

SEWON CHEMICAL CO., LTD. MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME	R301
MANUFACTURER	SEWON CHEMICAL CO., LTD. 169, TAEHWA-DONG, DAEDUK-GU, TAEJON, R.O.KOREA TEL: +(82) 42 623 1800 FAX: +(82) 42 623 1804
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2. Hazards identification



SPECIFIC HAZARDS : Flammable

ADVERSE HUMAN HEALTH EFFECTS :

Harmful by inhalation

Irritating to eyes and skin

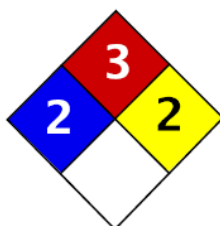
PHYSICAL AND CHEMICAL HAZARDS :

The mixture of product vapor and air could be explosive.

Strongly exothermic polymerization may be caused by : Heat

Free radical formers

Peroxides



Health	2
Fire	3
Reactivity	0
Personal Protection	H

HEALTH-2, FIRE-3, REACTIVITY-2

3. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENTS	CONTENT(%)	CAS-No.	EC-No.	Classification
Unsaturated Polyester(UPE)	60	26098-37-3	-	-
Styrene Monomer	40	100-42-5	202-851-5	Xn, R10-R20- R36/38

4. FIRST AID MEASURES

EYE CONTACT	Wash immediately (15minutes) with water, opening eyelids. If irritation continues, see an ophthalmologist.
SKIN CONTACT	Take off all contaminated clothing. Wash in soap and water and rinse with water.
INHALATION	Take person out of the contaminated area. Remove patient to fresh air. Call a doctor in case of doubt or if symptoms persist.
INGESTION	Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.
GENERAL ADVICE	Consult a physician. Show this safety data sheet to the doctor in attendance.

5. FIRE-FIGHTING MEASURES

SUITABLE	Powder, foam, carbon dioxide, sand pulverized water.
NOT SUITABLE	Use very large quantities (flooding) of water applied as a mist or spray;solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.
SPECIFIC HAZARDS	By combustion, formation of toxic products : carbon monoxide and carbon dioxide..
SPECIFIC METHODS	Cool container with sprayed water to avoid polymerization. Eliminate all sources of combustion.

PROTECTION OF FIRE-FIGHTERS	Wear individual breathing apparatus.
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6. ACCIDENTAL RELEASE MEASURES	
PERSONAL PRECAUTIONS	Avoid inhaling vapors. Wear protective equipment. Glove - Goggles - Boots. Wear self – contained breathing apparatus.
ENVIRONMENTAL PRECAUTIONS	Do not discharge in sewers. Do not allow this chemical to enter the environment. If the product contaminates lakes, rivers or sewers, inform appropriate authorities in accordance with local regulations.
METHODS FOR CLEANING UP	RECOVERY : Spread sand. Correct the product in a container pending future destruction. DISPOSAL : Burn in an approved installation for liquids. Polymerized product : discharge authorized. INCOMPATIBLE MATERIALS : Wood sawdust

7. HANDLING AND STORAGE	
HANDLING	PREVENTION OF WORKER EXPOSURE : Collect vapors at source. When using, workplace ventilation is required – NO SMOKING. PREVENTION OF FIRE AND EXPLOSION : Do not smoke when using. Take precautionary measures against static discharges.
STORAGE	STORAGE CONDITION : -SUITABLE : Keep at temperature not exceeding 30°C. Keep container tightly closed in a cool, well ventilated place. -TO AVOID : Sunlight, heat and sources of ignition(NO SMOKING) INCOMPATIBLE MATERIALS :

<p>Strong oxidizing agents. Catalysts and accelerator.</p> <p>PACKING MATERIALS :</p> <p>-.RECOMMENDED :</p> <p>Metal packing expect aluminum, copper or copper alloy.</p> <p>-.NOT SUITABLE :</p> <p>Aluminum.</p> <p>Copper or copper alloy and plastics.</p>
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8. EXPOSURE CONTENTS / PERSONAL PROTECTION		
PERSONAL PROTECTIVE EQUIPMENT		
RESPIRATORY PROTECTIVE EQUIPMENT	Do not breathe vapors. In case of insufficient ventilation, wear suitable respiratory equipment.	
HAND PROTECTION	Wear solvent-proof gloves.	
EYE PROTECTION	Wear glasses.	
SKIN AND BODY PROTECTION	Wear suitable protective clothing. Remove working clothed after work.	
SPECIFIC HYGIENE MEASURES	When using d not eat, drink or smoke.	
OCCUPATIONAL EXPOSURE LIMITS		
T W A	UPE	no data available
	Styrene	20 ppm , 85mg/m ³
S T E L	UPE	no data available
	Styrene	40 ppm, 170mg/m ³
CEILING	UPE	no data available
	Styrene	

9. PHYSICAL AND CHEMICAL PROPERTIES			
APPEARANCE			
Form	Liquid	Colour	Transparent
SAFETY DATA			

P	H	no data available	Water solubility	insoluble	
Boiling point	UPE	no data available	Melting point	UPE	no data available
	Styrene	146 °C		Styrene	-31 °C
Flash point	UPE	no data available	Ignition temperature	UPE	no data available
	Styrene	31 °C		Styrene	490 °C
Explosion limit	UPE	no data available	Vapor pressure	UPE	no data available
	Styrene	Upper 6.8 % Lower 0.9 %		Styrene	16,5 hPa at 37,7 °C 5,7 hPa at 15,0 °C
	TiO ₂	no data available		TiO ₂	no data available
Density	1.08~1.12 (25°C/25°C)		Vapor density	UPE	no data available
				Styrene	3.6 (air=1)
Viscosity	420 ~ 460 cps		molecular weight		Mn=3,000 ↓

10. STABILITY AND REACTIVITY

Storage stability	Stable under normal storage condition	
Conditions to avoid	May polymerize on exposure to light. Heat, flames and sparks.	
Materials to avoid	Oxidizing agents, Copper	
Hazardous Decomposition products	UPE	no data available
	Styrene	By thermal composition, formation of CO, CO ₂ .

