

Date of issue 5/14/2025 (month/day/year)

Version 1.01

Section 1. Chemical product and company identification

A. Product name : MEGASEAL HSPC HARDENER
Product code : 000010025268

Other means of identification
00481976

B. Relevant identified uses of the substance or mixture and uses advised against

Product use : Professional applications, Used by spraying.
Use of the substance/
mixture : Coating.
Uses advised against : Product is not intended, labelled or packaged for consumer use.

C. Supplier's or Importer's
information : PPG SSC
(680-090)
19, Yeocheon-ro 217beon-gil, Nam-gu,
Ulsan, Korea
Tel: +82-52-210-8222

Email Address : Korea.MSDS@PPG.COM

Emergency telephone
number: : +82-52-210-8331

Section 2. Hazards identification

A. Hazard classification : CORROSIVE TO METALS - Category 1
ACUTE TOXICITY (oral) - Category 4
ACUTE TOXICITY (dermal) - Category 4
ACUTE TOXICITY (inhalation) - Category 2
SKIN CORROSION - Category 1
SERIOUS EYE DAMAGE - Category 1
RESPIRATORY SENSITIZATION - Category 1
SKIN SENSITIZATION - Category 1
TOXIC TO REPRODUCTION - Category 2
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
AQUATIC HAZARD (ACUTE) - Category 1
AQUATIC HAZARD (LONG-TERM) - Category 1
This product is classified in accordance with the Industrial Safety and Health Act and the Chemical Control Act.

B. GHS label elements, including precautionary statements

Section 2. Hazards identification

Symbol

:

**Signal word**

:

Danger

Hazard statements

:

H290 - May be corrosive to metals.
H302 + H312 - Harmful if swallowed or in contact with skin.
H314 - Causes severe skin burns and eye damage.
H317 - May cause an allergic skin reaction.
H318 - Causes serious eye damage.
H330 - Fatal if inhaled.
H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H361 - Suspected of damaging fertility or the unborn child.
H373 - May cause damage to organs through prolonged or repeated exposure.
(kidneys)
H400 - Very toxic to aquatic life.
H410 - Very toxic to aquatic life with long lasting effects.

Precautionary statements**Prevention**

:

P202 - Do not handle until all safety precautions have been read and understood.
P280 - Wear protective gloves, protective clothing and eye or face protection.
P284 - Wear respiratory protection.
P234 - Keep only in original packaging.
P273 - Avoid release to the environment.
P260 - Do not breathe vapor.
P270 - Do not eat, drink or smoke when using this product.
P264 - Wash thoroughly after handling.

Response

:

P391 - Collect spillage.
P390 - Absorb spillage to prevent material damage.
P320 - Specific treatment is urgent (see the label).
P308 + P313 - IF exposed or concerned: Get medical advice or attention.
P304 + P340, P310 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor.
P342 + P311 - If experiencing respiratory symptoms: Call a POISON CENTER or doctor.
P301 + P310, P330, P331 - IF SWALLOWED: Immediately call a POISON CENTER or doctor. Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353, P310 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Immediately call a POISON CENTER or doctor.
P333 + P313 - If skin irritation or rash occurs: Get medical advice or attention.
P363 - Wash contaminated clothing before reuse.
P305 + P351 + P338, P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.

Storage

:

P403 + P233 - Store in a well-ventilated place. Keep container tightly closed.

Disposal

:

P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

C. Other hazards which do not result in classification

:

Causes digestive tract burns. Contains a substance that may emit formaldehyde if stored beyond its shelf life and/or during cure at curing temperatures greater than 60C (140F).

Section 3. Composition/information on ingredients

CAS number/other identifiers

CAS number : Not applicable.

