

Safety Data Sheet



SHOWA DENKO K.K.

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

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Revision date:

SECTION 1: Identification

Product Identifier

Product name: RIPOXY™ R-806 EX

1.1 Recommended use of the chemical and restrictions on use:

Recommended use: Industrial use, matrix resin.

Restrictions on use: Any use other than the recommended use.

1.2 Supplier's details:

Company Name: SHOWA DENKO K.K.

Address: Functional Polymers Department,
Functional Chemicals Division,
13-9, Shiba Daimon 1-Chome,
Minato-Ku, Tokyo 105-8518, JAPAN

Telephone number: +81-3-5403-5600

Fax number: +81-3-5403-5720

1.3 Emergency telephone

number: +81-791-67-1111 (available at holiday and night)

1.4 SDS No.

FPPV-61690 (UN)

SECTION 2: Hazard identification

This mixture is classified as "Hazardous" according to GHS.

2.1 Classification of the substance or mixture

2.1.1 Classification according to the Globally Harmonized System of Classification and Labelling of Chemicals (GHS):

Flammable Liquids Category 3

Acute toxicity (inhalation, vapour) Category 4

Skin Irritant Category 2

Eye Irritant Category 2

Germ Cell Mutagen Category 2

Reproductive Toxin Category 1B

Specific Target Organ Toxicity – Single Exposure Category 3 (respiratory tract irritation) (Oral)

Specific Target Organ Toxicity – Single Exposure Category 1 (central nervous system) (Oral)

Specific Target Organ Toxicity – Repeated Exposure Category 1 (respiratory organ, liver, nervous system, blood) (Oral)

Specific Target Organ Toxicity – Repeated Exposure Category 2 (adrenal gland, kidney) (Oral)

Aquatic hazard (acute) Category 2

2.2 Label elements:

Product Name: RIPOXY™ R-802 EX

Signal word: Danger

Pictograms:



Hazard statements:	<p>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. H360: May damage fertility or the unborn child. H370: Causes damage to organs (central nervous system) H372: Causes damage to organs (respiratory organ, liver, nervous system, blood, adrenal gland, kidney) through prolonged or repeated exposure H373: May cause damage to organs (adrenal gland, kidney) through prolonged or repeated exposure H401: Toxic to aquatic life.</p>
Precautionary statements:	
Prevention:	<p>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 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.</p>
Response:	<p>P302 + P352: IF ON SKIN: Wash with plenty of soap and water. P304 + P340: IF INHALED: Remove victim 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 + P313: IF exposed or concerned: Get medical advice/attention. P312: Call a POISON CENTER or doctor/physician if you feel unwell. P314: Get medical advice/attention if you feel unwell. P332 + P313: If skin irritation occurs: Get medical advice/attention. P337 + P313: If eye irritation persists: Get medical advice/attention. P362 + P364: Take off contaminated clothing and wash before reuse. P370 + P378: In case of fire: Use powder chemical, carbon dioxide, alcohol-resistant foam, dry sand, water spray for extinction.</p>
Storage:	<p>P403 + P233: Store in well-ventilated place. Keep container tightly closed P403 + P235: Store in a well-ventilated place. Keep cool. P405: Store locked up</p>
Disposal:	<p>P501: Dispose of contents/ container in accordance with local/regional/national/international regulations.</p>
2.3 Other hazards	None

SECTION 3: Composition/information on ingredients

3.1 Substances:

Not applicable.

3.2 Mixtures:

Vinyl ester resin

Information on ingredients:

CAS Number	Name	Weight % Content
Confidential	Bisphenol-based vinyl ester	51 - 55%
100-42-5	Styrene	43 – 47%
79-41-4	Methacrylic acid	< 2%

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

Section 4: FIRST-AID MEASURES**4.1 Description of first aid measures**

Ingestion:	Rinse mouth. Do NOT induce vomiting. Call a POISON CENTER or doctor/physician if you feel unwell.
Skin contact:	If on skin (or hair): Take off immediately all contaminated clothing. Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention
Eye contact:	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
Inhalation:	If inhaled: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
First Aider Protection:	Pay attention to fire. Wear protective glasses, oil-resistant protective gloves and such protective equipment to prevent exposure of eye and skin. Wear respiratory protection to prevent inhalation of vapour.

