SHOWA DENKO K.K.

13-9, Shiba Daimon 1-chome,
Minato-Ku, Tokyo, 105-8518,

Date of issue : 2016/06/29

SAFETY DATA SHEET

1. Identification of the substance/preparation and of the company/undertaking

Trade name	:	RIPOXY ™ H-600EX-1
Company/undertaking identification	:	SHOWA DENKO K.K.
Address	:	13-9, Shiba Daimon 1-chome, Minato-Ku, Tokyo, 105-8518, Japan
Department name	:	Functional Chemicals Division / Functional Polymers Department
Tel.	:	+81-3-5403-5600
Fax	:	+81-3-5403-5720
Emergency number	:	+81-791-67-1111 (holiday and night) (Tatsuno Plant, SHOWA DENKO K.K.)
Recommended uses and restrictions	:	Industrial use
Reference no.	:	FPPV-R6320JP-EN

2. Hazards identification

[GHS classification]

Physical hazards	:	Flammable liquids, Category 3
Health hazards	:	Acute toxicity (inhalation:vapour) Category 4
	:	Skin corrosion/irritation, Category 2
	:	Serious eye damage/eye irritation, Category 2
	:	Germ cell mutagenicity, Category 2
	:	Reproductive toxicity, Category 1B
	:	Specific target organ toxicity — single exposure, Category 1 (central nervous system)
	:	Specific target organ toxicity — Single exposure, Category 3 (Respiratory tract irritation)
	:	Specific target organ toxicity — Repeated exposure, Category 1 (respiratory system, liver, nervous system, blood)
	:	Specific target organ toxicity — Repeated exposure, Category 2 (adrenal, kidneys)
Environmental hazards	:	Hazardous to the aquatic environment — Acute Hazard, Category 2
		Hazardous to the aquatic environment — Long term Hazard, Category 3

Other hazards than mentioned above are Not applicable or No data available.

[GHS label elements]

Hazard pictograms :

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) May cause genetic defects
(H360) May damage fertility or the unborn child
(H370) Causes damage to organs (central nervous system)

(H372) Causes damage to organs (respiratory system, liver, nervous system, blood) through prolonged or repeated exposure
(H373) May cause damage to organs (adrenal, kidneys) through prolonged or repeated exposure
(H401) Toxic to aquatic life
(H412) Harmful to aquatic life with long lasting effects

Precautionary statements

Prevention precautionary statements :
(P201) Obtain special instructions (Safety Data Sheet) 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/lighting equipment
(P260) Do not breathe dust/fume/gas/mist/vapours/spray
(P264) Wash hands, forearms and face thoroughly after handling
(P270) Do not eat, drink or smoke when using this product
(P271) Use only outdoors or in a well-ventilated area
(P273) Avoid release to the environment
(P280) Wear protective gloves/protective clothing/eye protection/face protection

Response Precautionary Statements :
(P302+P352) IF ON SKIN: Wash with plenty of soap and water
(P304+P340) If inhaled, remove to fresh air and keep at rest in a position comfortable for breathing
(P305+P351+P338) If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
(P308+P311) IF exposed or concerned: Call a POISON CENTER/doctor
(P308+P313) IF exposed or concerned: Get medical advice/attention
(P312) Call a POISON CENTER or doctor/physician if you feel unwell
(P332+P313) If on skin and if skin irritation occurs, seek medical advice and attention
(P337+P313) If eye irritation persists: Get medical advice/attention
(P362+P364) Take off contaminated clothing and wash it before reuse
(P370+P378) In case of fire: Use carbon dioxide (CO2), Dry extinguishing powder, dry sand, alcohol resistant foam, water spray for extinction

Storage precautionary statements :
(P403+P233) Store in a well-ventilated place. Keep container tightly closed
(P403+P235) Store in a well-ventilated place. Keep cool
(P405) Store locked up

Disposal precautionary statements :
(P501) Dispose of contents/container in accordance with local/regional/national/international regulations.

