

## 1. IDENTIFICATION OF PREPARATION & OF COMPANY

Product: Vinyl Ester Resin  
Manufacturer: Chemco International Ltd  
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Coatbridge ML5 4XD  
Scotland United Kingdom  
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## 2. COMPOSITION INFORMATION ON INGREDIENTS

Vinyl ester resin in styrene.

Chemicals	Classification	Risk phrases
Styrene monomer	Xi, Xn	R10, R20, R36/38

## 3. HAZARDS IDENTIFICATION

Acute effects: Flammable. Harmful by inhalation. Irritating to eyes and skin.

## 4. FIRST AID MEASURES

Inhalation: Move to fresh air if effects occur. Seek medical attention.  
Ingestion: Immediately give plenty of water (if possible charcoal slurry).  
Seek medical attention immediately. Do not induce vomiting.  
Fully trained personnel can use oxygen or artificial respiration if required.

Eyes: Rinse with flowing water immediately for at least 15 minutes.  
Seek medical attention.

Skin: Remove contaminated clothing. Flush with flowing water for at least 15 minutes. Wash affected area with soap and water.  
Seek medical attention if irritation persists.

## 5. FIRE-FIGHTING MEASURES

Extinguishing media: Carbon dioxide, dry chemical powders, foam.  
Hazardous combustion products: Under conditions of incomplete combustion or pyrolysis, phenolics and carbon oxides may be evolved. The thermal decomposition products therefore should be treated as potentially hazardous substances and appropriate precautions should be taken.

Specific fire or explosion hazards: Flammable product.

Special protective equipment: Wear positive pressure self-contained breathing apparatus and protective fire-fighting clothing (includes fire-fighting helmet, coat, trousers, boots and gloves).

Specific methods of fire fighting: Solvents may produce excessive pressure under fire conditions. Sealed containers may rupture and ignite. Cool containers in the vicinity of the blaze using a water spray.

## 6. ACCIDENTAL RELEASE MEASURES

Personal protection:	Move unprotected personnel upwind to a clear area. Wear adequate personal protective equipment. Treat as flammable liquid, keep heat, flame or spark producing equipment away.
Environmental precautions:	Prevent from entering into soil, waterways and ground water. Flushing and wash waters must be confined and prevented from entering into soil, waterways and ground water. Contain large spills with a dike.
Methods for cleaning up:	Soak up spills with absorbent material such as sand or vermiculite and collect as much as possible in a clean container. Solvents are not recommended for clean-up unless the recommended exposure guidelines and safe handling for the specific solvent is followed. Residue resin may be removed using steam or hot soapy water. Do not empty into drains.
Additional information:	Vapours are heavier than air and may travel considerable distances to a source of ignition and flash back.

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## 7. HANDLING & STORAGE

Handling:	Practice care and caution to avoid skin and eye contact. Avoid breathing vapours.
Storage:	Ground and bond all equipment. Store containers tightly closed in a well-ventilated area. Do not expose to direct sunlight. Keep resin temperature below 25°C. (Polymerisation may be initiated at a resin temperature of > 28°C). If product is re-aerated it must not exceed the 30°C to avoid approaching the lower explosion limit (LEL) for styrene in the headspace.

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## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering controls:	Provide general and/or local exhaust ventilation to control airborne concentrations below the recommended exposure guideline.
Exposure limits:	Maximum: LTEL 100ppm. STEL 250ppm.
Respiratory:	Do not breathe vapours. Ensure atmospheric levels are maintained below exposure guidelines. Use an approved air-purifying respirator when required for specific operations.
Eye protection:	Use chemical goggles. If vapour exposure causes eye irritation, use a full-face respirator.
Protective clothing:	For prolonged or frequently repeated contact use protective clothing impervious to this material.

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## 9. PHYSICAL & CHEMICAL PROPERTIES

Physical state:	Viscous liquid.
Colour:	Yellow.
Odour:	Pungent styrene odour.
Boiling point:	146°C (styrene).
Flash point:	35°C (ASTM 3278/ISO 3679).
Specific gravity:	1.00 - 1.255
Vapour density:	3.6 (styrene).