4.2 Most important symptoms and effects, both acute and delayed

General advice:	Show this safety data sheet to medical personnel. Causes symptoms of eye/skin redness, dizziness, headache, nausea, exhaustion, lowered level of consciousness, asthma and pulmonary edema. Symptoms related to asthma and pulmonary edema may appear later in many cases. Therefore, keep at rest, otherwise the symptoms may deteriorate. Prolonged or repeat exposure may cause damage to the adrenal glands, kidney, liver, central nervous system, respiratory organs and blood.
Ingestion:	No data available.
Skin contact:	Causes skin irritation.
Eye contact:	Causes serious eye irritation.
Inhalation	May cause respiratory irritation.

4.3 Indication of immediate medical attention and special treatment needed, if necessary.

Keep the victim at rest. Medical monitoring is essential. Treatment should be based on judgment of the doctor in response to symptoms of the patient

SECTION 5: Fire-fighting measures

5.1 Extinguishing media

Suitable Extinguishing Media: Use powder chemical, carbon dioxide, alcohol-resistant foam, dry sand.

Unsuitable Extinguishing Media: Water jet.

5.2 Specific hazard arising from the substance or mixture

Heat may induce explosion of the container. Irritating toxic gas may be generated by combustion.

5.3 Special protective actions for fire-fighters

- Wear self-contained breathing apparatus for fire-fighting if necessary.
- Use powder chemical, carbon dioxide, alcohol-resistant foam, dry sand and such for the fire in its early stage.
- For a large fire, it is effective to shut off air using alcohol-resistant foam.
- For fire in the vicinity, sprinkle water to cool down the neighbouring facilities. Remove movable containers to a safe place immediately.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency measures

For non-emergency personnel:

- Immediately establish a suitable distance in all directions as leak area.
- Only authorised personnel should enter the leak area, utilising appropriate personal protective equipment.
- Approach from upwind.
- Ensure adequate ventilation.
- Prevent further leakage or spillage if safe to do so.
- For details of protective equipment, see Section 8.

For emergency responders:

- Ensure adequate ventilation.
- Wear positive pressure self-breathing apparatus.
- For details of protective equipment, see Section 8.

6.2 Environmental precautions

- Do not discharge onto the ground or into water courses.

6.3 Methods and material for containment and cleaning up

For containment:

- Wipe off residual spill with dry sand, saw dust or waste cloth and recover in a sealable container.
- Stop leakage if safe to do so.
- In case of large leakage, prevent the flow by surrounding the leakage with soil and recover in a sealable container.
- Rapidly remove all sources of ignition (ban of smoking, sparks and flame nearby).
- Prevent inflow into the drain, underground, or closed place.

For cleaning up:

Collect in a container which can be tightly closed and sealed (see section 13).

Other information:

After a fire, ventilate and clean the rooms before re-entry.

6.4 Reference to other sections

For personal protection, see Section 8.

For disposal of waste from clean-up operations, see Section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

- Do not handle until all safety precautions have been read and understood.

- Do not eat, drink and smoke in work areas.
- Wash hands thoroughly after handling.
- Wear protective gloves/ protective clothing/eye protection/face protection. See Section 8.
- Take off contaminated clothing and wash before reuse.
- Avoid heat, flames and other sources of ignition. Use only non-sparking tools.
- Take precautionary measures against static discharge.
- Ground/bond container and receiving equipment.
- Use explosion-proof electrical/ventilating/lighting/equipment.
- Do not breathe mist/vapours/spray.
- Use only outdoors or in a well-ventilated area.
- Avoid release to the environment. Do not allow to enter drains, sewers or watercourses.

7.2 Conditions for safe storage, including any incompatibilities

- Store in closed original container. Keep container tightly closed.
- Store in a well-ventilated place. Keep cool.
- Store locked up.
- Keep away from heat, sparks and open flame.
- Protect from light, including direct sunlight.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

8.1.1 Occupational exposure limits for the components of the product (where available):

Substance	Styrene			
	CAS No. 100-42-5			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m ³	ppm	mg/m ³
Australia	50	213	100	426
Austria	20	85	80	340
Belgium	50	216	100	432
Canada - Ontario	35	-	100	-
Canada - Québec	50	213	100	426
Denmark	25	105	25	105
France	50	215	-	-
Germany (AGS)	20	86	40 (1)	172 (1)
Germany (DFG)	20	86	40	172
Hungary	-	50	-	50
Ireland	20	85	40 (1)	170 (1)
Japan	50	-	-	-
Latvia	-	10	-	30 (1)
New Zealand	50	213	100	426
Poland	-	50	-	200
Singapore	50	213	100	426
South Korea	20	85	40	170
Spain	20	86	40	172
Sweden	10	43	20 (1)	86 (1)
Switzerland	20	85	40	170
USA - NIOSH	50	215	100 (1)	425 (1)
USA - OSHA	100	-	200	-
United Kingdom	100	430	250	1080

