



# Material Safety Data Sheet (MSDS)

## 1 Identification of the Substance/Preparation and of the Company/Undertaking

**Product Name:** Orthophthalic Polyester Resin ( LRPOL022-O )  
**Manufacturer / Supplier:** LAFFAN RESIN FACTORY  
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## Composition, and Information on Ingredients

**Substance / Preparation:** Preparation  
**Chemical Characterization:** Unsaturated Polyester resin dissolved in styrene.

Ingredient Name	CAS Number	% by weight	EC Number	Classification
Styrene	100-42-5	30 – 45	202-851-5	R10 Xn, R20 Xi R36/38
See section 16 for the full text of the R-phrases declared above				

## 2 Hazards Identification

The preparation is classified as dangerous according to Directive 1999/45/EC and its amendments.

**Classification** Harmful  
R10- Flammable  
R20- Harmful by inhalation  
R36/38- Irritating to eyes and skin.

See section 11 for more detailed information on health effects and symptoms.

## 3 First Aid Measures

<b>Inhalation</b>	Breathing aerosol and/or mist is possible when material is sprayed. Aerosol and mist may present a greater risk of injury because more material may be present in the air than from vapor alone. Breathing small amounts of this material during normal handling is not likely to cause harmful effects. Breathing large amounts may be harmful. Symptoms usually occur at air concentrations below the recommended exposure limits, if applicable (see Section 8)
<b>Ingestion</b>	Swallowing small amounts of this material during normal handling is not likely to cause harmful effects. Swallowing large amounts may be harmful. This material can get into the lungs during swallowing or vomiting. This results in lung inflammation and other lung injury.
<b>Eye Contact</b>	Check for and remove any contact lenses. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. Get medical attention.
<b>Skin Contact</b>	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention.



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<b>First Aid Measures</b>
See section 11 for more detailed information on health effects and symptoms.

## 4 Fire-Fighting Measures

<b>Extinguishing Media</b>	SMALL FIRE: Use dry chemical powder. LARGE FIRE: Use water spray or fog. Never direct a water jet into the container in order to prevent any splashing of the product, which could cause the fire to spread. Cool containers with water jet in order to prevent pressure build-up, auto-ignition or explosion.
<b>Suitable</b>	Use dry chemical, CO2, water spray (fog) or foam.
<b>Not Suitable</b>	Do not use water jet.
<b>Special Exposure Hazards</b>	Flammable liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. 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. Move containers from fire area if this can be done without risk. Use water spray to keep fire exposed containers cool.
<b>Thermal Decomposition Products</b>	Decomposition products may include the following materials: carbon oxides halogenated compounds
<b>Protection Of Fire-Fighters</b>	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

## 5 Accidental Release Measures

<b>Personal Precautions</b>	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. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).
<b>Environmental Precautions</b>	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).
<b>Methods For Cleaning Up</b>	Stop leak if without risk. Move containers from spill area. 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). Use spark proof tools and explosion-proof equipment. 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.
See Section 8 for personal protective equipment and Section 13 for waste disposal.	

## 6 Handling & Storage

<b>Handling</b>	Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not breathe the vapor or mist. Do not ingest. Avoid contact with eyes, skin and clothing. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.
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Handling & Storage	
<b>Storage</b>	Store between the following temperatures: 10 to 27°C (50 to 80.6°F). Store in accordance with local regulations. Store in a segregated and approved area. 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. Eliminate all ignition sources. Separate from oxidizing materials. 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.
<b>Packaging Materials Recommended</b>	Use original IBC, Drums and Container/Tanker.

**Note:** Store at temperatures below 25°C. Storage life decreases with increasing storage temperature. Avoid exposure to heat sources, such as direct sunlight or steam pipes. Keep containers sealed to prevent moisture pickup and monomer loss. Rotate stock. Bulk should be stored in stainless steel tanks, or in tanks lined with epoxy or phenolic coatings. Observe precautions against heat and moisture (see above). An oxygen or dry air spurge may be desirable to keep inhibitors activated.

### 7 Exposure Controls & Personal Protection

Ingredient Name	Occupational Exposure Limits
Styrene	ACGIH TLV (United States, 1/2006). Skin
	STEL: 170 mg/m <sup>3</sup> 15 minute(s)
	STEL: 40 ppm 15 minute(s)
	TWA: 85 mg/m <sup>3</sup> 8 hour(s)
	TWA: 20 ppm 8 hour(s).
Notes:	TWA=Time Weighted Average, STEL=Short Term Exposure Limit Where there is no reference to the national regulations, other limits (Europe or US) may be given.

Exposure controls	
<b>Engineering Measures</b>	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. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.
<b>Hygiene Measures</b>	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. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment	
<b>Respiratory Protection</b>	Use a properly fitted, air purifying or air fed respirator complying with an approved standard if a risk assessment indicates this is necessary. 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.
<b>Hand Protection</b>	Recommended: polyvinyl alcohol (PVA).
<b>Eye Protection</b>	Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts.
<b>Skin Protection</b>	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.