Chemical name	Common name	Identifiers	%
nonylphenol	NONYL PHENOL	CAS: 25154-52-3	20 - <30
Polyaminoamide	POLYAMIDE (POLYMER)	EC: 246-672-0 CAS: 68082-29-1	10 - <20
Poly[oxy(methyl-1,2-ethanediyl)], α-(2-aminomethylethyl)-ω-(2-aminomethylethoxy)-	POLYOXY PROPYLENE DIAMINE	EC: Polymer CAS: 9046-10-0 (n = 2-6)	10 - <20
Benzyl alcohol	BENZYL ALCOHOL	EC: 618-561-0 CAS: 100-51-6	10 - <20
Formaldehyde, polymer with benzenamine, hydrogenated m-Xylene-α, α'-diamine	Formaldehyde, polymer with benzenamine, hydrogenated 1,3-Benzenedimethanamine	EC: 202-859-9 CAS: 135108-88-2	10 - <20
4-tert-butylphenol	PARA TERTIO BUTYL PHENOL	CAS: 1477-55-0 EC: 216-032-5	1 - <5
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane and 1,2-ethanediamine	Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane and 1,2-ethanediamine	CAS: 98-54-4 EC: 202-679-0	1 - <5
2,4,6-tris[(dimethylamino)methyl]phenol	2,4,6-tris(dimethylaminomethyl)phenol	CAS: 36704-31-1	1 - <5
Trientine	TRIETHYLENETETRAMINE	CAS: 90-72-2 EC: 202-013-9	1 - <5
SALICYLIC ACID	Salicylic acid	CAS: 112-24-3 EC: 203-950-6	1 - <5
BIS(P-AMINOCYCLOHEXYL)METHANE	METHYLENEDI(CYCLOHEXYLAMINE)	CAS: 69-72-7 EC: 200-712-3	1 - <5
nonylphenols	4-nonylphenol, branched	CAS: 1761-71-3 EC: 217-168-8	1 - <5
nonylphenols	p-nonylphenol	CAS: 84852-15-3 EC: 284-325-5	1 - <5
		CAS: 104-40-5 EC: 203-199-4	0.1 - <1

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

A. Eye contact : Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Seek immediate medical attention.

B. Skin contact : Remove contaminated clothing and shoes. Wash skin thoroughly with soap and water or use recognized skin cleanser. Do NOT use solvents or thinners.

Section 4. First aid measures

- C. Inhalation** : Remove to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel.
- D. Ingestion** : If swallowed, seek medical advice immediately and show this container or label. Keep person warm and at rest. Do NOT induce vomiting.
- E. Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

- A. Extinguishing media**
- Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguishing media** : None known.
- B. Specific hazards arising from the chemical** : In a fire or if heated, a pressure increase will occur and the container may burst. This material is very toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon oxides
nitrogen oxides
halogenated compounds
Formaldehyde.
- C. Special equipment for fire-fighting** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
- Fire-fighting procedures** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Section 6. Accidental release measures

- A. Personal precautions, protective equipment and emergency procedures** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

Section 6. Accidental release measures

B. Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

C. Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Absorb spillage to prevent material damage. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Absorb spillage to prevent material damage. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

A. Precautions for safe handling : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems or asthma, allergies or chronic or recurrent respiratory disease should not be employed in any process in which this product is used. Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container. Absorb spillage to prevent material damage.

B. Conditions for safe storage, including any incompatibilities : Store between the following temperatures: 0 to 35°C (32 to 95°F). Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store in a corrosion resistant container with a resistant inner liner. Store locked up. Keep away from metals. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

A. Occupational exposure limits

Ingredient name	Exposure limits
m-Xylene- α , α' -diamine	ISHA Article 42 (Republic of Korea, 1/2020) Absorbed through skin. CEIL: 0.1 mg/m ³ .

Section 8. Exposure controls/personal protection

Recommended monitoring procedures : Reference should be made to appropriate monitoring standards. Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

B. Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

C. Personal protective equipment

Respiratory protection : Use an air-fed respirator unless a site-specific assessment determines that an air-fed respirator is not necessary, in which case the results of the risk assessment should be utilized to determine whether respiratory protection is necessary and what type of protection is appropriate. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Eye protection : Chemical splash goggles and face shield.

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Gloves : butyl rubber

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Section 9. Physical and chemical properties

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

A. Appearance

Physical state : Liquid.

Color : Not available.

