

U.S. DEPARTMENT OF LABOR

Form No. L50-005-4
May 1969

WAGE AND LABOR STANDARDS ADMINISTRATION Bureau of Labor Standards

MATERIAL SAFETY DATA SHEET

8.301

SECTION I

MANUFACTURER'S NAME LUCIDOL DIVISION, Pennwalt Corporation		EMERGENCY TELEPHONE NO. 716-877-1740
ADDRESS (Number, Street, City, State, and Zip Code) 1740 Military Road, Buffalo, New York 14240		
CHEMICAL NAME AND SYNONYMS Cumene Hydroperoxide		TRADE NAME AND SYNONYMS Cumene Hydroperoxide
CHEMICAL FAMILY Organic Peroxides (Hydroperoxide)	FORMULA C₉H₁₂O₂	

SECTION II HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)
Cumene hydroperoxide - LC ca 50 ppm (inhalation - rat) (HEW Toxic Substances Annual List 1971)	~80	—
Complex mixture of cumene and its alcohol and ketone derivatives.	~20	
Cumene		50ppm

SECTION III PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H ₂ O=1) 25/25°C	~1.03
VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	slight		
APPEARANCE AND ODOR	clear yellow liquid		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) 170°F (Micro open cup)	FLAMMABLE LIMITS	LeI	Uel
EXTINGUISHING MEDIA CO ₂ , dry chemical, or foam			
SPECIAL FIRE FIGHTING PROCEDURES Fight fire from safe distance like an oil fire. If large quantities are involved, evacuate area.			
UNUSUAL FIRE AND EXPLOSION HAZARDS If confined during exposure to a fire, can decompose with force.			

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SECTION V HEALTH HAZARD DATA	
THRESHOLD LIMIT VALUE	Toxicity not available as TLV. (See Section II)
EFFECTS OF OVEREXPOSURE	Known skin sensitizer.
Prolonged inhalation of vapors may cause headache and throat irritation.	
EMERGENCY AND FIRST AID PROCEDURES	
In case of eye contact, flush with copious amounts of water.	
In case of skin contact, wash with soap and water.	

SECTION VI REACTIVITY DATA			
STABILITY	UNSTABLE	X	CONDITIONS TO AVOID
	STABLE		Extended exposure to 175°F or higher temperature may cause rapid decomposition with gassing.
INCOMPATIBILITY (Materials to avoid)			
Mineral acids, oxidation catalysts, reducing agents, accelerators. *(see below)			
HAZARDOUS DECOMPOSITION PRODUCTS			
Decomposition products are flammable.			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
Spilled material should be absorbed with soda ash. Sweep or shovel up using non-sparking tools. Vermiculite causes decomposition and should not be used to absorb spills.	
WASTE DISPOSAL METHOD	
Place absorbed material in shallow trench and ignite from safe distance with a long torch (6 ft.-min.)	
Any disposal must comply with local, state and federal regulations.	

SECTION VIII SPECIAL PROTECTION INFORMATION		
RESPIRATORY PROTECTION (Specify type)		
None required - Avoid prolonged exposure to vapors.		
VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL (General)	Use with adequate ventilation
PROTECTIVE GLOVES		OTHER
Yes - neoprene.		Yes - goggles.
OTHER PROTECTIVE EQUIPMENT		
As desired.		

SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	
Do not store near sources of heat or ignition.	
Isolate from other storage of incompatible materials.	
OTHER PRECAUTIONS	
Store below 86°F to maintain active oxygen content.	
* Metals such as copper, brass, lead and cast iron can also catalyze decomposition.	

PRODUCT BULLETIN

PENWALT
LUCIDOL

*Read 2nd Edition
Davis Edition*

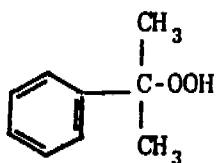
1740 MILITARY ROAD, BUFFALO, NEW YORK 14240 • (716) 877-1740

CUMENE HYDROPEROXIDE

Organic Peroxide Bulletin 8.301
March 1972

Cumene Hydroperoxide, a stable liquid hydroperoxide, is a useful catalyst for many vinyl-type polymerizations at both low and high temperatures.

Chemical Structure



10 Hr. Half-Life . . . 158°C

Molecular Weight . . . 152

Empirical Formula . . C₉H₁₂O₂

SPECIFICATIONS

Cumene Hydroperoxide	78% Minimum
Appearance	Clear Yellow Liquid
Color APHA	500 maximum

PROPERTIES (Typical)

Specific Gravity @ 25°C/25°C	1.027
Refractive Index @ 25°C	1.5185
Flash Point	170°F
pH	7.0
Solubility @ 20°C (Weight Percent)	
Insoluble (<1%)	Water
Very Soluble (>50%)	Most organic solvents, styrene and other monomers

THERMAL DECOMPOSITION DATA

Half-Life (t_{1/2}) in 0.2 M Benzene Solutions:

Temperature		t _{1/2} (Hours)
°C	°F	
115	239	470
130	266	110
145	293	29
190	374	1



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APPLICATIONS

Cumene Hydroperoxide is a good free radical source for emulsion, suspension, bulk, and solution polymerizations. It is readily soluble in most synthetic monomers and can be used as a polymerization catalyst with monomers such as styrene, vinyl chloride, and acrylonitrile. This catalyst can also be used for copolymerizing mixtures of monomers, especially styrene and butadiene.

Cumene Hydroperoxide will catalyze a number of polyesters when used alone or in combination with other organic peroxides such as Benzoyl Peroxide.

Without the addition of an accelerator, Cumene Hydroperoxide is effective only at elevated temperatures. The addition of metal soaps such as manganese and cobalt naphthenates, to a polyester resin catalyzed with Cumene Hydroperoxide will markedly lower the decomposition temperature. The incorporation of an additional accelerator, such as dimethylaniline is necessary to obtain room temperature cures.

PACKING

Cumene Hydroperoxide is packed and labeled in accordance with Agent T. C. George's Tariff as Oxidizing Material N. O. S. under Department of Transportation (DOT) Regulations.

<u>Container</u>	<u>Net Weight</u>	<u>Dimensions</u>
1 Gallon Steel Drum	8 pounds	23" D x 35" H
5 Gallon Steel Drum	40 pounds	
55 Gallon Steel Drum	450 pounds	

SHIPPING

Cumene Hydroperoxide is shipped under Yellow Label by rail and motor freight as Oxidizing Material, N. O. S. For Railway Express shipment, the maximum net weight is 2 lbs. per shipping case. Parcel Post shipments are prohibited.

HANDLING AND STORAGE

Cumene Hydroperoxide is an oxidizing material and should be handled with care. All persons handling this material should be familiar with the following facts.

Flammability. Cumene Hydroperoxide must be kept away from all sources of heat and ignition such as radiators, steam pipes, direct rays of the sun, open flames and sparks.

Contamination. Care must be taken to avoid contamination with combustible materials, strong oxidizing or reducing agents, e. g., accelerators for polymerization reactions, etc. As with other peroxides, Cumene Hydroperoxide should never be mixed directly with any metal soap, amine, or other accelerator as violent decomposition, forming phenol and other compounds, may occur.

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Static Electricity. When handling organic peroxides, generally accepted methods of reducing static electricity, e.g. grounding or bonding equipment, maintaining high humidity where possible, shortening free fall of material, etc., are recommended.

Storage Area. Store Cumene Hydroperoxide in original closed container in a cool place well separated from the manufacturing area and away from other combustible materials. Do not store Cumene Hydroperoxide with any material which is innately hazardous or which might induce decomposition. Storage areas for Cumene Hydroperoxide should be selected in accordance with local laws and regulations, subject to the approval of the insurance carrier. Bring into the manufacturing area only such quantities as will be used immediately.

Storage Temperature. While Cumene Hydroperoxide is relatively stable at ordinary temperatures, storage below 30°C (86°F) is recommended.

Spillage and Disposal. Keep a supply of soda ash on hand to soak up spilled material. Sweep the soda ash saturated with Cumene Hydroperoxide into a non-sparking shovel, deposit in a shallow trench in a safe place and ignite with a torch from a safe distance (kerosene-soaked rag on 6 ft. steel rod).

Drain thoroughly and flush empty containers with water before discarding.

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Fire. In case of a fire in a storage or handling area in which Cumene Hydroperoxide is involved, evacuate area and fight fire from a safe distance like an oil fire. Should a fire occur in the vicinity of an area in which Cumene Hydroperoxide is stored or handled, maintain a spray of water over the outside of the containers to prevent overheating.

FIRST AID

Care should be exercised by all personnel handling Cumene Hydroperoxide as all the physiological effects have not been fully determined. The material should not be allowed to remain in contact with the skin as it may be irritating.

In case of contact wash with plenty of soap and water; for eyes immediately flush with plenty of water and get medical attention. In case of ingestion, administer an emetic to induce vomiting and call a physician.

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