

## 1. IDENTIFICATION OF PREPARATION & OF COMPANY

Product: Vinyl Ester Hardener  
Manufacturer: Chemco International Ltd  
East Shawhead Industrial Estate  
Coatbridge ML5 4XD  
Scotland United Kingdom  
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## 2. COMPOSITION INFORMATION ON INGREDIENTS

Chemicals	Classification	Risk phrases
Cumyl hydroperoxide	O, C	R7, 20/22, R23, R34, R48, R51/53
Ethyl acetoacetate	Xi	R36
Cumene	Xi	R10, R37

## 3. HAZARDS IDENTIFICATION

Acute effects: May cause fire. Harmful in contact with skin and if swallowed. Causes burns. Harmful, danger of serious damage to health by prolonged exposure through inhalation and if swallowed.

## 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: Water fog, alcohol foam, carbon dioxide, dry chemical powders.

Unsuitable extinguishing media: Halons.

Special exposure hazards: If involved in a fire it will support combustion. Do not breathe fumes.

Special protective equipment: Wear suitable protective equipment and positive pressure, self-contained breathing apparatus.

Other information: Cool closed containers with water.

## 6. ACCIDENTAL RELEASE MEASURES

Personal protection:	Avoid contact with skin and eyes.
Environmental precautions:	Collect as much as possible in a clean container for re-use or disposal. Do not empty into drains.
Methods for cleaning up:	The waste should not be confined. Absorb remainder with vermiculite.

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## 7. HANDLING & STORAGE

Handling:	Never weigh out in the storage room. Keep product and emptied container away from heat and sources of ignition. No sparking tools should be used. Avoid shock and friction. Confinement must be avoided. Do not pipet by mouth. Do not inhale. Never bring peroxide into direct contact with accelerator during processing. Weigh out and add peroxide and accelerator separately.
Storage:	Keep away from reducing agents (e.g. amines), acids, alkalies and heavy metal compounds (e.g. accelerators, driers, metal soaps). Store in accordance with local regulations in a dry, well ventilated place away from sources of heat and direct sunlight. Keep container tightly closed in a cool, well ventilated place. Keep container upright to prevent leakage.
Other information:	When using, do not eat, drink or smoke. Wash thoroughly after handling. Keep work clothing separate and do not take them home.

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## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering controls:	Provide general good ventilation and local exhaustion in the working area (explosion-proof ventilation recommended.)
Exposure limits:	No limit has been established.
Cumyl hydroperoxide :	No limit has been established.
Ethyl acetoacetate:	OES (TWA) = 246mg.m <sup>-3</sup> (can be absorbed through skin).
Cumene:	OES (STEL) = 375mg.m <sup>-3</sup> (can be absorbed through skin).
Respiratory:	Do not breathe vapours. Ensure good ventilation and local exhaustion in the working area.
Eye protection:	Wear eye/face protection. A face shield is preferred over goggles.
Protective clothing:	For prolonged or frequently repeated contact, use protective clothing impervious to this material.
Other information:	Launder clothes before re-use.

## 9. PHYSICAL & CHEMICAL PROPERTIES

Physical state:	Liquid.
Colour:	Clear.
Odour:	Characteristic (mild).
Boiling point:	Do not distil - decomposes.
Flash point:	60°C (ASTM 3278/ISO 3679).
Melting point:	-10°C
Flammability:	Not determined.
Autoignition temperature:	>295°C
Explosion properties:	Not applicable.
Oxidising properties:	Not applicable.
Vapour pressure:	0.4 kPa (20°C).
Density:	1040 kg. m <sup>-3</sup>
pH value:	Weak acid.
Viscosity:	5 m.Pa s (20°C).
Active oxygen content:	4.6 - 4.7%
Peroxide content:	44%

## 10. STABILITY & REACTIVITY

Stability:	Avoid direct contact with incompatible substances which may cause dangerous self-accelerating decomposition and in some cases explosion or fire at temperatures above 55°C
Materials to avoid:	Only use stainless steel 316, PVC polyethylene or glass-lined equipment.
Conditions to avoid:	Violent reactions may be expected with acid, alkali, heavy metals and reducing agents.
Hazardous decomposition products:	Acetophenone, methane, 2-phenylisopropanol.

## 11. TOXICOLOGICAL INFORMATION

The information is based on cumyl hydroperoxide (70%)

Acute toxicity

Oral LD50:	382mg/kg (rat).
Inhalation:	220ppm (rat). (exposure time of 4hrs).

Irritation

Skin:	Corrosive.
Eye:	Severely irritating.
Genotoxicity:	
Ames test:	Not mutagenic.

The following information is based on ethyl acetoacetate.

Acute toxicity

Oral LD50:	3980mg/kg (rat).
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Irritation

Skin:	Mildly irritating.
Eye:	Moderately irritating.

## 11. TOXICOLOGICAL INFORMATION (cont'd)

This information is based on cumene.

Acute toxicity		
Oral LD50:	2910mg/kg	(rat).
Dermal LD50:	12.3mg/kg	(rabbit).
Inhalation LC50:	2000ppm	(mouse).

Irritation	
Skin:	Mildly irritating.
Eye:	Mildly irritating.

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## 12. ECOLOGICAL INFORMATION

Based on cumyl hydroperoxide	
Ecotoxicity:	Fish acute toxicity 96h-LC50 (on corhynchus mykiss) = 3.9mg/l
Degradation:	Not readily biodegradable (closed bottle test).
Other information:	No Observed Effect Concentration (NOEC) = 1.5mg/l

Based on ethyl acetoacetate	
Degradation:	Expected to be readily biodegradable.

Based on cumene	
Ecotoxicity:	Fish acute toxicity 96h-LC50 (pimephales promelas) = 6.32mg/l
Degradation:	Readily biodegradable.
Bioaccumulation potential:	Bioconcentration factor (fish) 35.5

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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:	Organic peroxide type F, liquid (Cumyl hydroperoxide)
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Road & Rail			
ADR/RID Class:	5.2	ADR Item No:	9b
Haz ID No:	539	Trem Card No:	52G01B
UN No:	UN 3109		
Sea			
IMO/IMDG Code:	5229a	EMS:	5.2-01/03
MFAG:	735	Marine Pollutant:	No
Class:	5.2	Packing Group:	II
UN No:	UN 3109		

Air			
IATA/ICAO Class:	5.2	Packing Group:	II
UN No:	UN 3109		
Packing Instruction (Pass & Cargo):	500	Packing Instruction (Cargo):	502

## 15. REGULATORY INFORMATION

Chemical name:	Cumyl hydroperoxide, 45% solution in solvents.
Labelling:	According to EEC directives and relating to packaging and labelling of dangerous substances and UK Chemicals Hazard Information and Packaging for Supply (CHIPS) legislation.
Symbols:	(C) Corrosive. (O) Oxidising. (Xi) Irritant.
Risk phrases:	R7, May cause fire. R21/22, Harmful in contact with skin and if swallowed. R23, Toxic by inhalation. R34, Causes burns. R48, Danger of serious damage to health by prolonged exposure through inhalation. R51/53, Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Safety phrases:	S3/7, Keep container tightly closed in a cool place. S14, Keep away from reducing agents, acids, alkalis, amines. S36/37/39, Wear suitable protective clothing, gloves and eye/face protection. S45, In case of accident or if you feel unwell seek medical advice. S50, Do not mix peroxide accelerators or reducing agents.

## 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.