B. Odor : Characteristic.

C. Odor threshold : Not available.

D. pH : Not applicable.

E. Melting/freezing point : Not available.

Section 9. Physical and chemical properties

F. Boiling point/boiling range : >37.78°C (>100°F)

G. Flash point : Closed cup: 121°C (249.8°F)

H. Evaporation rate : Not available.

I. Flammability (solid, gas) : Not available.

J. Lower and upper explosive (flammable) limits : Not available.

K. Vapor pressure	:	Ingredient name	Vapor Pressure at 20°C			Vapor pressure at 50°C		
			mm Hg	kPa	Method	mm Hg	kPa	Method
		Poly[oxy(methyl-1,2-ethanediyl)], α-(2-aminomethylethyl)-ω-(2-aminomethylethoxy)-	0.675	0.09		1.575	0.21	

L. Solubility(ies) :

Media	Result
cold water	Not soluble

Solubility in water : Not available.

M. Vapor density : Not available.

N. Relative density : 0.99

O. Partition coefficient: n-octanol/water : Not applicable.

P. Auto-ignition temperature :

Ingredient name	°C	°F	Method
4,4'-methylenebis(cyclohexylamine)	300	572	EU A.15

Q. Decomposition temperature : Not available.

R. Viscosity : Dynamic (room temperature): Not available.
Kinematic (room temperature): Not available.
Kinematic (40°C (104°F)): >21 mm²/s (>21 cSt)

Flow time (ISO 2431) : Not available.

S. Molecular weight : Not applicable.

Section 10. Stability and reactivity

A. Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

B. Conditions to avoid : When exposed to high temperatures may produce hazardous decomposition products.

Section 10. Stability and reactivity

- C. Incompatible materials** : Keep away from the following materials to prevent strong exothermic reactions: oxidizing agents, strong alkalis, strong acids.
- D. Hazardous decomposition products** : Depending on conditions, decomposition products may include the following materials: carbon oxides nitrogen oxides halogenated compounds Formaldehyde.

Section 11. Toxicological information

- A. Information on the likely routes of exposure** : Not available.

Potential acute health effects

- Inhalation** : Fatal if inhaled. May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- Ingestion** : Harmful if swallowed. Corrosive to the digestive tract. Causes burns.
- Skin contact** : Causes severe burns. Harmful in contact with skin. May cause an allergic skin reaction.
- Eye contact** : Causes serious eye damage.

Over-exposure signs/symptoms

- Inhalation** : Adverse symptoms may include the following:
wheezing and breathing difficulties
asthma
reduced fetal weight
increase in fetal deaths
skeletal malformations
- Ingestion** : Adverse symptoms may include the following:
stomach pains
reduced fetal weight
increase in fetal deaths
skeletal malformations
- Skin contact** : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur
reduced fetal weight
increase in fetal deaths
skeletal malformations
- Eye contact** : Adverse symptoms may include the following:
pain
watering
redness

B. Health hazards

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
nonylphenol	LD50 Dermal	Rabbit	2.14 g/kg	-
	LD50 Oral	Rat	580 mg/kg	-
Poly[oxy(methyl-1,2-ethanediyl)], α-(2-aminomethylethyl)-ω-(2-aminomethylethoxy)-	LD50 Dermal	Rat	2980 mg/kg	-
	LD50 Oral	Rat	2885 mg/kg	-
Benzyl alcohol	LC50 Inhalation Dusts and mists	Rat	>5 mg/l	4 hours

Section 11. Toxicological information

Formaldehyde, polymer with benzenamine, hydrogenated m-Xylene- α , α' -diamine	LD50 Dermal	Rabbit	>2000 mg/kg	-
	LD50 Oral	Rat	1200 mg/kg	-
	LD50 Oral	Rat	300 mg/kg	-
4-tert-butylphenol	LC50 Inhalation Gas.	Rat	700 ppm	1 hours
	LD50 Dermal	Rat - Male, Female	>3100 mg/kg	-
	LD50 Oral	Rat	930 mg/kg	-
2,4,6-tris[(dimethylamino)methyl]phenol	LD50 Dermal	Rabbit	2.29 g/kg	-
	LD50 Oral	Rat	2.95 g/kg	-
	LD50 Dermal	Rat	1280 mg/kg	-
Trientine	LD50 Oral	Rat	1200 mg/kg	-
	LD50 Dermal	Rabbit	1465 mg/kg	-
	LD50 Oral	Rat	1716 mg/kg	-
SALICYLIC ACID	LD50 Oral	Rat	0.891 g/kg	-
	LD50 Oral	Rat	0.891 g/kg	-
	LD50 Dermal	Rabbit	2.11 g/kg	-
BIS(P-AMINOCYCLOHEXYL) METHANE	LD50 Oral	Rat	0.625 g/kg	-
	LD50 Dermal	Rabbit	2.14 g/kg	-
	LD50 Oral	Rat	1300 mg/kg	-
nonylphenols	LD50 Oral	Rat	1620 mg/kg	-