Germany (AGS): (1) 15 minutes average value

Germany (DFG): STV 15 minutes average value

Ireland: (1) 15 minutes reference period

Latvia: (1) 15 minutes average value

Sweden: (1) Short term value, 15 minutes average value

USA – NIOSH: (1) 15 minutes average value

Substance	Methacrylic acid			
	CAS No. 79-41-4			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m ³	ppm	mg/m ³
Australia	20	70	-	-
Austria	20	70	-	-
Belgium	20	71	-	-
Canada - Ontario	20	-	-	-
Canada - Québec	20	70	-	-
Denmark	20	70	40	140
Finland	20	71	-	-
France	20	70	-	-
Germany (DFG)	5	18	10	36
Ireland	20	70	40 (1)	140 (1)
Latvia	-	10	-	-
New Zealand	20	70	-	-
People's Republic of China	-	3	-	-
Singapore	20	70	-	-
South Korea	20	70	-	-
Spain	20	72	-	-
Sweden	20	70	30 (1)	100 (1)
Switzerland	5	18	10	36
USA - NIOSH	20	70	-	-
United Kingdom	20	72	40	143

Germany (DFG): STV 15 minutes average value.

Ireland (1): 15 minutes reference period.

Sweden (1): Short-term value, 15 minutes average value.

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of work day.

8.2.2 Individual protection measures, such as personal protective equipment



Respiratory protection:

In case of insufficient ventilation, wear suitable respiratory equipment – gas mask for organic gas, air-supplied mask, self-contained breathing apparatus. Use self-contained breathing apparatus in all circumstances when the mask and cartridge do not give adequate protection.



Eye protection:

Use only respiratory protection that conforms to international/ national standards.

Protective glasses with side shields. Use only eye protection that conforms to international/national standards.



Skin protection:

Oil-resistant protective gloves. Use only gloves that conforms to international/national standards. Protective clothing (anti-static) and protective shoes (anti-static) are recommended.

Hygiene measures:

When using do not eat or drink.

Smoking is strictly prohibited.

Wash hands well after use.

Handle in accordance with good industrial hygiene and safety practice.

8.2.3 Environmental exposure controls

Do not allow to enter drains, sewers or watercourses.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance:	Pale yellow viscous liquid
Odour:	Aromatic hydrocarbon odour
Odour threshold:	No data available
pH:	Not applicable
Melting point/freezing point:	-30.6°C (styrene)
Boiling point:	145°C (styrene)
Initial boiling point and boiling range:	Unknown
Flash point:	32°C (Seta closed cup method)
Evaporation rate:	No data available
Flammability (solid, gas):	Not applicable
Upper/lower flammability or explosive limits:	Explosive limits: 0.7 – 6.8 vol% (styrene)
Vapour pressure:	0.7 kPa, 20 °C (styrene)
Vapour density:	3.59 (air=1, 20°C) (styrene)
Specific gravity:	1.0 – 1.2 (25°C)
Solubility:	Insoluble in water, soluble in acetone and such organic solvent.
Partition coefficient (n-octanol/water):	Log Pow = 2.95 (styrene)
Auto-ignition temperature:	490°C (styrene)
Decomposition temperature:	No data available
Viscosity:	0.4 – 0.6 Pa.s (25°C)
Explosive properties:	No data available
Oxidising properties:	No data available
Surface tension:	No data available

9.2 Other information

No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

Flammable mixture.
Polymerization is caused by heat, light, and peroxides.

10.2 Chemical stability

Stable when stored in a tightly closed container in a cool dark place.

10.3 Possibility of hazardous reactions

No hazardous decomposition products when stored and handled correctly.
Flammable mixture.
Polymerization reaction is caused by heat, light and such, and generates heat.

10.4 Conditions to Avoid

Protect container from direct sunlight.
Avoid peracids.
Avoid high temperatures, heat, flames and sparks and discharge of static electricity.

