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**FOR CHEMICAL EMERGENCY
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SECTION 1 - PRODUCT IDENTIFICATION

PRODUCT NAME: PART #1110 Vinyl Ester Resin

SECTION 2 – HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

APPEARANCE: liquid, amber

WARNING! FLAMMABLE LIQUID AND VAPOR, MAY AFFECT THE CENTRAL NERVOUS SYSTEM CAUSING DIZZINESS, HEADACHE OR NAUSEA. MAY CAUSE EYE, SKIN, AND RESPIRATORY TRACT IRRITATION. PROLONGED OR REPEATED CONTACT MAY DRY SKIN, CAUSE IRRITATION AND BURNS. MAY CAUSE RESPIRATORY TRACT IRRITATION. MAY BE HARMFUL IF INHALED OR SWALLOWED. MAY CAUSE IRRITATION. PROLONGED OR REPEATED CONTACT MAY DRY THE SKIN AND CAUSE IRRITATION AND BURNS.

POTENTIAL HEALTH EFFECTS

ROUTES OF EXPOSURE: Inhalation, Skin absorption, Skin contact, Eye contact, Ingestion

EYE CONTACT: Can cause eye irritation. Symptoms include stinging, tearing, redness, and swelling of eyes.

SKIN CONTACT: Can cause skin irritation. Prolonged or repeated contact may dry the skin. Symptoms may include redness, burning, and drying and cracking of skin, burns and other skin damage. Passage of this material into the body through the skin is possible, but it is unlikely that this would result in harmful effects during safe handling and use.

INGESTION: 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.

INHALATION: Breathing of vapor or mist is possible. 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 are not expected at air concentrations below the recommended exposure limits, if applicable (see Section 8).

AGGRAVATED MEDICAL CONDITION: Preexisting disorder of the following organs (or organ systems) may be aggravated by exposure to this material: respiratory tract, skin, lung (for example, asthma-like conditions), liver, male reproductive system, auditory system.

SYMPTOMS: Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include: metallic taste, stomach or intestinal upset (nausea, vomiting, diarrhea), irritation (nose, throat, airways), central nervous system depression (dizziness, drowsiness, weakness, fatigue, nausea, headache, unconsciousness) and other central nervous system effects, loss of coordination, confusion, liver damage.

TARGET ORGANS: Overexposure to this material (or its components) has been suggested as a cause of the following effects in laboratory animals: mild, reversible kidney effects, effects on hearing, respiratory tract damage (nose, throat, and airways), testis damage, liver damage, overexposure to this material (or its components) has been suggested as a cause of the following effects in humans: mild effects on color vision, effects on hearing, respiratory tract damage (nose, throat, and airways), central nervous system effects.

CARCINOGENICITY: Cobalt and certain cobalt compounds have been shown to cause cancer in laboratory animals. The relevance of this finding to humans is uncertain. Cobalt and certain cobalt compounds are listed as carcinogenic by the International Agency for Research on Cancer (IARC). There was no increase in cancer in rats exposed to styrene by inhalation. However, there was an increase in lung cancer in styrene-exposed mice. The relevance of the mouse lung cancer to humans is uncertain. Styrene did not cause cancer in mice in studies in which the chemical was placed in the stomachs through a feeding tube, or in a study in which styrene was given by injection. Epidemiological studies do not provide a basis for concluding that styrene cause cancer. Styrene is listed as a carcinogen by the International Agency for Research on Cancer (IARC).

REPRODUCTIVE HAZARD: This material (or a component) has been shown to cause harm to the fetus in laboratory animal studies. Harm to the fetus occurs only at exposure levels that harm the pregnant animal. The relevance of these findings to humans is uncertain.

OTHER INFORMATION: Styrene readily reacts with low concentrations of halogens (for example, fluorine, chlorine, bromine, or iodine) to form a tear-producing substance.

SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT(S)	CASE #	WEIGHT %
Styrene	100-42-5	>=40- <=50%
Cobalt 2-Ethylhexanoate	136-52-7	>=0.1- <0.5%

SECTION 4 – FIRST AID MEASURES

EYES: If symptoms develop, immediately move individual away from exposure and into fresh air. Flush eye gently with water for at least 15 minutes while holding eyelids apart; seek immediate medical attention.

SKIN: Remove contaminated clothing. Flush exposed area with large amounts of water. If skin is damaged, seek immediate medical attention. If skin is not damaged and symptoms persist, seek medical attention. Launder clothing before reuse.

INGESTION: Seek medical attention. If individual is drowsy or unconscious, do not give anything by mouth; place individual on the left side with the head down. Contact a physician, medical facility, or poison control center for advice about whether to induce vomiting. If possible, do not leave individual unattended.

INHALATION: If symptoms develop, move individual away from exposure and into fresh air. If symptoms persist, seek medical attention. If breathing is difficult, administer oxygen. Keep person warm and quiet; seek immediate medical attention.