Conclusion/Summary : There are no data available on the mixture itself.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
m-Xylene- α , α' -diamine	Skin - Severe irritant	Rat	-	4 hours	4 hours
nonylphenols	Skin - Erythema/Eschar	Rabbit	4	-	-

Conclusion/Summary

Skin : There are no data available on the mixture itself.

Eyes : There are no data available on the mixture itself.

Respiratory : There are no data available on the mixture itself.

Sensitization

Product/ingredient name	Route of exposure	Species	Result
m-Xylene- α , α' -diamine	skin	Mouse	Sensitizing
Trientine	skin	Guinea pig	Sensitizing

Conclusion/Summary

Skin : There are no data available on the mixture itself.

Respiratory : There are no data available on the mixture itself.

Mutagenicity

Conclusion/Summary : There are no data available on the mixture itself.

Carcinogenicity

Conclusion/Summary : There are no data available on the mixture itself.

Reproductive toxicity

Conclusion/Summary : There are no data available on the mixture itself.

Section 11. Toxicological information

Teratogenicity

Conclusion/Summary : There are no data available on the mixture itself.

Specific target organ toxicity (single exposure)

Name	Classification	Route of exposure	Target organs
4-tert-butylphenol	Category 3	-	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Name	Classification	Route of exposure	Target organs
Formaldehyde, polymer with benzenamine, hydrogenated	Category 2	oral	kidneys

Aspiration hazard

Not available.

Potential chronic health effects

- General** : May cause damage to organs through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
- Carcinogenicity** : No known significant effects or critical hazards.
- Mutagenicity** : No known significant effects or critical hazards.
- Reproductive toxicity** : Suspected of damaging fertility or the unborn child.

Additional information

Causes digestive tract burns. Repeated exposure to high vapor concentrations may cause irritation of the respiratory system and permanent brain and nervous system damage. Inhalation of vapor/aerosol concentrations above the recommended exposure limits causes headaches, drowsiness and nausea and may lead to unconsciousness or death. Contains a substance that may emit formaldehyde if stored beyond its shelf life and/or during cure at curing temperatures greater than 60C (140F). Can form nitrosamines in the presence of certain organic materials and if heated. Exposure to amine vapor has been reported to cause transient corneal edema described as blue haze, halo effect, foggy or blurred vision for several hours. This condition is typically temporary and does not cause permanent visual effects. When the proper eye protection specified in Section 8 is worn, exposure is significantly reduced and the condition has not been observed.

Chemical name	Identifiers	GHS Classification
nonylphenol	CAS: 25154-52-3 EC: 246-672-0	CORROSIVE TO METALS - Category 1 ACUTE TOXICITY (oral) - Category 4 SKIN CORROSION - Category 1 SERIOUS EYE DAMAGE - Category 1 TOXIC TO REPRODUCTION - Category 2 AQUATIC HAZARD (ACUTE) - Category 1 AQUATIC HAZARD (LONG-TERM) - Category 1
Polyaminoamide	CAS: 68082-29-1 EC: Polymer	SERIOUS EYE DAMAGE - Category 1
Poly[oxy(methyl-1,2-ethanediyl)], α-(2-aminomethylethyl)-ω-(2-aminomethylethoxy)-	CAS: 9046-10-0 (n = 2-6)	CORROSIVE TO METALS - Category 1