3. Composition/information on ingredients

Distinction of substance or mixture : Mixture
Generic name : Vinylester resin

Name	CAS No	Conc.	Formula	Kanpo number	
				CSCL	ISHL
Vinylester resin	Confidential	67 -71%	Confidential	Confidential (Existing Chemical Substance)	Confidential (Existing Chemical Substance)
Styrene	100-42-5	28 - 32%	CH_2=CH-C_6H_5	(3)-4	Existing Chemical Substance
Methacrylic acid	79-41-4	1 - 2%	CH_2=C(CH_3)COOH	(2)-1025	Existing Chemical Substance
Polymerization inhibitor	Confidential	0.2 -0.4 %	Confidential	Confidential (Existing Chemical Substance)	Confidential (Existing Chemical Substance)

4. First aid measures

First-aid measures after inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If you feel unwell, seek medical advice.

First-aid measures after skin contact	:	Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse. Seek medical attention if irritation develops.
First-aid measures after eye contact	:	Rinse eyes immediately with low pressured flowing water for over 15 minutes. Consult an eye specialist.
First-aid measures after ingestion	:	Rinse mouth with water, do not induce vomiting, call a doctor. If the person vomits, keep body inclined to avoid inhaling the vomit into the lung. The vomit can hurt lung.
Most Important Symptoms/Effects	:	Dizziness, headaches, nausea, red flare, weakness, deterioration of consciousness, asthma, lung edema.
Personal Protection in First Aid and Measures	:	Wear suitable protective clothing, gloves and eye or face protection. Wear respiratory protection.
Other medical advice or treatment	:	Keep quiet and prolonged medical observation is needed.

5. Fire fighting measures

Suitable extinguishing media	:	carbon dioxide (CO2), Dry extinguishing powder, dry sand, alcohol resistant foam, Water spray
Unsuitable extinguishing media	:	Water jet
Fire hazard	:	Heat may cause pressure rise with explosion of tanks/drums. On burning: release of harmful/irritant gases/vapours.
Firefighting instructions	:	Apply water spray or fog to cool nearby equipment. Move undamaged containers from immediate hazard area if it can be done safely. Approach from upwind. Early fire: use dry extinguishing powder, carbon dioxide (CO2), dry sand. Massive fire: use alcohol resistant foam to shut off air.
Personal protection (Emergency response)	:	Use a self-contained breathing apparatus and also a protective suit. Do the fire fighting from windward side to avert inhale a hazardous gas.

6. Accidental release measures

Personal Precautions, Protective Equipment and Emergency Procedures	:	Wear suitable protective clothing, gloves and eye or face protection. Do the operation from windward side and evacuate persons around leeward side area. Prepare extinguishing medias in preparation for ignition.
Environmental precautions	:	Pay attention that products never flow out to river etc. and never cause influence to the environment.
Methods and Equipment for Containment and Cleaning up	:	Take up liquid spill into absorbent material, e.g.: sand, saw dust. Store in a closed container. In the case of a large amount leakage, fenced by a clod or cloth and prevent the flowing. Collect leaking and spilled liquid in sealable containers.
Prevention Measures for Secondary Accidents	:	Eliminate all ignition sources if safe to do so. Prepare extinguishing medias in preparation for ignition. Notify authorities if liquid enters sewers or public waters.

7. Handling and storage

Handling

Technical measures	:	Provide ventilation system and use necessary personal protective equipment as described in "8. Exposure controls / Personal protection equipment."
Local and general ventilation	:	Treat in the local ventilation area, or in the place operating the general ventilation system.
Precautions for safe handling	:	Do not handle until all safety precautions have been read and understood. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Don't handle a container roughly, as falling down, falling damage in loading and dragging. Never touch, inhale and eat. Handle product only in closed system or provide appropriate exhaust ventilation.
Hygiene measures	:	Wash hands thoroughly after handling. Remove contaminated clothes. Wash contaminated clothing before reuse.