NOTE TO PHYSICIANS: This material is an aspiration hazard. Potential danger from aspiration must be weighed against possible oral toxicity (see Section 2 – Swallowing) when deciding whether to induce vomiting.

Treatment: No information available.

SECTION 5 – FIRE FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA: Foam, Carbon dioxide (CO₂), Dry chemical, water

HAZARDOUS COMBUSTION PRODUCTS: May form; carbon dioxide and carbon monoxide, toxic fumes, various hydrocarbons

PRECAUTIONS FOR FIRE-FIGHTING:

Material is volatile and readily gives off vapors which may travel along the ground or be moved by ventilation and ignited by pilot lights, flames, sparks, heaters, smoking, electric motors, static discharge or other ignition sources at locations near the material handling

point. Wear full firefighting turn-out gear (full Bunker gear), and respiratory protection (SCBA). Polymerization will take place under fire conditions. If polymerization occurs in a closed container, there is a possibility it will rupture violently. Cool storage container with water, if exposed to fire.

Flammability Class for Flammable Liquids

Flammable Liquid Class IC Flammable Liquid Class IC

SECTION 6 – ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS: For personal protection see section 8. Eliminate all ignition sources (flares, flames including pilot lights, electrical sparks). Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source. Prevent from entering drains, sewers, streams or other bodies of water. Prevent from spreading. If runoff occurs, notify authorities as required. Pump or vacuum transfer spilled product to clean container for recovery. Absorb unrecoverable product. Transfer contaminated absorbent, soil and other materials to containers for disposal.

ENVIRONMENTAL PRECAUTIONS: Prevent run-off to sewers, streams or other bodies of water. If run-off occurs, notify proper authorities as required, that a spill has occurred.

METHODS OF CLEANING UP: Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source, dike area of spill to prevent spreading, pump liquid to salvage tank. Remaining liquid may be taken up on sand, clay, earth, floor absorbent, or other absorbent material and shoveled into containers.

SECTION 7 – HANDLING AND STORAGE

HANLDING: Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in the data sheet must be observed, precautions during use: avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing impervious protective gloves. As with all products of this nature, good personal hygiene is essential. Hands and other exposed areas should be washed thoroughly with soap and water after contact, especially before eating and/or smoking. Regular laundering of contaminated clothing is essential to reduce indirect skin contact with this material. Static ignition hazard can result from handling and use. Electrically bond and ground all containers, personnel and equipment before transfer or usage of material. Special precautions may be necessary to dissipate static electricity for non-conductive containers. Use proper bonding and grounding during product transfer as described in National Fire Protection Association document NFPA 77.

STORAGE: Store in closed containers in a dry, well-ventilated area. Do not store near extreme heat, open flame, or sources of ignition.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES

<u>STYRENE</u>		<u>100-42-5</u>
ACGIH	time weighted average	20 ppm
ACGIH	Short term exposure limit	40 ppm
NIOSH	Recommended exposure limit	50 ppm
NIOSH	Recommended exposure limit	215 mg/m ³
NIOSH	Short term exposure limit	100 ppm
NIOSH	Short term exposure limit	425 mg/m ³
OSHA Z2	time weighted average	100 ppm
OSHA Z2	Ceiling Limit Value	200 ppm
OSHA Z2	Maximum concentration:	600 ppm

General Advice: These recommendations provide general guidance for handling this product. Personal protective equipment should be selected for individual applications and should consider factors which affect exposure potential, such as handling practices, chemical concentrations and ventilation. It is ultimately the responsibility of the employer to follow regulatory guidelines established by local authorities.

EXPOSURE CONTROLS: Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV(s); OSHA has formally endorsed a styrene industry proposal for a voluntary 50 ppm workplace limit on styrene. Members of the Styrene Information and Research Council (SIRC), Composites Institute (CI), Composite Fabricators Association (CFA), International Cast Polymers Association (ICPA) and National Marine Manufacturers Association (NMMA) have agreed to use either engineering controls, work practices or respiratory protection to achieve this voluntary limit for styrene.

EYE PROTECTION: Chemical splash goggles in compliance with OSHA regulations are advised; however, OSHA regulations also permit other type safety glasses. Consult your safety representative.

SKIN AND BODY PROTECTION: Wear resistant gloves such as: polyvinyl alcohol. To prevent repeated or prolonged skin contact, wear impervious clothing and boots.

