

# SEWON CHEMICAL CO., LTD.

## MATERIAL SAFETY DATA SHEET

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

<b>PRODUCT NAME</b>	<b>POLYSTAR UG270</b>
<b>MANUFACTURER</b>	SEWON CHEMICAL CO., LTD. 169, TAEHWA-DONG, DAEDUK-GU, TAEJON, R.O.KOREA TEL: +(82) 42 623 1800      FAX: +(82) 42 623 1804

### 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-2

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENTS	CONTENT(%)	CAS-No.	EC-No.	Classification
Unsaturated Polyester(UPE)	50 ~ 60	-	-	-
Styrene Monomer	30 ~ 40	100-42-5	202-851-5	Xn, R10-R20-R36/38
TiO <sub>2</sub>	5 ~ 10	13463-67-7		
PIGMENT	10 ~ 15	-	-	-

#### 4. FIRST AID MEASURES

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

#### 5. FIRE-FIGHTING MEASURES

<b>SUITABLE</b>	Powder, foam, carbon dioxide, sand pulverized water.
<b>NOT SUITABLE</b>	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.
<b>SPECIFIC HAZARDS</b>	By combustion, formation of toxic products : carbon monoxide and carbon dioxide..
<b>SPECIFIC METHODS</b>	Cool container with sprayed water to avoid polymerization. Eliminate all sources of combustion.
<b>PROTECTION OF FIRE-FIGHTERS</b>	Wear individual breathing apparatus.

#### 6. ACCIDENTAL RELEASE MEASURES

<b>PERSONAL PRECAUTIONS</b>	Avoid inhaling vapors. Wear protective equipment. Glove - Goggles - Boots. Wear self – contained breathing apparatus.
<b>ENVIRONMENTAL PRECAUTIONS</b>	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.
<b>METHODS FOR CLEANING UP</b>	<b>RECOVERY :</b> Spread sand. Correct the product in a container pending future destruction. <b>DISPOSAL :</b> Burn in an approved installation for liquids. Polymerized product : discharge authorized. <b>INCOMPATIBLE MATERIALS :</b> Wood sawdust

<b>7. HANDLING AND STORAGE</b>	
<b>HANDLING</b>	<b>PREVENTION OF WORKER EXPOSURE :</b> Collect vapors at source. When using, workplace ventilation is required – NO SMOKING. <b>PREVENTION OF FIRE AND EXPLOSION :</b> Do not smoke when using. Take precautionary measures against static discharges.
<b>STORAGE</b>	<b>STORAGE CONDITION :</b> <b>-.SUITABLE :</b> Keep at temperature not exceeding 30°C. Keep container tightly closed in a cool, well ventilated place. <b>-.TO AVOID :</b> Sunlight, heat and sources of ignition(NO SMOKING) <b>INCOMPATIBLE MATERIALS :</b> Strong oxidizing agents. Catalysts and accelerator. <b>PACKING MATERIALS :</b> <b>-.RECOMMENDED :</b> Metal packing expect aluminum, copper or copper alloy.

	<p><b>-.NOT SUITABLE :</b>  Aluminum.  Copper or copper alloy and plastics.</p>
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## 8. EXPOSURE CONTENTS / PERSONAL PROTECTION

PERSONAL PROTECTIVE EQUIPMENT	
<b>RESPIRATORY PROTECTIVE EQUIPMENT</b>	Do not breathe vapors. In case of insufficient ventilation, wear suitable respiratory equipment.
<b>HAND PROTECTION</b>	Wear solvent-proof gloves.
<b>EYE PROTECTION</b>	Wear glasses.
<b>SKIN AND BODY PROTECTION</b>	Wear suitable protective clothing. Remove working clothed after work.
<b>SPECIFIC HYGIENE MEASURES</b>	When using d not eat, drink or smoke.

OCCUPATIONAL EXPOSURE LIMITS		
<b>T W A</b>	UPE	no data available
	Styrene	20 ppm , 85mg/m <sup>3</sup>
	TiO <sub>2</sub>	1085 mg/m <sup>3</sup>
<b>S T E L</b>	UPE	no data available
	Styrene	40 ppm, 170mg/m <sup>3</sup>
	TiO <sub>2</sub>	no data available
<b>CEILING</b>	UPE	no data available
	Styrene	
	TiO <sub>2</sub>	1085 mg/m <sup>3</sup>

## 9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE					
Form	Liquid	Colour	-		
SAFETY DATA					
P	H	no data available	Water solubility	insoluble	
Boiling	UPE	no data available	Melting	UPE	no data available

point	Styrene	146 °C	point	Styrene	-31 °C
	TiO <sub>2</sub>	2500 ~ 3000 °C		TiO <sub>2</sub>	1855 °C
Flash point	UPE	no data available	Ignition temperature	UPE	no data available
	Styrene	31 °C		Styrene	490 °C
	TiO <sub>2</sub>	no data available		TiO <sub>2</sub>	no data available
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 <sub>2</sub>	no data available		TiO <sub>2</sub>	no data available
Density		1.30 (25°C/25°C)	Vapor density	UPE	no data available
Viscosity		1500 ~ 5000 cps		Styrene	3.6 (air=1)
			molecular weight	About 5,000	

## 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 <sub>2</sub> .
	TiO <sub>2</sub>	By thermal composition, formation of TiO <sub>2</sub> .