Storage precautionary statements

Storage conditions	:	Keep out of direct sunlight. Store in a cool, well-ventilated place. Comply with relevant laws such as Fire Service Law and Industrial Safety and Health Law.
Material used in packaging/containers	:	Use containers provided by Fire Service Law and United Nations Recommendations on the Transport of Dangerous Goods.

8. Exposure controls / Personal protection equipment

Product

Japan administration level	:	No information
	:	No information

Vinylester resin

Japan administration level	:	No information
Exposure limits (JSOH)	:	No information
Exposure limits (ACGIH)	:	No information

Styrene

Japan administration level	:	20ppm
Exposure limits (JSOH)	:	20ppm(85mg/m3) (skin)
Exposure limits (ACGIH)	:	TWA 20 ppm,STEL 40 ppm

Methacrylic acid

Japan administration level	:	No information
Exposure limits (JSOH)	:	2ppm
Exposure limits (ACGIH)	:	TLV-TWA 20ppm (70mg/m3)
Others	:	Germany, DFG MAK-TWA 5ppm

Polymerization inhibitor

Japan administration level	:	No information
Exposure limits (JSOH)	:	No information
Exposure limits (ACGIH)	:	No information

Appropriate engineering controls	:	Install the local exhaust ventilation in handling area. Emergency safety showers should be available in the immediate vicinity of any potential exposure. Install hand-washing and eye-washing etc. station.

Protective equipment

Respiratory protection	:	Approved organic vapour respirator. Self contained breathing apparatus. Air-supplied respirator.
Hand protection	:	Oleum-proof gloves
Eye protection	:	Tightly fitting safety goggles
Skin and body protection	:	Non-static creating clothing and conductive shoes

9. Physical and chemical properties

Form	:	Thick liquid
Colour	:	light yellow
Odour	:	Hydrocarbons, aromatic
pH	:	Not applicable
Melting point	:	-30.6℃（styrene）
Boiling point	:	145℃（styrene）
Flash point	:	32 ℃ (seta closed cup)
Explosive limits (g/m³)	:	No data available
Explosive limits (vol %)	:	0.7 - 6.8vol%（styrene）
Vapour pressure	:	0.7kPa（20℃）（styrene）

Relative vapour density at 20 °C	:	3.59（air=1、20℃）（styrene）
Specific gravity density	:	1.0 - 1.2（25℃）
Solubility	:	Not soluble in water. Soluble in organic solvents.
Log Pow	:	2.95（styrene）
Auto-ignition temperature	:	490℃（styrene）
Decomposition temperature	:	No data available
Viscosity	:	0.6 - 1.2 Pa.s（25℃）

10. Stability and reactivity

Reactivity	:	Can polymerise exothermically if heated, exposed to air, sunlight or by addition or free radical initiators.
Chemical stability	:	The product is stable at normal handling and storage conditions. Stable under sealed condition in a cool, well-ventilated place.
Possibility of hazardous reactions	:	No data available
Conditions to avoid	:	Light (daylight). Overheating. Static electrical charge. Do not use perforated, permeable or soluble materials.
Incompatible materials	:	Do not use peroxides in excess amount for curing.
Hazardous decomposition products	:	Carbon monoxide. Carbon dioxide.