Section 11. Toxicological information

Benzyl alcohol	EC: 618-561-0 CAS: 100-51-6 EC: 202-859-9	SKIN CORROSION - Category 1C SERIOUS EYE DAMAGE - Category 1 AQUATIC HAZARD (LONG-TERM) - Category 3 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (dermal) - Category 4 ACUTE TOXICITY (inhalation) - Category 3 EYE IRRITATION - Category 2A SKIN SENSITIZATION - Category 1 TOXIC TO REPRODUCTION - Category 2 CORROSIVE TO METALS - Category 1
Formaldehyde, polymer with benzenamine, hydrogenated	CAS: 135108-88-2	ACUTE TOXICITY (oral) - Category 3 SKIN CORROSION - Category 1C SERIOUS EYE DAMAGE - Category 1 SKIN SENSITIZATION - Category 1B SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2 AQUATIC HAZARD (LONG-TERM) - Category 3 CORROSIVE TO METALS - Category 1 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (inhalation) - Category 2 SKIN CORROSION - Category 1 SERIOUS EYE DAMAGE - Category 1 SKIN SENSITIZATION - Category 1 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 AQUATIC HAZARD (LONG-TERM) - Category 3 SKIN IRRITATION - Category 2
m-Xylene- α , α' -diamine	CAS: 1477-55-0 EC: 216-032-5	EYE IRRITATION - Category 2A RESPIRATORY SENSITIZATION - Category 1A SKIN SENSITIZATION - Category 1B CORROSIVE TO METALS - Category 1 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (dermal) - Category 4 SKIN CORROSION - Category 1 SERIOUS EYE DAMAGE - Category 1 CORROSIVE TO METALS - Category 1 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (dermal) - Category 3 SKIN CORROSION - Category 1 SERIOUS EYE DAMAGE - Category 1 SKIN SENSITIZATION - Category 1 AQUATIC HAZARD (LONG-TERM) - Category 2 ACUTE TOXICITY (oral) - Category 4 EYE IRRITATION - Category 2A TOXIC TO REPRODUCTION - Category 2 CORROSIVE TO METALS - Category 1 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (inhalation) - Category 1 SKIN CORROSION - Category 1 SERIOUS EYE DAMAGE - Category 1 CORROSIVE TO METALS - Category 1
4-tert-butylphenol	CAS: 98-54-4 EC: 202-679-0	ACUTE TOXICITY (oral) - Category 3 SKIN CORROSION - Category 1C SERIOUS EYE DAMAGE - Category 1 SKIN SENSITIZATION - Category 1B SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2 AQUATIC HAZARD (LONG-TERM) - Category 3 CORROSIVE TO METALS - Category 1 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (inhalation) - Category 2 SKIN CORROSION - Category 1 SERIOUS EYE DAMAGE - Category 1 SKIN SENSITIZATION - Category 1 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 AQUATIC HAZARD (LONG-TERM) - Category 3 SKIN IRRITATION - Category 2
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane and 1,2-ethanediamine	CAS: 36704-31-1	EYE IRRITATION - Category 2A RESPIRATORY SENSITIZATION - Category 1A SKIN SENSITIZATION - Category 1B CORROSIVE TO METALS - Category 1 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (dermal) - Category 4 SKIN CORROSION - Category 1 SERIOUS EYE DAMAGE - Category 1 CORROSIVE TO METALS - Category 1 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (dermal) - Category 3 SKIN CORROSION - Category 1 SERIOUS EYE DAMAGE - Category 1 SKIN SENSITIZATION - Category 1 AQUATIC HAZARD (LONG-TERM) - Category 2 ACUTE TOXICITY (oral) - Category 4 EYE IRRITATION - Category 2A TOXIC TO REPRODUCTION - Category 2 CORROSIVE TO METALS - Category 1 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (inhalation) - Category 1 SKIN CORROSION - Category 1 SERIOUS EYE DAMAGE - Category 1 CORROSIVE TO METALS - Category 1