## 11. TOXICOLOGICAL INFORMATION

<b>Acute Toxicity - General Material Information</b>		
<b>INHALATION</b>	UPE, TiO <sub>2</sub>	no data available
	Styrene	causing headache, dizziness, nausea, loss of coordination, unconsciousness, and in extreme conditions coma and possibly death.
<b>ORAL</b>	UPE, TiO <sub>2</sub>	no data available
	Styrene	no data available
<b>SKIN IRRITATION</b>	UPE	no data available
	Styrene, TiO <sub>2</sub>	Moderate skin irritant.
<b>EYE IRRITATION</b>	UPE	no data available

	Styrene, TiO <sub>2</sub>	Moderate eye irritant.
<b>Acute Toxicity - LD50/LC50</b>		
Oral	UPE	no data available
	Styrene	LD50 2650mg/kg Rat
	TiO <sub>2</sub>	LD50>10000mg/kg Rat
Inhalation	UPE	no data available
	Styrene	LC50 Rat: 11.8 mg/L/4H;
	TiO <sub>2</sub>	LC50>6.82mg/l 4hr-Rat
<b>Chronic Toxicity - General Material Information</b>		
<p>&lt;Styrene&gt;</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>		
<b>Chronic Toxicity</b>		
<b>Carcinogenic Effects</b>	UPE	no data available
	Styrene, TiO <sub>2</sub>	IARC – 2B ACGIH – A4 NTP,OSHA,WISHA- no data available
	UPE, TiO <sub>2</sub>	no data available
<b>Mutagenic Effects</b>	UPE, TiO <sub>2</sub>	no data available
	Styrene	Styrene has been shown to be mutagenic in several "in vitro" assays.

## 12. ECOLOGICAL INFORMATION

<b>AQUATIC/ TERRESTRIAL TOXICITY</b>	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
TiO <sub>2</sub>	48 Hr EC50 Lepomis macrochirus:>1000mg/L	

<b>PERISISTENCE/ DEGRADABILITY</b>	UPE, TiO <sub>2</sub>	no data available
	Styrene	The BOD for styrene is 1.29 (5 days)g/g 2.45 (20 days)g/g
<b>BIO ACCUMULATION</b>	UPE, TiO <sub>2</sub>	no data available
	Styrene	Styrene will partition from water to organisms, depositing in fatty tissues. Elimination is rapid and not likely to bioconcentrate through the food chain.
<b>ENVIRONMENTAL FATE/MOBILITY</b>	UPE, TiO <sub>2</sub>	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.

<b>13. DISPOSAL CONSIDERATIONS</b>	
<b>MEASURES FR DISPOSAL</b>	Incineration in approved installation.
<b>NEUTRALIZING OR DESTROYING PROCEDURE OF PRODUCT</b>	Incineration for liquid resins. Curing then incineration for solid resins.
<b>DESTROYING PROCEDURE OF CONTAMINATED PACKING</b>	Cleaned packaging may be recycled.

<b>14. TRANSPORT INFORMATION</b>			
<b>SEA(IMDG)</b>			
<b>PROPER SHIPPING NAME</b>	RESIN SOLUTION	<b>UN NO.</b>	1866
<b>HAZARD CLASS</b>	3	<b>PACKAGING GROUP</b>	3
<b>LABEL</b>	3	<b>EMS NO</b>	F-E S-E
<b>AIR(ICAO / IATA)</b>			
<b>UN NO.</b>	1866	<b>LABEL</b>	3

<b>CLASS</b>	3	<b>PACKAGING GROUP</b>	3
<b>LAND(RID/ADR, RTMDR/RTMDF)</b>			
<b>PROPER SHIPPING NAME</b>	RESIN SOLUTION	<b>UN NO.</b>	1866
<b>CLASS</b>	3/31 DEGREE BY CELSIUS	<b>PACKAGING GROUP</b>	3
<b>LABEL</b>	3	<b>SUBSTANCE IDENTIFICATION NO.</b>	1866

## 15. REGULATORY INFORMATION

### Federal and State Regulations

UPE	no data available
Styrene	<p>Pennsylvania RTK: Styrene (monomer)</p> <p>Florida: Styrene (monomer)</p> <p>Minnesota: Styrene (monomer)</p> <p>Massachusetts RTK: Styrene (monomer)</p> <p>New Jersey: Styrene (monomer)</p> <p>TSCA 8(b) inventory: Styrene (monomer)</p> <p>SARA 313 toxic chemical notification and release reporting: Styrene (monomer)</p> <p>CERCLA: Hazardous substances.: Styrene (monomer)</p>

### 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	<p><b>WHMIS (Canada):</b></p> <p>CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F).</p> <p>CLASS D-2A: Material causing other toxic effects (VERY TOXIC).</p> <p><b>DSCL (EEC):</b></p>



	R10- Flammable. R38- Irritating to skin. R41- Risk of serious damage to eyes. R45- May cause cancer.
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## 16. OTHER INFORMATION

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 application of the product described herein.

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