11. Toxicological information

Toxicological information of Product

: No information about all of the items

Toxicological information of Vinylester resin

: No information about all of the items

Toxicological information of Styrene

Acute toxicity (oral)	:	Rat, LD50 = 5000 mg/kg (Initial Risk Assessment of the Chemical Substances)
Acute toxicity(inhalation:vapour)	:	Rat, LC50 (4hr) = 2770 ppm (11690 mg/m3) (Initial Risk Assessment of the Chemical Substances)
Skin corrosion / irritation	:	Severe irritation and partial degeneration were observed in a skin irritation study using the Rabbit. (Initial Risk Assessment of the Chemical Substances)
Serious eye damage / irritation	:	Moderate conjunctival irritation and damage lasted for 7 days in an eye irritation study using the Rabbit. (Initial Risk Assessment of the Chemical Substances)
Skin sensitization	:	No information.
Respiratory sensitization	:	No information.
Germ cell mutagenicity	:	Positive in the observation of bone marrow cell in chromosome aberration study by inhalation exposure in the Rat. (Initial Risk Assessment of the Chemical Substances)
	:	Positive in the observation of bone marrow cell and etc., in sister chromatid exchange analysis by inhalation exposure in the Mouse. (Initial Risk Assessment of the Chemical Substances)
	:	Positive in sperm morphology aberration assay in the Mouse and Rat. (Initial Risk Assessment of the Chemical Substances)
	:	Negative in Ames test using Salmonella typhimurium. (Initial Risk Assessment of the Chemical Substances)
Carcinogenicity	:	Carcinogenicity classification of IARC: Group 2B (possibly carcinogenic to humans).
	:	Carcinogenicity classification of ACGIH: A4 (not classifiable as a human carcinogen)
	:	No significant increase was detected in the mortality and etc., in the followup survey of 40688 workers who were exposed to styrene in 660 factories in EU. (EU-RAR)
Reproductive toxicity	:	No effect was noted in parental animals of 250 ppm treated group (F0) but significant decrease in survival rate was noted in pups (F1) in three-generation reproduction study using Rat (administration by drinking-water). (Initial Risk Assessment of the Chemical Substances)
	:	Aberration in righting reflex and such many parameters of behavioral tests was noted in pups of the groups treated at 50 ppm and above in inhalation exposure study in the Rat

during day 7-21 of pregnancy. (Initial Risk Assessment of the Chemical Substances)

: Increase of embryonic/fetal mortality and skeletal variation in F1 generation were noted in 250 ppm treated group in inhalation exposure test in the Mouse during 6-16 day of pregnancy. (Initial Risk Assessment of the Chemical Substances)

: Decrease of number of sperm in epididymis, etc., were noted in 200 mg/kg/day group in 60-day oral dose administration study in male Rat. NOAEL is 100 mg/kg/day. (Initial Risk Assessment of the Chemical Substances)

Specific target organ toxicity -single exposure : Tremor, loss of consciousness and such effect to central nervous system, irritation to eye, nose and lung were noted in inhalation exposure studies in the Mouse, Rat and the Guinea-pig. (Initial Risk Assessment of the Chemical Substances)

: Delayed response to visual and auditory stimulation was noted at and above 50 mL/m3 in 1.5-hour inhalation exposure study in volunteers. (Initial Risk Assessment of the Chemical Substances)

Specific target organ toxicity -repeated exposure : Styrene causes chronic bronchitis, obstructive lung damage and disorder of digestive function in stomach by long-term inhalation exposure. (Initial Risk Assessment of the Chemical Substances)

: Decrease of thrombocyte and etc., were noted in the workers at styrene resin plant (estimated exposure concentration at 100-300 ppm). (Initial Risk Assessment of the Chemical Substances)

: Functional disorder was noted in neuropsychiatric functional examination in the workers who were exposed to the substance at 10-300 ppm in the plant. (Initial Risk Assessment of the Chemical Substances)

: Necrosis of hepatocyte was noted at 259 ppm in 14-day inhalation exposure test in the Mouse. (Initial Risk Assessment of the Chemical Substances)

Aspiration hazard : If liquid styrene is swallowed, chemical pneumonia may be caused due to aspiration to lung. (ICSC)

Toxicological information of Methacrylic acid

Acute toxicity (oral) : Rat, LD50 = 1060 - 2260 mg/kg (Initial Risk Assessment of the Chemical Substances)

Acute toxicity (dermal) : Rabbit, LD50 = 500 - 2000 mg/kg (Initial Risk Assessment of the Chemical Substances)

Acute toxicity (inhalation: mist) : Rat, LC50 = 1981 ppm/4hr (Initial Risk Assessment of the Chemical Substances)

Skin corrosion / irritation : Corrosion was noted in skin irritation study using the Rabbit after application for 3 minutes (Initial Risk Assessment of the Chemical Substances).