2,4,6-tris[(dimethylamino)methyl]phenol	CAS: 90-72-2 EC: 202-013-9	EYE IRRITATION - Category 2A RESPIRATORY SENSITIZATION - Category 1A SKIN SENSITIZATION - Category 1B CORROSIVE TO METALS - Category 1 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (dermal) - Category 4 SKIN CORROSION - Category 1 SERIOUS EYE DAMAGE - Category 1 CORROSIVE TO METALS - Category 1 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (dermal) - Category 3 SKIN CORROSION - Category 1 SERIOUS EYE DAMAGE - Category 1 SKIN SENSITIZATION - Category 1 AQUATIC HAZARD (LONG-TERM) - Category 2 ACUTE TOXICITY (oral) - Category 4 EYE IRRITATION - Category 2A TOXIC TO REPRODUCTION - Category 2 CORROSIVE TO METALS - Category 1 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (inhalation) - Category 1 SKIN CORROSION - Category 1 SERIOUS EYE DAMAGE - Category 1 CORROSIVE TO METALS - Category 1
Trientine	CAS: 112-24-3 EC: 203-950-6	EYE IRRITATION - Category 2A RESPIRATORY SENSITIZATION - Category 1A SKIN SENSITIZATION - Category 1B CORROSIVE TO METALS - Category 1 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (dermal) - Category 4 SKIN CORROSION - Category 1 SERIOUS EYE DAMAGE - Category 1 CORROSIVE TO METALS - Category 1 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (dermal) - Category 3 SKIN CORROSION - Category 1 SERIOUS EYE DAMAGE - Category 1 SKIN SENSITIZATION - Category 1 AQUATIC HAZARD (LONG-TERM) - Category 2 ACUTE TOXICITY (oral) - Category 4 EYE IRRITATION - Category 2A TOXIC TO REPRODUCTION - Category 2 CORROSIVE TO METALS - Category 1 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (inhalation) - Category 1 SKIN CORROSION - Category 1 SERIOUS EYE DAMAGE - Category 1 CORROSIVE TO METALS - Category 1
SALICYLIC ACID	CAS: 69-72-7 EC: 200-712-3	EYE IRRITATION - Category 2A RESPIRATORY SENSITIZATION - Category 1A SKIN SENSITIZATION - Category 1B CORROSIVE TO METALS - Category 1 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (dermal) - Category 4 SKIN CORROSION - Category 1 SERIOUS EYE DAMAGE - Category 1 CORROSIVE TO METALS - Category 1 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (dermal) - Category 3 SKIN CORROSION - Category 1 SERIOUS EYE DAMAGE - Category 1 SKIN SENSITIZATION - Category 1 AQUATIC HAZARD (LONG-TERM) - Category 2 ACUTE TOXICITY (oral) - Category 4 EYE IRRITATION - Category 2A TOXIC TO REPRODUCTION - Category 2 CORROSIVE TO METALS - Category 1 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (inhalation) - Category 1 SKIN CORROSION - Category 1 SERIOUS EYE DAMAGE - Category 1 CORROSIVE TO METALS - Category 1
BIS(P-AMINOCYCLOHEXYL)METHANE	CAS: 1761-71-3 EC: 217-168-8	EYE IRRITATION - Category 2A RESPIRATORY SENSITIZATION - Category 1A SKIN SENSITIZATION - Category 1B CORROSIVE TO METALS - Category 1 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (dermal) - Category 4 SKIN CORROSION - Category 1 SERIOUS EYE DAMAGE - Category 1 CORROSIVE TO METALS - Category 1 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (dermal) - Category 3 SKIN CORROSION - Category 1 SERIOUS EYE DAMAGE - Category 1 SKIN SENSITIZATION - Category 1 AQUATIC HAZARD (LONG-TERM) - Category 2 ACUTE TOXICITY (oral) - Category 4 EYE IRRITATION - Category 2A TOXIC TO REPRODUCTION - Category 2 CORROSIVE TO METALS - Category 1 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (inhalation) - Category 1 SKIN CORROSION - Category 1 SERIOUS EYE DAMAGE - Category 1 CORROSIVE TO METALS - Category 1
nonylphenols	CAS: 84852-15-3	EYE IRRITATION - Category 2A RESPIRATORY SENSITIZATION - Category 1A SKIN SENSITIZATION - Category 1B CORROSIVE TO METALS - Category 1 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (dermal) - Category 4 SKIN CORROSION - Category 1 SERIOUS EYE DAMAGE - Category 1 CORROSIVE TO METALS - Category 1 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (dermal) - Category 3 SKIN CORROSION - Category 1 SERIOUS EYE DAMAGE - Category 1 SKIN SENSITIZATION - Category 1 AQUATIC HAZARD (LONG-TERM) - Category 2 ACUTE TOXICITY (oral) - Category 4 EYE IRRITATION - Category 2A TOXIC TO REPRODUCTION - Category 2 CORROSIVE TO METALS - Category 1 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (inhalation) - Category 1 SKIN CORROSION - Category 1 SERIOUS EYE DAMAGE - Category 1 CORROSIVE TO METALS - Category 1