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### 8 Physical and Chemical Properties

<b>Physical State</b>	Viscous liquid [Clear.]
<b>Color</b>	Hazy, blue, pink or yellowish, green
<b>Odor</b>	Pungent
<b>Boiling Point</b>	145°C based on styrene (styrene may polymerase below its boiling point)
<b>Melting Point</b>	Not Available
<b>Specific Gravity</b>	1.06-1.12
<b>Flash Point</b>	31°C (Closed Cup)
<b>Vapor Density (Air=1)</b>	Heavier than air
<b>Evaporation Rate</b>	1 (Ethyl Ether)
<b>Explosion Limits</b>	LEL:1.1% UEL:6.1%
<b>Vapor Pressure</b>	5mmHg @ 25°C
<b>Solubility</b>	Insoluble in water
<b>Viscosity</b>	Dynamic: 400 To 600 Mpa·S (400 To 600 Cp)
	Kinematic: 3.75 To 5.75 Cm <sup>2</sup> /S (375 To 575 Cst)

### 9 Stability and Reactivity

<b>Stability</b>	Hazardous polymerization may occur under certain conditions of storage or use.
<b>Conditions To Avoid</b>	Exposure to heat, direct sunlight, UV-light, etc
<b>Materials To Avoid</b>	Reactive or incompatible with the following materials: oxidizing materials. Slightly reactive or incompatible with the following materials: acids and alkalis, peroxides, metal salts [such as aluminum chloride, Iron (III) chloride].
<b>Thermal Decomposition Products</b>	Decomposition products may include the following materials: carbon oxides, halogenated compounds

### 10 Toxicological information

Potential Acute Health Effects				
<b>Inhalation</b>	Harmful by inhalation			
<b>Ingestion</b>	Irritating to mouth, throat and stomach			
<b>Skin contact</b>	Irritating to skin			
<b>Eye contact</b>	Irritating to eyes			
<b>Acute toxicity</b>	No data available			
Ingredient name	Test	Species	Results	Exposure
Styrene	LD50	Rat	898 mg/kg	
	Intraperitoneal	Rat		
	LD50 Oral	Rat	2650 mg/kg	
	LD50 Oral	Rat	5000 mg/kg	
	LC50 Inhalation	Rat	12000 mg/m <sup>3</sup>	4 hours





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<b>Toxicological information</b>	
<b>Potential Chronic Health Effects</b>	
<b>Chronic Effects</b>	No known significant effects or critical hazards.
<b>Carcinogenicity</b>	No known significant effects or critical hazards.
<b>Fertility Effects</b>	No known significant effects or critical hazards.

<b>Overexposure Signs/Symptoms</b>	
<b>Skin Contact</b>	Adverse symptoms may include the following: Irritation, redness.
<b>Eye Contact</b>	Adverse symptoms may include the following: irritation, watering, redness.
<b>Target Organs</b>	Contains material which causes damage to the following organs: lungs, the reproductive system, liver, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea.

### 11 Ecological Information

<b>Environmental Effects</b>	Not readily biodegradable
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<b>Ecotoxicity Data Aquatic Ecotoxicity:</b> Acute Toxicity			
Ingredient Name	Species	Period	Result
Styrene	Selena strum	48 hour(s)	0.56mg/l
	Capricornus(EC50)	48 hour(s)	4.7 mg/l
	Daphnia magna (EC50)	96 hour(s)	4.02 mg/l
	Pimephales promelas (LC50)	96 hour(s)	10 mg/l
	Lepomis Macrochirus(LC50)	96 hour(s)	25.05 mg/l
	Pimephales promelas (LC50)	96 hour(s)	29 mg/l

### Other Ecological Information

<b>Persistence/Degradability</b>			
Ingredient Name	Aquatic Half-life	Photolysis	Biodegradability
Orthophthalic Polyester Resin	--	--	Not readily

<b>Bioaccumulative potential</b>			
Ingredient name	Log Pow	BCF	Potential
Styrene	2.95	13.5	Low
<b>AOX</b>	The product contains organically bound halogens and can contribute to the AOX value in wastewater.		




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### 12 Disposal Considerations

<b>Methods of disposal</b>	The generation of waste should be avoided or minimized wherever possible. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. 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. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers
<b>European waste catalogue (EWC)</b>	07 02 99
<b>Hazardous waste</b>	Yes
<b>Additional information</b>	07 02 00 wastes from the MFSU of plastics, synthetic rubber and man-made fibers

### 13 Transport Information

<b>Land: Road/Railway [ADR/RID Classification]</b>	
UN Number	UN1866
Proper Shipping Name	Resin Solution
Adr/Rid Class	3
Packing Group	III
Adr/Rid Label	
<b>Other Information</b>	
Hazard Identification Number	30
Limited Quantity	LQ7
Cefic Tremcard	30GF1-III
Remarks	Special provisions for transport 640 E

<b>Sea [IMO/IMDG Classification]</b>	
UN Number	UN1866
Proper Shipping Name	RESIN SOLUTION
IMDG Class	3
Packing group	III
IMDG Label	

### 14 Regulatory Information

Classification and labeling have been determined according to EU Directives 67/548/EEC and 1999/45/EC (including amendments) and take into account the intended product use.

<b>Product Use</b>	Industrial applications
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<b>Regulatory Information</b>	
<b>EU Regulations</b>	
<b>Hazard Symbol Or Symbols</b>	
<b>Risk Phrases</b>	R10- Flammable, R20- Harmful by inhalation
	R36/38- Irritating to eyes and skin

<b>Regulatory Information</b>	
<b>Safety Phrases</b>	S16- Keep away from sources of ignition - No smoking.
	S23- Do not breathe vapor.
	S33- Take precautionary measures against static discharges.
	S51- Use only in well-ventilated areas.
<b>Contains</b>	Styrene 202-851-5
<b>Tactile Warning Of Danger</b>	Not applicable

### 15 Other information

#### Full text of R-phrases referred to in Sections 2 and 3 [Europe]:

R10- Flammable  
R20- Harmful by inhalation  
R36/38- Irritating to eyes and skin

#### Full text of classifications referred to in Sections 2 and 3 [Europe]:

Xn – Harmful  
Xi - Irritant

**Label Code:** R100E

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### Notice to Reader

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Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

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