11. TOXICOLOGICAL INFORMATION

Acute Toxicity - General Material Information

INHALATION	UPE	no data available
	Styrene	causing headache, dizziness, nausea, loss of coordination, unconsciousness, and in extreme conditions coma and possibly death.
ORAL	UPE	no data available
	Styrene	no data available
SKIN IRRITATION	UPE	no data available
	Styrene	Moderate skin irritant.
EYE IRRITATION	UPE	no data available

	Styrene	Moderate eye irritant.
Acute Toxicity - LD50/LC50		
Oral	UPE	no data available
	Styrene	LD50 2650mg/kg Rat
Inhalation	UPE	no data available
	Styrene	LC50 Rat: 11.8 mg/L/4H;
Chronic Toxicity - General Material Information		
<p><Styrene></p> <p>Prolonged and repeated high exposure may cause impairment of lung, kidney, liver, and brain functions and possibly death. Chronic exposure may result in neurological defects known as "styrene sickness". Prolonged skin contact may produce irritation and defatting dermatitis. Styrene has been classified by IARC as Group 2B (possibly carcinogenic to humans) based on "inadequate evidence" in humans, "limited evidence" in animals, and "other relevant data". Styrene has been shown to be mutagenic in several "in vitro" assays.</p>		
Chronic Toxicity		
Carcinogenic Effects	UPE	no data available
	Styrene	IARC – 2B ACGIH – A4 NTP, OSHA, WISHA- no data available
Mutagenic Effects	UPE	no data available
	Styrene	Styrene has been shown to be mutagenic in several "in vitro" assays.

12. ECOLOGICAL INFORMATION		
AQUATIC/ TERRESTRIAL TOXICITY	UPE	no data available
	Styrene	96 Hr LC50 Pimephales promelas: 4.02 mg/L 96 Hr LC50 Lepomis macrochirus: 25.05 mg/L 96 Hr EC50 Selenastrum capricornutum: 0.72 mg/L
PERISTENCE/ DEGRADABILITY	UPE	no data available
	Styrene	The BOD for styrene is 1.29 (5 days)g/g 2.45 (20 days)g/g
BIO	UPE	no data available

ACCUMULATION	Styrene	Styrene will partition from water to organisms, depositing in fatty tissues. Elimination is rapid and not likely to bioconcentrate through the food chain.
ENVIRONMENTAL FATE/MOBILITY	UPE	no data available
	Styrene	The atmospheric half-life for styrene vapor is estimated between 0.5 and 17 hours. Styrene is primarily removed by photochemical reactions in air and evaporation in water. The half-life in moving water has been estimated at approximately 6 hours and in ponds and lakes it ranges from 3 to 13 days. In soils with high organic content, styrene moves slowly. It will volatilize from surface soil at a much slower rate than from water.

13. DISPOSAL CONSIDERATIONS

MEASURES FOR DISPOSAL	Incineration in approved installation.
NEUTRALIZING OR DESTROYING PROCEDURE OF PRODUCT	Incineration for liquid resins. Curing then incineration for solid resins.
DESTROYING PROCEDURE OF CONTAMINATED PACKING	Cleaned packaging may be recycled.

14. TRANSPORT INFORMATION

SEA(IMDG)			
PROPER SHIPPING NAME	RESIN SOLUTION	UN NO.	1866
HAZARD CLASS	3	PACKAGING GROUP	3
LABEL	3	EMS	F-E, S-E
AIR(ICAO / IATA)			
UN NO.	1866	LABEL	3
CLASS	3	PACKAGING GROUP	3
LAND(RID/ADR, RTMDR/RTMDF)			
PROPER SHIPPING	RESIN SOLUTION	UN NO.	1866

NAME			
CLASS	3/31 DEGREE BY CELSIUS	PACKAGING GROUP	3
LABEL	3	SUBSTANCE IDENTIFICATION NO.	1866

15. REGULATORY INFORMATION	
Federal and State Regulations	
UPE	no data available
Styrene	Pennsylvania RTK: Styrene (monomer) Florida: Styrene (monomer) Minnesota: Styrene (monomer) Massachusetts RTK: Styrene (monomer) New Jersey: Styrene (monomer) TSCA 8(b) inventory: Styrene (monomer) SARA 313 toxic chemical notification and release reporting: Styrene (monomer) CERCLA: Hazardous substances.: Styrene (monomer)
Other Regulations	
UPE	no data available
Styrene	OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).
Other Classifications	
UPE	no data available
Styrene	WHMIS (Canada): CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC). DSCL (EEC): R10- Flammable. R38- Irritating to skin. R41- Risk of serious damage to eyes. R45- May cause cancer.

16. OTHER INFORMATION
<p>This information is given in good faith and based on our current knowledge of the product. We make no guarantee that the health and safety precautions we have suggested will be adequate for all individuals and/or situations involving its handling and use. This information only describes safety measures and no liability may arise from the use of</p>

application of the product described herein.

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		Last Updated:	2023.03.31