Section 11. Toxicological information

nonylphenols	EC: 284-325-5	ACUTE TOXICITY (oral) - Category 4 SKIN CORROSION - Category 1 EYE IRRITATION - Category 2A TOXIC TO REPRODUCTION - Category 2 AQUATIC HAZARD (ACUTE) - Category 1 AQUATIC HAZARD (LONG-TERM) - Category 1
	CAS: 104-40-5 EC: 203-199-4	CORROSIVE TO METALS - Category 1 ACUTE TOXICITY (oral) - Category 4 SKIN CORROSION - Category 1 SERIOUS EYE DAMAGE - Category 1 TOXIC TO REPRODUCTION - Category 2 AQUATIC HAZARD (ACUTE) - Category 1 AQUATIC HAZARD (LONG-TERM) - Category 1

Section 12. Ecological information

A. Ecotoxicity

Product/ingredient name	Result	Species	Exposure
nonylphenol	Acute EC50 0.056 mg/l Fresh water	Algae - <i>Desmodesmus subspicatus</i>	72 hours
	Chronic EC10 0.003 mg/l Fresh water	Algae - <i>Desmodesmus subspicatus</i>	72 hours
Poly[oxy(methyl-1,2-ethanediyl)], α-(2-aminomethylethyl)-ω-(2-aminomethylethoxy)-Formaldehyde, polymer with benzenamine, hydrogenated	Chronic NOEC 1 µg/l Fresh water	Daphnia - <i>Daphnia magna</i>	21 days
	EC50 15 mg/l	Algae	72 hours
4-tert-butylphenol	Acute EC50 43.94 mg/l	Algae	72 hours
	Acute EC50 15.4 mg/l Acute LC50 63 mg/l Acute EC50 16.91 mg/l Fresh water	Daphnia Fish Algae - <i>Selenastrum capricornutum</i> - Exponential growth phase	48 hours 96 hours 72 hours
2,4,6-tris[(dimethylamino)methyl]phenol	Acute LC50 >100 mg/l	Daphnia	48 hours
SALICYLIC ACID	Acute LC50 >100 mg/l	Fish	96 hours
	Acute EC50 1147.57 mg/l Fresh water	Daphnia - <i>Daphnia longispina</i> - Neonate	48 hours
nonylphenols	Chronic NOEC 5.6 mg/l Fresh water	Daphnia - <i>Daphnia magna</i> - Neonate	21 days
	Acute EC50 0.04 mg/l	Algae - <i>Raphidocelis subcapitata</i>	72 hours
nonylphenols	Acute EC50 0.044 mg/l	Crustaceans - <i>Moina macrocopa</i>	48 hours
	Acute LC50 0.221 mg/l	Fish	96 hours
	Acute EC50 117.7 µg/l Fresh water	Algae - <i>Raphidocelis subcapitata</i> - Exponential growth phase	72 hours
	Chronic EC10 54.4 µg/l Fresh water	Algae - <i>Raphidocelis subcapitata</i> - Exponential growth phase	72 hours

Section 12. Ecological information

B. Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
Formaldehyde, polymer with benzenamine, hydrogenated	-	0 % - Not readily - 28 days	-	-
2,4,6-tris[(dimethylamino) methyl]phenol	OECD Ready Biodegradability - Closed Bottle Test	4 % - Not readily - 28 days	-	-

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Poly[oxy(methyl-1,2-ethanediyl)], α-(2-aminomethylethyl)-ω-(2-aminomethylethoxy)-Benzyl alcohol	-	-	Not readily
Formaldehyde, polymer with benzenamine, hydrogenated	-	-	Readily
2,4,6-tris[(dimethylamino) methyl]phenol	-	-	Not readily

C. Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
nonylphenol	3.28	154.88	Low
Benzyl alcohol	0.87	-	Low
Formaldehyde, polymer with benzenamine, hydrogenated	2.68	209 to 219	Low
m-Xylene-α, α'-diamine	0.18	2.69	Low
4-tert-butylphenol	3	67.61	Low
2,4,6-tris[(dimethylamino) methyl]phenol	0.219	-	Low
Trientine	-1.66 to -1.4	-	Low
SALICYLIC ACID	2.21 to 2.26	-	Low
BIS(P-AMINOCYCLOHEXYL) METHANE	2.03	-	Low
nonylphenols	5.4	251.19	Low
nonylphenols	5.76	380.19	Low

D. Mobility in soil

Soil/Water partition coefficient : Not available.

E. Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

- A. Disposal methods** : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.
- B. Disposal precautions** : This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	UN	IMDG	IATA
A. UN number	UN3066	UN3066	UN3066
B. UN proper shipping name	PAINT	PAINT	PAINT
C. Transport hazard class(es)	8	8	8
D. Packing group	II	II	II
Environmental hazards	Yes. The environmentally hazardous substance mark is not required.	Yes.	Yes. The environmentally hazardous substance mark is not required.
E. Marine pollutant substances	Not applicable.	(nonylphenol)	Not applicable.

Additional information

UN : None identified.

IMDG : The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.

IATA : The environmentally hazardous substance mark may appear if required by other transportation regulations.

F. Special precaution which a user to be aware of or needs to comply with in connection with transport or transportation

Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not applicable.

Section 15. Regulatory information

A. Regulation according to ISHA

ISHA article 117 : None of the components are listed.
(Harmful substances prohibited from manufacture)

ISHA article 118 : None of the components are listed.
(Harmful substances requiring permission)

Article 2 of Youth Protection Act on Substances Hazardous to Youth : It is not allowed to sell to persons under the age of 19.

Exposure Limits of Chemical Substances and Physical Factors

The following components have an OEL:

ISHA Enforcement Regs Annex 19 (Exposure standards established for harmful factors) : None of the components are listed.

ISHA Enforcement Regs Annex 11-5 (Harmful factors subject to Work Environment Measurement) : None of the components are listed.

ISHA Enforcement Regs Annex 22 (Harmful Factors Subject to Special Health Check-up) : None of the components are listed.

Standard of Industrial Safety and Health Annex 12 (Hazardous substances subject to control) : None of the components are listed.

B. Regulation according to Chemicals Control Act

Article 11 (TRI) : The following components are listed: Nonylphenol, Branched 4-nonylphenol

Article 18 Prohibited (K-Reach Article 27) : None of the components are listed.

Article 19 Subject to authorization (K-Reach Article 25) : None of the components are listed.

Article 20 Restricted (K-Reach Article 27) : The following components are listed: nonylphenols, nonylphenols, nonylphenols

Article 20 Toxic Chemicals (K-Reach Article 20) : Toxic

Korea inventory : All components are listed or exempted.

Article 39 (Accident Precaution Chemicals) : None of the components are listed.

Section 15. Regulatory information

- C. [Dangerous Materials](#)** : **Class:** Class 4 - Flammable Liquid
[Safety Management Act](#) **Item:** 5. Class 3 petroleum - Water-insoluble liquid
Threshold: 2000 L
Danger category: III
Signal word: Contact with sources of ignition prohibited
- D. [Wastes regulation](#)** : Dispose of contents and container in accordance with all local, regional, national and international regulations.
- E. [Regulation according to other foreign laws](#)**
[Safety, health and environmental regulations specific for the product](#) : No known specific national and/or regional regulations applicable to this product (including its ingredients).

Section 16. Other information

- A. [References](#)** : Korean Ministry of Environment; Chemical Control Act
Korean Ministry of Labor; Industrial Safety and Health Act
NIER Notice
Registry of Toxic Effects of Chemical Substances (RTECS)
U.S. Environmental Protection Agency, AQUIRE (Aquatic toxicity Information Retrieval) ECOTOX Database System.
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- D. [Version](#)** : **1.01**
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- E. [Other](#)**

 Indicates information that has changed from previously issued version.

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