Serious eye damage / irritation : Corneal opacity and other symptoms were observed at 1 day after instillation in eye irritation study using the Rabbit. The symptoms did not recover even after 7 days and chemical burn, corneal epithelial necrosis and defect, and etc., were observed (Initial Risk Assessment of the Chemical Substances).

Skin sensitization : Not sensitising in skin sensitisation study using the Guinea-pig (Initial Risk Assessment of the Chemical Substances).

: A positive result is seen in the reports of human study but most of the results are negative (Initial Risk Assessment of the Chemical Substances).

Respiratory sensitization : No information.

Germ cell mutagenicity : Negative in reverse mutation test using Salmonella typhimurium (Initial Risk Assessment of the Chemical Substances).

Carcinogenicity : No information.

Reproductive toxicity : Effect to genitalia was not noted in 90-days exposure study (highest concentration: 1071 mg/m3) in the Rat and Mouse (Environmental Risk Assessment of the Chemical Substances, Ministry of the Environment).

Specific target organ toxicity -single exposure : Irritation to eye and upper respiratory tract were observed at 0.4 - 3 mg/m3 in a study in volunteers (Initial Risk Assessment of the Chemical Substances).

Specific target organ toxicity -repeated exposure : Tendency of decrease in platelet number, tremor of fingers and such nervous symptoms, etc., were observed in the workers in the main working environment at 20 - 80 mg/m3 (Initial Risk Assessment of the Chemical Substances).

: Degeneration of nasal olfactory epithelium at and above 100 ppm, rhinitis, decrease of leukocyte count, cytomegaly in tubular epithelium of kidney at 300 ppm were observed in 90-days ihnalation exposure study in the Mouse. OAEL was 20 ppm (Initial Risk Assessment of the Chemical Substances).

: Decrease of reflex ability, atrophy of liver, kidney and adrenal gland, decrease of red blood cell were observed in 5 mg/kg/day group in 6-months oral administration study in the Rat.

NOAEL was 0.05 mg/kg/day (Initial Risk Assessment of the Chemical Substances).

Aspiration hazard : No information.

Toxicological information of Polymerization inhibitor

Acute toxicity (oral) : Rat, LD50 = 3200 mg/kg (IUCLID, RTECS)
Acute toxicity (dermal) : Rabbit, LD50 > 200 mg/kg (IUCLID)
Acute toxicity (inhalation: dust) : Rat, LC50(4hr), 1.5 mg/L (aerosol) (IUCLID)
Skin corrosion / irritation : Corrosive in 4-hours occlusive application skin irritation study in the Rabbit. (IUCLID)
Serious eye damage / irritation : In a Rabbit eye irritation study, severe conjunctival redness, corneal opacity and vascularization etc., were observed until 8 days after instillation, and mild conjunctival redness and corneal opacity were still noted 21 days after instillation. (IUCLID)
Skin sensitization : Sensitization was observed observed in skin sensitization study using the Guinea-pig. (IUCLID)
Respiratory sensitization : No information.
Germ cell mutagenicity : Negative in Ames test using S. typhimurium. (IUCLID).
Carcinogenicity : No information.
Reproductive toxicity : Results of a safety study by METI
: In a combined repeated dose and reproductive/developmental toxicity screening study in rats, death of dams, decreased delivery indices, the decreased number of corpus luteum, the decreased number of implantations, the decreased total number of pups delivered, etc., were observed at 300 mg/kg. NOAEL for dams and pups was 60 mg/kg/day.
Specific target organ toxicity -single exposure : No information.
Specific target organ toxicity -repeated exposure : In a combined repeated dose and reproductive/developmental toxicity screening study in rats, death of animals, salivation, irregular respiration, decrease in locomotor activity, tonic convulsion, etc., occured at 300 mg/kg, and hemolytic anemia (changes in spleen and hematology values, etc.,) was also observed in males at 60 mg/kg. NOAEL was 10 mg/kg/day for males and 60 mg/kg/day for females.
Aspiration hazard : No information.

12. Ecological information

Ecological information of Product

: No information about all of the items

Ecological information of Vinylester resin

: No information about all of the items

Ecological information of Styrene

Ecotoxicity : Fish (Fathead minnow) LC50(96hr), 4.02mg/L (Initial Risk Assessment of the Chemical Substances)
: Crustacea (Daphnia magna) EC50(48hr), 4.7mg/L (Initial Risk Assessment of the Chemical Substances)
: Algae (Selenastrum) ErC50(72hr) 4.9mg/L, (Initial Risk Assessment of the Chemical Substances)
Persistence/degradability : Readily biodegradable in 2-weeks biodegradation study in accordance with Chemical Substance Control Law. (Safety Assessment Data of Existing Chemical Substance)
Bioaccumulative potential : BCF = 13.5 (Golden fish), 37 (calculation) (Initial Risk Assessment of the Chemical Substances)
: Octanol/water partition coefficient:
: logPow=2.95 (measured value), 2.89 (calculated value) (Initial Risk Assessment of the Chemical Substances)
Mobility in soil : Soil absorption coefficient, Koc=960 (HSDB)
Hazardous to the ozone layer : No information.

Ecological information of Methacrylic acid

Ecotoxicity : Fish (Rainbow trout) LC50 (96hr) = 85 mg/L (Initial Risk Assessment of the Chemical Substances)
: Crustacea (Daphnia magna) EC50 (48hr) >130 mg/L, NOEC (21day) = 53 mg/L (Initial Risk Assessment of the Chemical Substances)
: Algae (Selenastrum) ErC50 (72hr) = 14 mg/L, NOEC (72hr) = 8.2 mg/L (Initial Risk

Assessment of the Chemical Substances)

Persistence/degradability	:	Judged to be readily biodegradable in 2-weeks biodegradation study based on Chemical Substance Control Law (Safety Assessment Data of Existing Chemical Substance)
Bioaccumulative potential	:	BCF = 0.2 (calculation) (Initial Risk Assessment of the Chemical Substances)
	:	Octanol/water partition coefficient: log Pow = 0.93 (measured value), 0.99 (calculation) (Initial Risk Assessment of the Chemical Substances)
Mobility in soil	:	Soil adsorption coefficient: Koc = 15 (HSDB)
Hazardous to the ozone layer	:	No information.

Ecological information of Polymerization inhibitor

Ecotoxicity	:	Fish (Cyprinidae), LC50(96hr), 1-2.2 mg/L (IUCLID)
	:	Crustacea (Daphnia magna), EC50(48hr), 0.97 mg/L (IUCLID)
	:	Algae (Scenedesmus), EC50(72hr), 13 mg/L (IUCLID)
Persistence/degradability	:	No information
Bioaccumulative potential	:	Biodegradability by BOD after 4 weeks was -6 to -7% in biodegradation study in accordance with the Japanese Chemical Substance Control Law. Based on this the substance is judged to be persistent. (Safety Assessment Data of Existing Chemical Substance)
Mobility in soil	:	No information.
Hazardous to the ozone layer	:	No information.

13. Disposal considerations

Ecology - waste materials	:	Dispose of contents/container under national government /prefectural and city governments /cities, towns and villages regulations. Dispose of contents/container in accordance with licensed collector's sorting instructions.
Contaminated container and packagingDisposal	:	Assure disposal complies with applicable regulations. Dispose of contents/container in accordance with licensed collector's sorting instructions. Empty the packaging completely prior to disposal.

14. Transport information

International Regulations

UN-No. (ADR)	:	1866
Class (ADR)	:	3
Proper Shipping Name (ADR)	:	RESIN SOLUTION flammable
Packing group (UN)	:	III

Domestic regulations

Precautions for transport	:	Based on relevant regulations in section 15, transport this product.

Other information

ERG No	:	128
	:	Load containers without turnover, drop and friction. Take measure certainly to prevent containers from collapsing. Check if there are no leaks. Keep containers tightly colsed.