RESPIRATORY PROTECTION: If workplace exposure limit(s) of product or any component is exceeded (see exposure guidelines), a NIOSH/MSHA approved air supplied respirator is advised in absence of proper environmental control. OSHA regulations also permit other NIOSH/MSHA respirators (negative pressure type) under specified conditions (see your industrial hygienist). Engineering or administrative controls should be implemented to reduce exposure.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

STATE OF MATTER: liquid

FORM: No data

COLOUR: amber

ODOUR: pungent

BOILING POINT: 293°F / 145°C

PH: No data

FLASH POINT: 84.9°F / 29.4°C, Seta closed cup

EVAPORATION RATE: No data

EXPLOSION LIMITS: 1.1 %(V) 6.6 %(V)

VAPOR PRESSURE: 0.853kPa 25°C

VAPOR DENSITY: N/A

DENSITY: 8.6 lb/gal @ 77.00°F / 25.00 °C

SOLUBILITY: insoluble, water

PARTITION COEFFICIENT (N-OCTANOL/WATER): No Data

AUTO-IGNITION TEMPERATURE: No data

SECTION 10 – STABILITY AND REACTIVITY

STABILITY: This material is unstable at elevated temperatures and pressures.

CONDITIONS TO AVOID: Avoid heat, open flame, and prolonged storage at elevated temperatures, Avoid contact with excessive heat.

INCOMPATIBLE PRODUCTS: Avoid contact with: acids, aluminum chloride, halogens, iron chloride, metal salts, peroxides, strong alkalis, strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS: May form: carbon dioxide and carbon monoxide, toxic fumes, various hydrocarbons.

HAZARDOUS REACTIONS: Product can undergo hazardous polymerization, Avoid exposure to excessive heat, peroxides and polymerization catalysts.

THERMAL DECOMPOSITION: No data

SECTION 11 – TOXICOLOGICAL INFORMATION

ACUTE ORAL TOXICITY

STYRENE LD 50 Rat: 2650 mg/kg
COBALT 2-ETHYLHEXANOATE LD 50 Rat: 1,220 – 1,550 mg/kg

ACUTE DERMAL TOXICITY

STYRENE LC 50 Rat: 2800 ppm, 4h
COBALT 2-ETHYLHEXANOATE LC 50 Rat: > 10 mg/l, 1 h

ACUTE INHALATION TOXICITY

STYRENE no data available
COBALT 2-ETHYLHEXANOATE LD 50 Rabbit: > 5,000 mg/kg

SECTION 12 – ECOLOGICAL INFORMATION

Aquatic Toxicity

Acute and Prolonged Toxicity to Fish

No data

Acute Toxicity to Aquatic Invertebrates

No data

Environmental fate and pathways

No data

SECTION 13 – DISPOSAL CONSIDERATION

WASTE DISPOSAL METHODS: Dispose of in accordance with all applicable local, state and federal regulations. Do not discharge effluent containing this product into lakes,

streams, ponds or estuaries, ocean, or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit, and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the EPA.

SECTION 14 – TRANSPORT INFORMATION

TDG_ROAD: RESIN SOLUTION, 3, UN1866, Packing group III
TDG_RAIL: RESIN SOLUTION, 3, UN1866, Packing group III
TDG_INWTR: RESIN SOLUTION, 3, UN1866, Packing group III
IMDG: RESIN SOLUTION, 3, UN1866, Packing group III
IATA_P: RESIN SOLUTION, 3, UN1866, Packing group III
IATA_C: RESIN SOLUTION, 3, UN1866, Packing group III
IMDG_ROAD: RESIN SOLUTION, 3, UN1866, Packing group III
IMDG_RAIL: RESIN SOLUTION, 3, UN1866, Packing group III
CFR_INWTR: RESIN SOLUTION, 3, UN1866, Packing group III
IMDG_INWTR: RESIN SOLUTION, 3, UN1866, Packing group III
IMDG_ROAD: RESIN SOLUTION, 3, UN1866, Packing group III
IMDG_RAIL: RESIN SOLUTION, 3, UN1866, Packing group III

Dangerous goods descriptions (if indicated above) may not reflect package size, quantity, end-use or region-specific exceptions that can be applied. Consult shipping documents for descriptions that are specific to the shipment.

SECTION 15 – REGULATORY INFORMATION

California Prop. 65

WARNING! This product contains a chemical known in the State of California to cause cancer.

BENZENE

1,4-DIOXANE

ACETALDEHYDE

WARNING! This product contains a chemical known in the State of California to cause birth defects or other reproductive harm.

BENZENE

TOLUENE

SARA Hazard Classification

Fire Hazard

Acute Health Hazard

Chronic Health Hazard
Reactivity Hazard

SARA 313 Component(s)

STYRENE	100-42-5	46.2411%
COBALT 2	136-52-7	0.1625%
ETHYLHEXANOATE		
HYDROQUINONE	123-31-9	0.0141%

OSHA Hazards Unstable Reactive

OSHA Hazards Flammable Liquid
Toxic by inhalation
Moderate skin irritation
Moderate eye irritation
Carcinogen

	Health	Flammability	Reactivity	Other
HMIS	2	3	2	
NFPA	2	3	2	

SECTION 16 - COMMENTS

The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with Fibre Glast Developments or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances.