFORMATION

There is no data available on the product itself.
Toxicological information of ingredients:

Acute Oral toxicity

Harmful if swallowed.

<u>Substances</u>	<u>Oral LD50(Rat), mg/kg</u>
Styrene	5000

Acute dermal/skin toxicity

<u>Substances</u>	<u>Dermal LD50 (Rabbit), mg/kg</u>
Styrene	Data not available

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.

<u>Substances</u>	<u>Inhalation Vapor LC50 (Rat), mg/L/4hr</u>
Styrene	12

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

Styrene

The International Agency for Research on Cancer (IARC) has classified Styrene as possibly carcinogenic to humans (Group 2B) 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.

Aspiration hazard

May be harmful if swallowed and enters airways

12. ECOLOGICAL INFORMATION

Toxicity

Aquatic toxicity -No data available

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, and 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: 1866
Proper shipping name: Resin Solution
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: 1866
Proper shipping name: Resin Solution
Class: Class 3

Packaging Group: III
Marine Pollutant: No

SEA (Annex II of MARPOL 73/78 and the IBC code)

Not applicable

15. REGULATORY INFORMATION

Applicable national regulations:

- Standards on Hazard communication for hazardous chemicals and dangerous goods
 - SS 586 : Part 1: 2014- Transport and storage of dangerous goods
 - SS 586 : Part 2: 2014- GHS of classification and labelling of chemicals- Singapore's adaptations
 - SS 586 : Part 3: 2008- Preparation of safety data sheets (SDS)
- 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

Revision date/Version No.: 04-04-2017 /3/1.1.1

History

Previous Revision Date/Version No.: not applicable //

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

IARC 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

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

Product Name: **HI-PON 80-12 VINYL ESTER LINING ACCELERATOR**
Intended Use: Solvent-Free Protective Paint
Manufacturer: Nippon Paint (S) Co. Pte Ltd
No. 1 First Lok Yang Road
Jurong Singapore 629728
Emergency Phone Number: (65) 6 265 5355
Fax Numbers: (65) 6 264 1603

2. HAZARDS IDENTIFICATION

GHS Classification:

Physical Hazard

Flammable Hazard Category 3

Health Hazard

Acute Toxicity Category 4
Carcinogenicity Category 2

Environment Hazard

Acute (Short-term) hazard Category 2

GHS Pictogram



Signal Word

Warning

Hazard statements

H226 Flammable Liquid and vapour
H302 Harmful if swallowed
H351 Suspected of causing cancer
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

HI-PON 80-12 VINYL ESTER LINING ACCELERATOR

P264: Wash hands thoroughly after handling
P280: Wear protective gloves/protective clothing/eye protection/face protection
P281: Use personal protective equipment as required

Response

P321: Specific treatment (see Section 4 of SDS)
P362: Take off contaminated clothing and wash before reuse
P302+352: IF ON SKIN: Wash with soap and water
P308+313: IF exposed or concerned: Get medical advice/attention
P332+313: If skin irritation occurs: Get medical advice/attention
P337+313: If eye irritation persists: Get medical advice/attention
P370+378: In case of fire: Use appropriate media for extinction
P303+361+353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P305+351+338: IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing

Storage

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

Disposal

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

3. COMPOSITION / INFORMATION ON INGREDIENTS

<u>Ingredient</u>	<u>CAS No.</u>	<u>%</u>
N,N-Dimethylaniline	121-69-7	40
Stoddard solvent	8052-41-3	33
Cobalt naphthenate	61789-51-3	27
Substances determined to be non-hazardous	-	<u>Balance</u>
		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

HI-PON 80-12 VINYL ESTER LINING ACCELERATOR

- Alcohol-resistant foam, Carbon dioxide, or dry chemical type

SPECIFIC HAZARDS ARISING FROM THE CHEMICAL

- Combustion products may include and are not limited to: Carbon monoxide and Carbon dioxide.