## 9. PHYSICAL & CHEMICAL PROPERTIES (cont'd)

Vapour pressure:	5mmHg 21°C (styrene).
Solubility:	Insoluble 25°C
Flammability:	LFL 1.1°C. UFL 6.10°C (styrene).
Autoignition temperature:	490°C (styrene).

## 10. STABILITY & REACTIVITY

Chemical stability:	Stable under the recommended storage and handling conditions.
Conditions to avoid:	Avoid ignition sources, i.e. flames or spark producing equipment. Solvent may cause high-pressure build up under excessive heat in closed containers.
Materials to avoid:	Oxidising agents, metallic halides (salts) e.g. ferric and aluminium chlorides, peroxides.
Hazardous decomposition products:	Pyrolysis products such as CO and phenolics may be produced. Treat as potentially hazardous and take necessary precautions.

## 11. TOXICOLOGICAL INFORMATION

Acute toxicity Ingestion: Oral LD50:	> 4,000mg/kg <sup>-1</sup> (rat). May cause lung damage if aspirated.
Skin contact:	Skin absorption LD50 (rabbits) > 2,000mg/kg <sup>-1</sup> . Single prolonged exposure not likely to result in material being absorbed through skin.
Inhalation:	Excessive vapour concentrations are attainable and can be hazardous on single exposure.

## 12. ECOLOGICAL INFORMATION

Of the ingredients in this preparation, environmental impact is expected to be particularly influenced by the solvents.

Mobility and bioaccumulation potential:	
Resin:	Partitioning from water to Octanol not applicable.
Solvent:	Log octanol/water coefficient 2.95
Bio concentration factor:	Fish = 13.5. Potential for mobility in soil low (POC between 500 and 2000).
Degradation:	
Resin:	Biodegradation under aerobic conditions below detectable limits.
Solvent:	Biodegradation reached in closed bottle test after 20 days > 54%. Material is expected to pass closed bottle test for ready biodegradability in 28 days. Biodegradation may increase in soil and/or water with acclimation.

## 12. ECOLOGICAL INFORMATION (cont'd).

Aquatic toxicity: Solvent: Acute LC50 (fathead minnow - pimphales promelas) 46.4 - 59.3mg/l  
Acute LC50 (water flea - daphnia magna) 23mg/l  
Material is harmful to aquatic organisms (LC50/EC50/IC50 10 - 100mg/l).

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## 13. DISPOSAL CONSIDERATIONS

Product: Must be incinerated when in compliance with local regulations.  
Contaminated packaging: Can be re-used after cleaning when in compliance with the Environmental Protection (Duty of Care) Regulations 1991. Dispose of washing solution in the same way as product.

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## 14. TRANSPORT INFORMATION

Proper shipping name: Resin solution

Road, Rail & Barge  
ADR/RID Loaded: 3-31(C) Empty: 3-41 Label : 3  
Barge ADNR Loaded: 3-3 Empty: 3-6 Label : 2A  
Kemler Code: 30 PENOS Code: S  
UN No: UN 1866 Trem Card No: 677B

Sea  
IMO/IMDG Class: 3.3 Label: 3  
EMS: 3-05 MFAG: 310  
UN No: UN 1866 Packing Group: III

Air  
IATA/ICAO Class: 3 Packing Group: III  
UN No: UN 1866  
Packing Instruction (Pass & Cargo): 309 Packing Instruction (Cargo): 310

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## 15. REGULATORY INFORMATION

Chemical name: Contains styrene.  
Labelling: According to EEC directives relating to packaging and labelling of dangerous substances and UK Chemicals Hazard Information and Packaging for Supply (CHIPS) legislation.  
Symbols: (Xi) Irritant.  
(Xn) Harmful.  
Risk phrases: R10, Flammable.  
R20, Harmful by inhalation.  
R36/38, Irritating to eyes and skin.  
Safety phrases: S23, Do not breathe vapours.  
S51, Use only in well ventilated areas.

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## 16. OTHER INFORMATION

The information contained in this data sheet is based on present state of knowledge and current national legislation (CHIPS). It provides guidance on health, safety and environmental aspects of the product and should not be construed as any guarantee of technical performance or suitability for the particular applications.