15. Regulatory information

Japanese Pollutant Release and Transfer Register Law (PRTR Law)	:	Class 1 Designated Chemical Substances (Act Art.2 para. 2, Enforcement Oder Art.1 Appended Table No.1) Styrene (30%) Methacrylic acid (1.8%)
Industrial Safety and Health Law	:	Group 2 Specified Chemical Substance, Special Organic Solvents (Ordinance on Prevention of Hazards Due to Specified Chemical Substances Art.2 Para.1, Items 2, 3-2, 3-3) Styrene Specified Chemical Substances, Special Control Substances (Ordinance on Prevention of Hazards Due to Specified Chemical Substances Art.38-3)

		Styrene Working Environment Evaluation Standards, Administrative Control Levels (Law Art.65-2, Para.1) Styrene Dangerous and Harmful Substances Subject to Indicate Their Names (Law Art.57, Enforcement Oder Art.18) Styrene Methacrylic acid Dangerous and Harmful Substances Subject to Notify Their Names (Law Art.57-2, Enforcement Oder Art.18-2) Styrene Methacrylic acid Dangerous Substances - Flammable Substance (Enforcement Order Attached Table 1 Item 4) Styrene Substances with Health Hazards Prevention Guideline (Law Art.28 Para 3, MHLW Published Guideline) Styrene
Japanese Poisonous and Deleterious Substances Control Law	:	Not applicable
Chemical Substances Control Law	:	Priority Assessment Chemical Substances (Article 2, Paragraph (5) of the Act) Styrene Methacrylic acid
Water Pollution Prevention Law	:	Designated Materials (Article 2, Paragraph 4 of the Law, Article 3-3 of the Enforcement Order) Styrene
Fire Service Law	:	Group 4 - Flammable liquids - 2nd Class petroleums - Insoluble (Law Art.2 Para.7, Attached Table 1, Group 4)
Offensive Odor Control Law	:	Specified Offensive Odor Substances (Law Art.2-1, Enforcement Order Art.1) Styrene
Air Pollution Control Law	:	Hazardous Air Pollutants (Central Environment Council Report No. 9) Styrene Methacrylic acid Volatile Organic Compounds (Law Art.2 Para.4) (MOE Official Notice to Prefectures) Styrene Volatile Organic Compounds (Law Art.2, Para 4) (Investigation Report for VOC Emission in 2002) Methacrylic acid
Law Relating to Prevention of Marine Pollution and Maritime Disasters	:	Flammable Substances (Law Art.3,(6)-2, Enforcement Order, Art.1-7, Attached Table No.1-4) Styrene Noxious Liquid Substances - Category Y (Law Art.3(3), Enforcement Order, Art.1-2, Attached Table No.1 Item 2) Styrene Methacrylic acid
Ship Safety Act	:	Flammable liquids
Civil Aeronautics Law	:	Flammable liquids
Port Regulation Law	:	Flammable liquids
Law for the Control of Export, Import and Others of Specified Hazardous Wastes and Other Wastes (Basel Convention)	:	Hazardous Substaces Containing in Waste (Act Cat.2 para (1) Item (I) (a), 3 Ministry Notification No.2 of 1993) Styrene Methacrylic acid
Labor Standards Act	:	Chemical Substances Causing Occupational Illnesses (Act Art.75, Para.2, Ordinance Attached Table 1-2, Item 4-1,MHLW Nortification No.36 of 1978 Styrene

16. Other information

Name	TSCA	EC No	IECSC
Vinylester resin	Listed	Not applicable	Listed
Styrene	Listed	202-851-5	Listed
Methacrylic acid	Listed	201-204-4	Listed
Polymerization inhibitor	Listed	Listed	Listed

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The statements, contents, figures and other physical and chemical properties are not guaranteed. Hazard assessment, which has been prepared on the basis of documents and other information currently available data, it does not cover all the documents were not so, please use caution when handling.

This SDS is translation of a Japanese version. (JIS Z 7253-2012)

When using this product outside Japan, it must be handled in accordance with applied laws and regulations in each country or territory.