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 run-off 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

HI-PON 80-12 VINYL ESTER LINING ACCELERATOR

CONTROL PARAMETERS/OCCUPATIONAL LIMITS

<u>Substances</u>	<u>ACGIH TLV-TWA</u>		<u>OSHA PEL-TWA</u>	
	<u>ppm</u>	<u>mg/m3</u>	<u>ppm</u>	<u>mg/m3</u>
N,N-Dimethylaniline	5	25	-	-

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	: Deep-purple liquid
Odour	: Weak pungent odor
Odour threshold	: Not available
pH	: Not available
Melting point/freezing point	: Not available
Initial boiling point and boiling range	: 193 °C (N,N-Dimethylaniline) 130-230 °C (Stoddard solvent)
Flash point	: 46 °C
Evaporation rate	: Not available
Flammability (solid, gas)	: Not applicable
Lower flammability or explosive limit	: 1 vol% (N,N-Dimethylaniline); 0.6 vol% (Stoddard solvent)
Upper flammability or explosive limit	: 7 vol% (N,N-Dimethylaniline) 8 vol% (Stoddard solvent)
Vapour pressure	: 67Pa (at 20°C) (N,N-Dimethylaniline) 0.1-1.4kPa (at 20°C) (Stoddard solvent)
Vapour density	: 4.17 (N,N-Dimethylaniline) (Vapour is heavier than air)
Relative density	: 0.90 – 0.98 (at 25°C)
Solubility	: Not Miscible in water
Partition coefficient	: Not available
Auto-ignition temperature	: Not available
Decomposition temperature	: Not available
Viscosity	: Not available

10. STABILITY AND REACTIVITY

REACTIVITY

- No dangerous reaction known under condition of normal use.

CHEMICAL STABILITY

- The product is stable under recommended storage and handling conditions. (see section 7)

POSSIBILITY OF HAZARDOUS REACTION

HI-PON 80-12 VINYL ESTER LINING ACCELERATOR

- Under normal conditions of storage and use, hazardous reaction will not occur.

CONDITIONS TO AVOID

- Keep away from oxidising agents, strongly alkaline and strongly acidic materials in order to avoid exothermic reactions. Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, drill, grind or expose containers to heat or sources of ignition.

HAZARDOUS DECOMPOSITION PRODUCTS

- When exposed to high temperatures may produce hazardous decomposition products such as carbon monoxide, carbon dioxide, oxides of nitrogen and smoke.

11. TOXICOLOGICAL INFORMATION

There is no data available on the product itself.

Toxicological information of ingredients:

Acute Oral toxicity

Harmful if swallowed.

Substances

N,N-Dimethylaniline

Oral LD50(Rat), mg/kg

Data not available

Acute dermal/skin toxicity

Substances

N,N-Dimethylaniline

Dermal LD50 (Rabbit), mg/kg

Data not available

Acute inhalation toxicity

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

Substances

N,N-Dimethylaniline

Inhalation Vapor LC50 (Rat), mg/L/4hr

Data not available

Skin corrosion or irritation

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

Serious eye damage or irritation

May be an eye irritant.

Respiratory or skin sensitisation

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

Germ cell mutagenicity

No information available on the product.

Carcinogenicity

No information available on the product.

Reproductive toxicity

No information available on the product.

Specific Target Organ Toxicity (STOT)- single exposure

No information available on the product.

HI-PON 80-12 VINYL ESTER LINING ACCELERATOR

Specific Target Organ Toxicity (STOT)- repeated exposure
No information available on the product.

Aspiration hazard
May be harmful if swallowed and enters airways

12. ECOLOGICAL INFORMATION

Toxicity
Aquatic toxicity -No data available

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, and 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: Resin Solution
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: Resin Solution

HI-PON 80-12 VINYL ESTER LINING ACCELERATOR

Class: Class 3
Packaging Group: III
Marine Pollutant: No

SEA (Annex II of MARPOL 73/78 and the IBC code)

Not applicable

15. REGULATORY INFORMATION

Applicable national regulations:

- Standards on Hazard communication for hazardous chemicals and dangerous goods
 - SS 586 : Part 1: 2014- Transport and storage of dangerous goods
 - SS 586 : Part 2: 2014- GHS of classification and labelling of chemicals- Singapore's adaptations
 - SS 586 : Part 3: 2008- Preparation of safety data sheets (SDS)
 - 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

Revision date/Version No.: 04-04-2017 /3/1.1.1

History

Previous Revision Date/Version No.: not applicable //

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

IARC 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.



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

Product Name: **HI-PON 80-12 VINYL ESTER LINING HARDENER**
Intended Use: Solvent-Free Protective Paint
Manufacturer: Nippon Paint (S) Co. Pte Ltd
No. 1 First Lok Yang Road
Jurong Singapore 629728
Emergency Phone Number: (65) 6 265 5355
Fax Numbers: (65) 6 264 1603

2. HAZARDS IDENTIFICATION

GHS Classification:

Physical Hazard
Organic peroxides

Type D

Health Hazard

Acute Toxicity:

- Oral Category 4
- Inhalation Category 4
Skin corrosion/Irritation Category 1
Serious eye damage/irritation Category 1

Environment Hazard

Not classified as an environmental hazard under GHS criteria

GHS Pictogram



Signal Word

Danger

Hazard statements

H242 Heating may cause a fire
H302 Harmful if swallowed
H312 Harmful in contact with skin
H314 Causes severe skin burns and eye damage
H332 Harmful if inhaled

Precautionary statements

P220 Keep/store away from clothing combustible materials
P234 Keep only in original container
P261 Avoid breathing dust/fume/gas/mist/vapours/spray
P280 Wear protective gloves/eye protection/face protection

HI-PON 80-12 VINYL ESTER LINING HARDENER

Response

P310: Immediately call a POISON CENTER or doctor/physician

P311: Call a POISON CENTER or doctor/physician

P312: Call a POISON CENTER or doctor/physician if you feel unwell

P314: Get medical advice/attention if you feel unwell

P321: Specific treatment (see Section 4 of SDS)

P322: Specific measures (see Section 4 of SDS)

P330: Rinse mouth

P363: Wash contaminated clothing before reuse

P391: Collect spillage

P301+312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell

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

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+233: Store in a well ventilated place. Keep container tightly closed

Disposal

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

3. COMPOSITION / INFORMATION ON INGREDIENTS

<u>Ingredient</u>	<u>CAS No.</u>	<u>%</u>
Dimethyl phthalate	131-11-3	60-100
Methyl ethyl ketone peroxide;Reaction mass of butane-2,2-diyl dihydroperoxide and di-sec-butylhexaoxidane	1338-23-4	30 - 37
Methyl ethyl ketone	78-93-3	1 - 3
Substances determined to be non-hazardous	-	<u>Balance</u>
		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

HI-PON 80-12 VINYL ESTER LINING HARDENER

- 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

- Alcohol-resistant foam, Carbon dioxide, or dry chemical type

SPECIFIC HAZARDS ARISING FROM THE CHEMICAL

- Combustion products may include and are not limited to: Carbon monoxide and Carbon dioxide.

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 run-off 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

HI-PON 80-12 VINYL ESTER LINING HARDENER

- 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

Ingredient	ACGIH TLV-TWA		OSHA PEL-TWA	
	ppm	mg/m3	ppm	mg/m3
Dimethyl phthalate	-	-	-	5
Methyl ethyl ketone peroxide; Reaction mass of butane-2,2-diyl dihydroperoxide and di-sec- butylhexaoxidane	-	-	0.2	1.5
Methyl ethyl ketone	-	-	200	590

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	:	Clear colorless liquid
Odour	:	Faint
Odour threshold	:	Not available
pH	:	Not available
Melting point/freezing point	:	Not available
Initial boiling point and boiling range	:	Not available
Flash point	:	Above the SADT value
Evaporation rate	:	Not available
Flammability (solid, gas)	:	Not applicable
Lower flammability or explosive limit	:	Not available
Upper flammability or explosive limit	:	Not available
Vapour pressure	:	1 hPa at 84 °C
Vapour density	:	> 1.00 (Vapour is heavier than air)
Relative density	:	1.18 at 20 °C
Solubility	:	Partly miscible in water
Partition coefficient	:	Not available
Auto-ignition temperature	:	Not available
Decomposition temperature	:	Not available
Viscosity	:	24 mPa.s at 20 °C
SADT	:	60 °C
Active Oxygen Content	:	8.8 - 9.0 %

HI-PON 80-12 VINYL ESTER LINING HARDENER

Organic peroxides : 30 - 37 %

10. STABILITY AND REACTIVITY

REACTIVITY

- No dangerous reaction known under condition of normal use.

CHEMICAL STABILITY

- SADT – (Self accelerating decomposition temperature) is the lowest temperature at which self accelerating decomposition may occur with a substance in the packaging as used in transport. A dangerous self accelerating decomposition reaction and, under certain circumstances, explosion or fire can be caused by thermal decomposition at and above the following temperature: 60°C. Contact with incompatible substances can cause decomposition at or below the SADT 60°C.

POSSIBILITY OF HAZARDOUS REACTION

- Under normal conditions of storage and use, hazardous reaction will not occur.

CONDITIONS TO AVOID

- Keep away from oxidising agents, strongly alkaline and strongly acidic materials in order to avoid exothermic reactions. Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, drill, grind or expose containers to heat or sources of ignition.

HAZARDOUS DECOMPOSITION PRODUCTS

- When exposed to high temperatures may produce hazardous decomposition products such as carbon monoxide, carbon dioxide, oxides of nitrogen and smoke.

11. TOXICOLOGICAL INFORMATION

There is no data available on the product itself.

Toxicological information of ingredients:

Acute Oral toxicity

Harmful if swallowed.

<u>Ingredient</u>	<u>Oral LD50(Rat), mg/kg</u>
Dimethyl phthalate	> 5000
Methyl ethyl ketone peroxide; Reaction mass of butane-2,2-diyl dihydroperoxide and di-sec-butyl hexaoxidane	1017
Methyl ethyl ketone	2737

Acute dermal/skin toxicity

<u>Ingredient</u>	<u>Dermal LD50 (Rabbit), mg/kg</u>
Dimethyl phthalate	> 10 000
Methyl ethyl ketone peroxide; Reaction mass of butane-2,2-diyl dihydroperoxide and di-sec-butyl hexaoxidane	4000

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Methyl ethyl ketone 6480

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.

<u>Ingredient</u>	<u>Inhalation Vapor LC50 (Rat), mg/L/4hr</u>
Methyl ethyl ketone peroxide; Reaction mass of butane-2,2-diyl dihydroperoxide and di-sec-butyl hexaoxidane	1.5

Skin corrosion or irritation

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

Serious eye damage or irritation

May be an eye irritant.

Respiratory or skin sensitisation

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

Germ cell mutagenicity

No information available on the product.

Carcinogenicity

No information available on the product.

Reproductive toxicity

No information available on the product.

Specific Target Organ Toxicity (STOT)- single exposure

No information available on the product.

Specific Target Organ Toxicity (STOT)- repeated exposure

No information available on the product.

Aspiration hazard

May be harmful if swallowed and enters airways

12. ECOLOGICAL INFORMATION

Ecotoxicology Assessment

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Toxic to aquatic life

Test result

Ecotoxicity effects

Toxicity to fish : LC50: 44.2 mg/l
Exposure time: 96 h
Species: Poecilia reticulata (guppy)
Test Type: semi-static test

Toxicity to daphnia and other aquatic invertebrates : 39 mg/l
Exposure time: 48 h
Species: Daphnia magna (Water flea)
Test Type: Immobilization

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Toxicity to algae : ErC50: 5.6 mg/l
Exposure time: 72 h
Species: Pseudokirchneriella subcapitata (algae)
Test Type: Growth inhibition

Toxicity to bacteria : EC10: 12 mg/l
Exposure time: 0.5 h
Species: activated sludge
Test Type: Respiration inhibition
Method: Domestic OECD Guideline 209

Ecotoxicology Assessment

Component: Dimethyl phthalate

Acute aquatic toxicity : Harmful to aquatic life

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Harmful to aquatic life.

Test result

Ecotoxicity effects

Toxicity to fish : LC50: 420 mg/l
Exposure time: 96 h
Species: Lepomis macrochirus (Bluegill sunfish)

Toxicity to algae : EC10: 193.09 mg/l
Exposure time: 72 h
Species: Desmodesmus subspicatus (green algae)
Test Type: Growth inhibition
Method: OECD Test Guideline 201

ErC50: 259.76 mg/l
Exposure time: 72 h
Species: Desmodesmus subspicatus (green algae)
Test Type: Growth inhibition
Method: OECD Test Guideline 201

Toxicity to fish (Chronic toxicity) : NOEC: 11 mg/l
Exposure time: 102 d
Species: Oncorhynchus mykiss (rainbow trout)
Test Type: flow-through test
Method: Other guidelines

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 9.6 mg/l
Exposure time: 21 d
reproduction rate
Species: Daphnia magna (Water flea)
Method: Other guidelines

Elimination information (persistence and degradability)

Bioaccumulation : Species: Fish
Exposure time: 1 d
Bioconcentration factor (BCF): 5.4

Biodegradability : Result: Readily biodegradable

Component: Methyl ethyl ketone peroxide; Reaction mass of butane-2,2-diyl dihydroperoxide and di-sec-butylhexaoxidane

Ecotoxicity effects

Toxicity to fish : LC50: 44.2 mg/l
Exposure time: 96 h

HI-PON 80-12 VINYL ESTER LINING HARDENER

		Species: Poecilia reticulata (guppy) Test Type: semi-static test
Toxicity to daphnia and other aquatic invertebrates	:	39 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea) Test Type: Immobilization
Toxicity to algae	:	ErC50: 5.6 mg/l Exposure time: 72 h Species: Pseudokirchneriella subcapitata (algae) Test Type: Growth inhibition
Toxicity to bacteria	:	EC10: 12 mg/l Exposure time: 0.5 h Species: activated sludge Test Type: Respiration inhibition Method: Domestic OECD Guideline 209

Elimination information (persistence and degradability)

Bioaccumulation	:	Bioconcentration factor (BCF): 10.3 Not expected considering the low log Pow value.
Biodegradability	:	Result: Readily biodegradable Method: Closed Bottle test

Component: Methyl ethyl ketone

Ecotoxicity effects

Toxicity to fish	:	LC50: 3,220 mg/l Exposure time: 96 h Species: Lepomis macrochirus (Bluegill sunfish)
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Elimination information (persistence and degradability)

Biodegradability	:	Result: Readily biodegradable
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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, and 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:	UN3105
Proper shipping name:	Organic Peroxide Type 'D' Liquid – Methyl ethyl ketone peroxide
Class:	Class 5.2

HI-PON 80-12 VINYL ESTER LINING HARDENER

Packaging Group: Not Assigned

SEA TRANSPORT

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

UN Number: UN3105
Proper shipping name: Organic Peroxide Type 'D' Liquid – Methyl ethyl ketone peroxide
Class: Class 5.2
Packaging Group: Not Assigned
Marine Pollutant: No

SEA (Annex II of MARPOL 73/78 and the IBC code)

Not applicable

15. REGULATORY INFORMATION

Applicable national regulations:

- Standards on Hazard communication for hazardous chemicals and dangerous goods
 - SS 586 : Part 1: 2014- Transport and storage of dangerous goods
 - SS 586 : Part 2: 2014- GHS of classification and labelling of chemicals- Singapore's adaptations
 - SS 586 : Part 3: 2008- Preparation of safety data sheets (SDS)
- 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

Revision date/Version No.: 04-04-2017 /3/1.1.1

History

Previous Revision Date/Version No.: not applicable //

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
IARC International Agency for Research in Cancer

HI-PON 80-12 VINYL ESTER LINING HARDENER

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

Version No: 003

Revision Date/Version No.: 01-10-2018 /3/1.1.2 (JS)

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

Product Name: **HI-PON 80-12 VINYL ESTER LINING BASE**
Intended Use: Solvent-Free Protective Paint
Manufacturer: Nippon Paint (S) Co. Pte Ltd
No. 1 First Lok Yang Road
Jurong Singapore 629728
Emergency Phone Number: (65) 6 265 5355
Fax Numbers: (65) 6 264 1603

2. HAZARDS IDENTIFICATION

GHS Classification:

Physical Hazard

Flammable Hazard Category 3

Health Hazard

Acute toxicity (inhalation, vapour) Category 4
Skin corrosion/Irritation Category 2
Serious eye damage/irritation Category 2
Germ cell mutagenicity Category 2
Reproductive toxicity Category 1B
Specific target organ toxicity (Single) Category 1
Specific target organ toxicity (Repeated) Category 1

Environment Hazard

Aquatic (Acute) hazard Category 2

GHS Pictogram



Signal Word

Danger

Hazard statements

H226 Flammable Liquid and vapour
H315 Causes skin irritation
H319 Causes serious eye irritation
H332 Harmful if inhaled
H335 May cause respiratory irritation
H341 Suspected of causing genetic defects
H351 Suspected of causing cancer
H360 May damage fertility or the unborn child
H370 Causes damage to organs (central nervous system)

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H372 Causes damage to organs (respiratory system, liver, nervous system, blood) through prolonged or repeated exposure

H401 Toxic to aquatic life

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

P264: Wash hands thoroughly after handling

P280: Wear protective gloves/protective clothing/eye protection/face protection

P281: Use personal protective equipment as required

Response

P321: Specific treatment (see Section 4 of SDS)

P362: Take off contaminated clothing and wash before reuse

P302+352: IF ON SKIN: Wash with soap and water

P304+340: IF inhaled, remove to fresh air and keep at rest in a position comfortable for breathing

P308+311: IF exposed or concerned: Call a POISON CENTER/doctor

P308+313: IF exposed or concerned: Get medical advice/attention

P332+313: IF skin irritation occurs: Get medical advice/attention

P337+313: IF eye irritation persists: Get medical advice/attention

P370+378: In case of fire: Use appropriate media for extinction

P303+361+353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing.

Rinse skin with water/shower

P305+351+338: IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing

P370+378: In case of fire: Use carbon dioxide (CO₂), dry extinguishing powder, dry sand, alcohol resistant foam, Water spray for extinction

Storage

P405: Store locked up

P403+235: Store in a well ventilated place. Keep cool

Disposal

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

3. COMPOSITION / INFORMATION ON INGREDIENTS

<u>Ingredient</u>	<u>CAS No.</u>	<u>%</u>
Bisphenol-based vinyl ester resin	-	52-56
Styrene monomer	100-42-5	42-46
Methacrylic acid	79-41-4	< 3
Substances determined to be non-hazardous	-	<u>Balance</u>
		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

HI-PON 80-12 VINYL ESTER LINING BASE

- 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

- Alcohol-resistant foam, Carbon dioxide, or dry chemical type

SPECIFIC HAZARDS ARISING FROM THE CHEMICAL

- Combustion products may include and are not limited to: Carbon monoxide and Carbon dioxide.

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 run-off 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.

