



# MATERIAL SAFETY DATA SHEET

Chemtrec 24-Hour Emergency Telephone  
 Domestic North America (800)424-9300  
 International (800)527-3887

*This MSDS complies with 29 CFR 1910.1200 (Hazard Communication)*

## 1. Product and Supplier Identification

**Product:** Orca Polyester Resin Solution - 051254D

**Product Use:** Used in the manufacture of thermoset plastic parts.

**Supplier:** Fiberlay Inc.  
 24 S. Idaho St  
 Seattle, Wa 98134  
 (206)782-0660

## 2. Composition

Component	% (w/w)	CAS Number
Styrene	31.0	100-42-5
Cobalt Compounds	0.1 – 1	Mixture
Alpha Methyl Styrene	1 – 5	98-83-9

## 3. Hazards Identification

**WHMIS (Canada):** B-2, D-2A, D-2B

**NFPA (USA):** 2, 3, 1, X

**HMIS (USA):** 2,3,1,X

**Protective Clothing:** Goggles, Gas Mask, Gloves

**Routes of Entry:** Eye contact, Skin contact, Inhalation, Ingestion

**Potential Acute Health Effects:**

**Eyes:** Severe eye irritant which may result in redness, burning, tearing and blurred vision.

**Skin:** Skin irritant which may result in burning sensation. Repeated or prolonged skin contact may cause dermatitis.

**Ingestion:** Ingestion may result in mouth, throat and gastrointestinal irritation, nausea, vomiting and diarrhea.

**Inhalation:** Inhalation of spray mist or liquid vapors may cause upper respiratory irritation and possible central nervous system effects including headaches, nausea, vomiting, dizziness, drowsiness, loss of coordination, impaired judgement and general weakness.

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### **Chronic Health Effects: CARCINOGENIC EFFECTS:**

**Styrene:** Classified A4 (not classifiable for human or animal) by ACGIH. Classified 2B (possible for human) by IARC. An increased incidence of lung tumors was observed in mice from a recent inhalation study. The relevance of this finding is uncertain since data from other long-term animal studies and from epidemiology studies of workers exposed to styrene do not provide a basis to conclude that styrene is carcinogenic to humans.

Lung effects have been observed in mouse studies following repeated exposure.

**Cobalt Compounds:** Classified A3 (proven for animal) by ACGIH. Classified 2B (possible for human) by IARC.

**MUTAGENIC or TERATOGENIC EFFECTS:** No known effect according to our database.

**Medical Conditions Aggravated by Exposure:** Pre-existing eye, skin, respiratory tract disorders may be aggravated by exposure.

**OSHA status** This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

## 4. First Aid Measures

**INHALATION:** Move the victim to a safe area as soon as possible. Allow the victim to rest in a well-ventilated area. If breathing is difficult, give oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

**SKIN CONTACT:** Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. If irritation persists, seek medical attention.

**EYE CONTACT:** Flush with a continuous flow of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Use of buffered baby shampoo will aid in removal. Seek medical attention.

**INGESTION:** Do not induce vomiting. Seek immediate medical attention.

## 5. Fire Fighting Measures

<b>Class:</b>	Flammable Liquid, Class IC
<b>Flash point:</b>	87.6°F (31°C) Styrene
<b>Autoignition Temperature:</b>	914°F(490°C) Styrene
<b>Lower Explosive Limit:</b>	0.09 % by volume
<b>Upper Explosion Limit:</b>	6.8% by volume

**Hazardous Combustion Products:** May produce carbon monoxide, carbon dioxide, and irritating or toxic vapors, gases or particulate.

**Fire Hazard:** Flammable in the presence of open flames, sparks, or heat.

**Explosion Hazard:** Can react with oxidizing materials. Explosive in the form of vapor when exposed to heat or flame. Material may polymerize when container is exposed to heat (fire) and polymerization will increase pressure in a closed container which may cause the container to rupture violently.

**Extinguishing Media: SMALL FIRE:** Use carbon dioxide, foam, dry chemical or water fog to extinguish. **LARGE FIRE:** Evacuate surrounding areas. Use carbon dioxide, foam, dry chemical or water fog to extinguish. Wear self-contained breathing apparatus (SCBA) and full fire-fighting protective clothing. Cool containing vessels with water spray in order to prevent pressure build-up, autoignition or explosion. Prevent run off to sewers or other water ways.

## 6. Accidental Release Measures

**Small Spill:** Absorb with an inert material and place in an appropriate waste disposal container.

**Large Spill:** Stop leak if without risk. Eliminate all ignition sources. Contain with an inert material, recover as much as possible and place the remainder in an appropriate waste disposal container. Warn unauthorized personnel to move away. Prevent entry into sewers or confined areas.

## 7. Handling and Storage

**Handling Procedures:** WARNING! Use only in well-ventilated areas. Store away from direct sunlight. Avoid inhalation and contact with eyes, skin, and clothing. Wear appropriate personal protective equipment for your task. Ground and bond all containers when transferring the material. Empty containers may retain product and product vapor. Do not expose to heat, flame, sparks or other ignition sources such as cutting, welding, drilling, grinding or static electricity. Do not pressurize. Provide adequate safety showers and eyewashes in the area of use.

**Note:** If product contains metal compounds (Section III), avoid dust from dried product or grinding of articles made from this material.

**Storage:** Keep away from heat. Keep away from sources of ignition. Keep container tightly closed. Keep in a cool, well ventilated place. Containers should be grounded.

## 8. Exposure Controls, Personal Protection

### Styrene

#### ACGIH TLV (United States, 1/2008). Skin

TWA: 20 ppm 8 hour(s).

TWA: 85 mg/m<sup>3</sup> 8 hour(s).

STEL: 40 ppm 15 minute(s).

STEL: 170 mg/m<sup>3</sup> 15 minute(s).

#### OSHA PEL Z2 (United States, 11/2006).

TWA: 100 ppm 8 hour(s).

CEIL: 200 ppm

AMP: 600 ppm 5 minute(s).

#### OSHA PEL 1989 (United States, 3/1989).

STEL: 100 ppm 15 minute(s).

STEL: 425 mg/m<sup>3</sup> 15 minute(s).

#### NIOSH REL (United States, 6/2008).

TWA: 50 ppm 10 hour(s).

TWA: 215 mg/m<sup>3</sup> 10 hour(s).

STEL: 100 ppm 15 minute(s).

STEL: 425 mg/m<sup>3</sup> 15 minute(s).

### Alpha Methyl Styrene

#### ACGIH TLV (United States, 1/2008).

STEL: 483 mg/m<sup>3</sup> 15 minute(s).

STEL: 100 ppm 15 minute(s).

TWA: 242 mg/m<sup>3</sup> 8 hour(s).

TWA: 50 ppm 8 hour(s).

#### NIOSH REL (United States, 6/2008).

STEL: 485 mg/m<sup>3</sup> 15 minute(s).

STEL: 100 ppm 15 minute(s).

TWA: 240 mg/m<sup>3</sup> 10 hour(s).

TWA: 50 ppm 10 hour(s).

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### Alpha Methyl Styrene

**OSHA PEL (United States, 11/2006).**

CEIL: 480 mg/m<sup>3</sup>

CEIL: 100 ppm

**OSHA PEL 1989 (United States, 3/1989).**

STEL: 485 mg/m<sup>3</sup> 15 minute(s).

STEL: 100 ppm 15 minute(s).

TWA: 240 mg/m<sup>3</sup> 8 hour(s).

TWA: 50 ppm 8 hour(s).

### Cobalt Compounds

**OSHA PEL (United States).**

TWA: 0.1 mg/m<sup>3</sup>

**ACGIH TLV (United States).**

TWA: 0.02 mg/m<sup>3</sup>

While the federal workplace exposure limit for styrene is 100 ppm, OSHA accepted the styrene industry's proposal to voluntarily meet a PEL of 50 ppm on an 8 hours TWA.

**Engineering Controls:** Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits. Provide adequate safety showers and eyewashes in the area of use.

**Personal Protection:** Protective equipment may vary depending on the job being performed.

**Eye/face:** Wear eye protection such as safety glasses with side shields, splash goggles or face shield with safety glasses.

**Skin:** Avoid skin contact. Impervious gloves should be worn. Other items may include long sleeves, lab coats, or impervious jackets.

**Respiratory:** Determine if airborne concentrations are below the recommended exposure limits in accordance your company's PPE program and regulatory requirements. If they are not, select a NIOSH-approved respirator that provides adequate protection from the concentration levels encountered. Air-purifying respirators are generally adequate for organic vapors. Use positive pressure, supplied-air respirators if there is potential for an uncontrolled release, if exposure levels are unknown, or under circumstances where air-purifying respirators may not provide adequate protection. Reference OSHA 29 CFR 1910.134.

**Personal Protection in Case of Large Spill:** Chemical resistant gloves, full protective suit, and boots. Respiratory protection in accordance with OSHA regulation 29 CFR 1910.134. A self-contained breathing apparatus should be used to avoid inhalation of the product vapors.

## 9. Physical and Chemical Properties

**Appearance:** Blue Liquid

**Odour:** Aromatic

**pH:** Not applicable.

**Vapour Pressure:** 4.5 mm Hg@ 68°F (20°C)

Styrene

**Molecular Weight (g/mol):** 1000 to 15000

**Vapour Density:** 3.59 Styrene (Air = 1)

**Specific Gravity:** 1.1 (Water = 1)

**Melting Point:** Not applicable.

**Boiling Point:** 293°F(145°C) Styrene

**Freezing Point:** Not available.

**Relative Density:** 1.05-1.30 (water = 1)

**Partition Coefficient:** No data

**Evaporation Rate:** Not available.

**Water/Oil Dist. Coeff:** Not available

**Odor Threshold:** 0.14 ppm Styrene

**Solubility in Water:** Slight

**Dispersibility Properties:**

Not dispensed in water

## 10. Stability and Reactivity

**Chemical Stability:** Normally stable, but can become unstable at elevated temperatures.

**Instability Temperature:** >170°F (77°C)

**Condition of Instability:** Heat.

**Incompatibility:** Polymerizes in the presence of organic peroxides, oxidizing materials, or heat.

**Corrosivity:** Our database contains no additional remark on the corrosivity of this product

## 11. Toxicological Information

Name	Result	Species	Dose	Exposure
Styrene	LD50 Oral	Rat	2650 mg/kg	-
	LC50 Inhalation	Rat	5634.2 ppm	4 hours
	Vapor			
Alpha Methyl Styrene	LD50 Oral	Rat	4900 mg/kg	
Cobalt Compounds	LD50 Oral	Rat	6171 mg/kg	-

**Special remarks on toxicity to animals:** Lung effects have been observed in mouse studies following repeated exposure.

**Special remarks on chronic effects on humans:** No additional remark.

**Special remarks on other toxic effects on humans:** No additional remark.

## 12. Ecological Information

Toxic to aquatic organisms. Should not be released to sewage system or other bodies of water at concentrations above limits established in regulations or permits.

## 13. Disposal Considerations

Recycle to process, if possible. Consult your local or regional authorities. Ignitable characteristic.

## 14. Transport Information

<b>DOT</b>	UN1866; Resin Solution; 3; III.
<b>TDG</b>	UN1866; Resin Solution; 3; III.
<b>IATA/IMDG</b>	IATA: UN1866; Resin Solution; 3; III; Pkg. Inst.: Passenger - 309; Cargo - 310
	IMDG: UN1866; Resin Solution; 3; III; FP=31°C; EmS No.: F-E, S-E

**Additional Transportation Information:** US regulations require the reporting of spills when the amount exceeds the Reportable Quantity (RQ) for specific components of this material. See CERCLA in Section 15, Regulatory Information, for the Reportable Quantities.

## 15. Regulatory Information

This section does not reference all applicable regulatory compliance lists.

**TSCA:** All ingredients are listed or compliant with TSCA.

**DSL:** All ingredients are listed or compliant with the NSNR.

**Proposition 65 Warning:** This product contains a chemical(s) known to the State of California to cause cancer, birth defects and/or reproductive harm.

**SARA 302 component(s):** None.

**SARA 313 component(s):** Styrene, Cobalt Compounds.

**CERCLA(RQ):** Styrene - 1000 lbs. (453.6 kg)

## 16. Other Information

**Preparation Date:** July 8<sup>th</sup>, 2010

**Prepared by:** Fiberlay Inc

Comments: This Material Safety Data Sheet was prepared using information provided by Fiberlay Inc. and AOC, LLC.

**Revisions:** None