10.5 Incompatible materials

Avoid using materials, which are permeable to the component or contact with the materials, which are soluble in the component.
When peroxide is mixed for hardening, do not add excessively.

10.6 Hazardous decomposition products

Carbon monoxide and carbon dioxide are generated by thermal decomposition.

SECTION 11: Toxicological information**11.1 Information on toxicological effects**

No data are available for the product therefore available data for the components of the product are provided below.

Acute toxicity:	Product is classified as Acute Toxicity Category 4 (Inhalation, vapour).
Styrene component:	LD50 ca. 5000 mg/kg bw (oral, rat, standard acute method). LC50 ≥ 0.68 mg/L air (inhalation, male mouse). LD50 > 2000 mg/kg bw (dermal, rat, OECD Guideline 402, Acute Dermal Toxicity).
Methacrylic acid component:	LC50 > 7.1 mg/L air (inhalation, male and female rats, OECD Guideline 403 (Acute Inhalation Toxicity)).
Skin corrosion/irritation:	Product is classified as Skin Irritant Category 2.
Styrene component:	Classified as Skin Irritant Category 2.
Serious eye damage/ irritation:	Product is classified as Eye Irritant Category 2.
Styrene component:	Moderate conjunctival irritation (inflammation and slight swelling of the eyelids) and slight, transient corneal injury (perceptible superficial necrosis involving <50% of the lens) were reported in rabbits.
Respiratory or skin sensitisation:	
Respiratory:	Product is not classified.
Skin:	Product is not classified.
Methacrylic acid component:	Not a dermal sensitizer in albino guinea pigs. Methacrylic Acid did appear to be a skin irritant at concentrations of 15% and above. (OECD Guideline 406 (Skin Sensitisation)).
Styrene component:	Not sensitizing (guinea pig maximisation test).
Germ cell mutagenicity:	Product is classified as Germ Cell Mutagen Category 2.
Styrene component:	Negative result (OECD Guideline 474, Mammalian Erythrocyte Micronucleus Test) Positive results (sister chromatid exchange assay, in vitro mammalian chromosome aberration test, Ames test).
Methacrylic acid component:	Negative for mutagenicity in Salmonella tester strain. (OECD Guideline 471 (Bacterial Reverse Mutation Assay))
Carcinogenicity:	Product is not classified.
Styrene component	NOAEC (carcinogenicity) ≥ 4.34 mg/L air (nominal) (inhalation, rat, OECD Guideline 453, Combined Chronic Toxicity/Carcinogenicity Studies). There was no evidence of treatment-related increases of any tumor type in males or females or in the number of tumor-bearing rats in the exposed groups compared to controls.
Methacrylic acid component:	NOAEC ≥ 4.1 mg/L air (nominal) (inhalation, male/female mice and rats). Equivalent or similar to OECD Guideline 451 (Carcinogenicity Studies). Not considered to be carcinogenic. There were no significant differences between exposed and control groups.
Reproductive toxicity:	Product is classified as Reproductive Toxin Category 1B.
Styrene component:	LOAEL (P, F1) = 250 ppm (oral, rat, three-generation study). A statistically significant reduced pup survival in the high dose group of F0 parents 21 days after birth and in F1

Methacrylic acid component:	parents from day 1 to day 14. In the F2 generation no such effects were observed. 50 mg/kg bw/day (nominal) (rats male/female, oral; gavage, OECD Guideline 416 (Two-Generation Reproduction Toxicity Study)). There was no evidence to suggest any adverse effects.
STOT- single exposure:	Product is classified as STOT - Single Exposure Category 1 (central nervous system) and Category 3 (respiratory tract irritation). (Oral)
STOT- repeated exposure:	Product is classified as STOT - Repeated Exposure Category 1 (respiratory organ, nervous system, blood, liver) and Category 2 (adrenal gland, kidney). (Oral)
Styrene component:	NOAEL = 1000 mg/kg bw/day (oral, male/female rat, 78 to 103 weeks). Basis for effect level: mortality; histopathology (hepatic necrosis).
Aspiration hazard:	Product is not classified.

11.2 Information on the likely routes of exposure

Potential Health Effects

Inhalation

Acute (Immediate): Vapours cause irritation of the respiratory tract. Dizziness, headache, nausea, exhaustion, lowered level of consciousness, asthma and pulmonary edema.

Chronic (Delayed): Symptoms related to asthma and pulmonary edema may appear later in many cases.

Skin

Acute (Immediate): Causes skin irritation.

Chronic (Delayed): Causes skin irritation.

Eye

Acute (Immediate): Causes serious eye irritation.

Chronic (Delayed): Causes serious eye irritation.

Ingestion

Acute (Immediate): No data available. Initial exposure may cause respiratory tract irritation or damage to the central nervous system

Chronic (Delayed): No data available. Prolonged or repeat exposure may cause damage to the adrenal glands, kidney, liver, central nervous system, respiratory organs and blood.

11.3 Symptoms related to the physical, chemical and toxicological characteristics

Causes symptoms of eye/skin redness, dizziness, headache, nausea, exhaustion, lowered level of consciousness, asthma and pulmonary edema. Symptoms related to asthma and pulmonary edema may appear later in many cases. Therefore, keep at rest, otherwise the symptoms may worsen.

SECTION 12: Ecological information

No data are available for the product therefore available data for the components of the product are provided below.

12.1 Toxicity

Product is classified as Acute Aquatic Toxicity Category 2, and is not classified as Chronic Aquatic Toxicity.

Styrene component:	96 h LC50 (mortality) = 4.02 mg/L (<i>Pimephales promelas</i>). 96 h LC50 (mortality) = 9.5 mg/L (<i>Hyalella azteca</i>). 96 h LC50 (growth rate) = 6.3 mg/L (<i>Selenastrum Capricornutum</i>).
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Methacrylic acid component:	21 d NOEC (reproduction) = 1.01 mg/L (<i>Daphnia magna</i>). 96h LC50 (mortality) = 85 mg/L (<i>Oncorhynchus mykiss</i>) 24 h NOEC (mobility) = 100 mg/L (<i>Daphnia magna</i>) 72h EC50 (groth rate) = 45 mg/L (<i>Pseudokirchnerella subcapitata</i>)
12.2 Persistence and degradability	
Styrene component:	Inherently biodegradable: 100% after 14 days (modified MITI test (II), OECD Guideline 302C).
Methacrylic acid component:	Attained 86 % biodegradation within 28 days. OECD 301 D (Readily Biodegradability: Closed Bottle Test)
12.3 Bioaccumulative potential	
Styrene component:	BCF = 13.5 (<i>Carassius auratus</i>).
Methacrylic acid component:	BCF = 3
12.4. Mobility in soil	
Styrene component:	Koc = 352, log Koc = 2.55 (QSAR).
Methacrylic acid component:	Log Koc = 0.23 (measured).
12.5. Other adverse effects	
No data available.	

SECTION 13: Disposal considerations

13.1 Waste treatment methods

13.1.1 Residual wastes

In accordance with local and national regulations.

13.1.2 Contaminated containers and packaging

In accordance with local and national regulations.

13.2 Other information: None

SECTION 14: Transport information

14.1 UN Number:	1866
14.2 UN proper shipping name:	RESIN SOLUTION, flammable
14.3 Transport hazard class(es):	3
14.4 Packing group:	III
14.5 Environmental hazards:	No
14.6 Special Precautions for user:	None
14.7 Transport in bulk according to Annex II of Marpol 73/78 and the IBC Code:	Not applicable

SECTION 15: Regulatory information

This safety datasheet complies with the requirements of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) (Rev. 5, 2013).

SECTION 16: Other information

Methods of evaluation:

The mixture was classified using test data available for the neat substances with the application of relevant concentration limits, in accordance with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

References:

Disseminated REACH registration dossiers for styrene and methacrylic acid available on ECHA website. Accessed 04 June 2015.

The Globally Harmonized System of Classification and Labelling of Chemicals (GHS) (Rev. 5, 2013).

Abbreviations:

BCF: Bioaccumulation factor

Koc: Adsorption coefficient

QSAR: Quantitative structure–activity relationship

STOT – repeated exposure: Specific target organ toxicity – repeated exposure

STOT – single exposure: Specific target organ toxicity – single exposure

Training advice: Consideration should be given to the work procedures involved and the potential extent of exposure as they may determine whether a higher level of protection is required.

The information contained herein is carefully presented, based on the data we have. However, all precautions described herein are for normal handling, not for special handling. Please establish the safe usage in accordance with your handling procedures by reference to this SDS and applicable laws and guidance. In addition, the description, composition, and physical/chemical properties are typical values and not guaranteed for this product.

When using the product, it must be handled in accordance with applied laws and regulations in that country or territory.