HI-PON 80-12 VINYL ESTER LINING BASE

- 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

CONTROL PARAMETERS/OCCUPATIONAL LIMITS

<u>Substances</u>	<u>ACGIH TLV-TWA</u>		<u>OSHA PEL-TWA</u>	
	<u>ppm</u>	<u>mg/m3</u>	<u>ppm</u>	<u>mg/m3</u>
Styrene	20	-	40	-

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	:	Viscous yellowish brown liquid
Odour	:	Aromatic odour
Odour threshold	:	Not available
pH	:	Not available
Melting point/freezing point	:	Not available
Initial boiling point and boiling range	:	145 °C
Flash point	:	32 °C
Evaporation rate	:	Not available
Flammability (solid, gas)	:	Not applicable
Lower flammability or explosive limit	:	0.7 vol% (Styrene)
Upper flammability or explosive limit	:	6.8 vol% (Styrene)
Vapour pressure	:	600Pa (at 20°C) (Styrene)
Vapour density	:	3.6 (Styrene) (Vapour is heavier than air)
Relative density	:	1.0 – 1.2 (at 25°C)
Solubility	:	Not Miscible in water
Partition coefficient	:	Not available
Auto-ignition temperature	:	490 °C (Styrene)
Decomposition temperature	:	Not available

Viscosity : Not available

10. STABILITY AND REACTIVITY

REACTIVITY

- No dangerous reaction known under condition of normal use.

CHEMICAL STABILITY

- The product is stable under recommended storage and handling conditions. (see section 7)

POSSIBILITY OF HAZARDOUS REACTION

- Under normal conditions of storage and use, hazardous reaction will not occur.

CONDITIONS TO AVOID

- Keep away from oxidising agents, strongly alkaline and strongly acidic materials in order to avoid exothermic reactions. Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, drill, grind or expose containers to heat or sources of ignition.

HAZARDOUS DECOMPOSITION PRODUCTS

- When exposed to high temperatures may produce hazardous decomposition products such as carbon monoxide, carbon dioxide, oxides of nitrogen and smoke.

11. TOXICOLOGICAL INFORMATION

There is no data available on the product itself.

Toxicological information of ingredients:

Acute Oral toxicity

Harmful if swallowed.

Substances

Styrene

Oral LD50(Rat), mg/kg

5000

Acute dermal/skin toxicity

Substances

Styrene

Dermal LD50 (Rabbit), mg/kg

Data not available

Acute inhalation toxicity

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

Substances

Styrene

Inhalation Vapor LC50 (Rat), mg/L/4hr

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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

Styrene

The International Agency for Research on Cancer (IARC) has classified Styrene as possibly carcinogenic to humans (Group 2B) 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.

Aspiration hazard

May be harmful if swallowed and enters airways

12. ECOLOGICAL INFORMATION

Toxicity

Aquatic toxicity -No data available

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, and IMDG for sea and IATA for Air.

LAND TRANSPORT

HI-PON 80-12 VINYL ESTER LINING BASE

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: 1866
Proper shipping name: Resin Solution
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: 1866
Proper shipping name: Resin Solution
Class: Class 3
Packaging Group: III
Marine Pollutant: No

SEA (Annex II of MARPOL 73/78 and the IBC code)

Not applicable

15. REGULATORY INFORMATION

Applicable national regulations:

- Standards on Hazard communication for hazardous chemicals and dangerous goods
 - SS 586 : Part 1: 2014- Transport and storage of dangerous goods
 - SS 586 : Part 2: 2014- GHS of classification and labelling of chemicals- Singapore's adaptations
 - SS 586 : Part 3: 2008- Preparation of safety data sheets (SDS)
- 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

Revision date/Version No.: 01-10-2018 /3/1.1.2 (JS)

History

Previous Revision Date/Version No.: not applicable //

Abbreviation

ACGIH American Conference of Governmental Industrial Hygienists

TLV Threshold limit value

HI-PON 80-12 VINYL ESTER LINING BASE

TWA Time-Weighted Average
OSHA Occupational Safety and Health Administration
PEL Permissible Exposure Limit
LD50 Lethal Dose
LC50 Median lethal concentration
IARC 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.