

Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
  	Organic Peroxide. Oxidizer. Flammable material; avoid heat and sources of ignition. POSSIBLE CARCINOGEN. MINIMIZE EXPOSURE. Freeze.	   

Section I. Chemical Product and Company Identification

Chemical Name	Di-tert-butyl Peroxide		
Catalog Number	D3411	Supplier	TCl America 9211 N. Harborage St. Portland OR 1-800-423-8616
Synonym	Not available.		
Chemical Formula	C ₈ H ₁₈ O ₂		
CAS Number	110-05-4	In case of Emergency Call	Chemtrec® (800) 424-9300 (U.S.) (703) 527-3887 (International)

Section II. Composition and Information on Ingredients

Chemical Name	CAS Number	Percent (%)	TLV/PEL	Toxicology Data
Di-tert-butyl Peroxide	110-05-4	-----	This chemical is classified as a possible carcinogen. There is no acceptable exposure limit for a carcinogen.	Rat LD ₅₀ (oral) >25 gm/kg Rat LC ₅₀ (inhalation) >4100 ppm Rat LD ₅₀ (intraperitoneal) 3210 mg/kg Mouse LD ₅₀ (oral) 216.4 mg/kg Mouse LC ₅₀ (inhalation) >4103 ppm

Section III. Hazards Identification

Acute Health Effects	No specific information is available in our data base regarding the toxic effects of this material for humans. However, exposure to any chemical should be kept to a minimum. Skin and eye contact may result in irritation. May be harmful if inhaled or ingested. Always follow safe industrial hygiene practices and wear proper protective equipment when handling this compound. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.
Chronic Health Effects	CARCINOGENIC EFFECTS : Not available. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Tumorigenic Effects. Mouse TDLo Unreported 585 mg/kg TOXIC Effects: Tumorigenic - Equivocal tumorigenic agent by TRECS criteria Lung, Thorax, or Respiration - Tumors Blood - Lymphomas including Hodgkins disease DEVELOPMENTAL TOXICITY: Reproductive Effects. Rat TCLo Inhalation 226 mg/m ³ /4H, female 1-19 days of pregnancy TOXIC Effects: Effects on Embryo or Fetus - Fetotoxicity

Section IV. First Aid Measures

Eye Contact	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.
Skin Contact	In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
Inhalation	If the victim is not breathing, perform mouth-to-mouth resuscitation. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, oxygen can be administered. Seek medical attention if respiration problems do not improve.
Ingestion	INDUCE VOMITING by sticking finger in throat. Lower the head so that the vomit will not reenter the mouth and throat. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive.

Section V. Fire and Explosion Data			
Flammability	Flammable.	Auto-Ignition	Not available.
Flash Points	18°C (64.4°F).	Flammable Limits	Not available.
Combustion Products	These products are toxic carbon oxides (CO, CO ₂).		
Fire Hazards	Not available.		
Explosion Hazards	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.		
Fire Fighting Media and Instructions	Oxidizing material. Flammable liquid. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog. DO NOT use water jet. Use flooding quantities of water. Avoid contact with organic materials. Consult with local fire authorities before attempting large scale fire-fighting operations.		

Section VI. Accidental Release Measures	
Spill Cleanup Instructions	Oxidizing material. Flammable material. Possibly carcinogenic material. Keep away from heat. Mechanical exhaust required. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Avoid contact with a combustible material (wood, paper, oil, clothing...). Keep substance damp using water spray. DO NOT use metal tools or equipment. DO NOT touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Consult federal, state, and/or local authorities for assistance on disposal.

Section VII. Handling and Storage	
Handling and Storage Information	OXIDIZER. FLAMMABLE. POSSIBLE CARCINOGEN. FREEZE. Keep away from heat. Mechanical exhaust required. Keep away from combustible material.. Avoid excessive heat and light. Do not breathe gas/fumes/ vapor/spray. Always store away from incompatible compounds such as alkalis (bases).

Section VIII. Exposure Controls/Personal Protection	
Engineering Controls	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash station and safety shower is proximal to the work-station location.
Personal Protection	Splash goggles. Lab coat. Vapor respirator. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product. Be sure to use a MSHA/NIOSH approved respirator or equivalent.
	
Exposure Limits	This chemical is classified as a possible carcinogen. There is no acceptable exposure limit for a carcinogen.

Section IX. Physical and Chemical Properties			
Physical state @ 20°C	Liquid. (Light Yellow, Clear.)	Solubility	Soluble in organic solvents, in most resin monomers, and in partial polymers. Soluble in water about 0.01%.
Specific Gravity	0.8 (water=1)		
Molecular Weight	146.23	Partition Coefficient	Log K _{ow} : 0.52
Boiling Point	109 to 110 °C (228.2 to 230 °F) @ 760 mmHg	Vapor Pressure	40 mmHg (@ 20 °C)
Melting Point	-40 °C (-40 °F)	Vapor Density	5.03 (Air = 1)
Refractive Index	1.389	Volatility	Not available.
Critical Temperature	Not available.	Odor	Not available.
Viscosity	Not available.	Taste	Not available.

Section X. Stability and Reactivity Data	
Stability	This material is stable if stored under proper conditions. (See Section VII for instructions)
Conditions of Instability	Avoid excessive heat and light.
Incompatibilities	Reactive with strong reducing agents, finely powder metals, strong alkalies (bases).

Section XI. Toxicological Information	
RTECS Number	ER2450000
Routes of Exposure	Eye Contact. Ingestion. Inhalation.
Toxicity Data	Rat LD ₅₀ (oral) >25 gm/kg Rat LC ₅₀ (inhalation) >4100 ppm Rat LD ₅₀ (intraperitoneal) 3210 mg/kg Mouse LD ₅₀ (oral) 216.4 mg/kg Mouse LC ₅₀ (inhalation) >4103 ppm
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Section XII. Ecological Information	
Ecotoxicity	Not available.
Environmental Fate	Bis(1,1-dimethylethyl)peroxide's production and use as a polymerization catalyst for resins, including olefins, styrene, styrenated alkyds, and silicones, as an ignition accelerator for diesel fuel, in organic synthesis, and as an intermediate may result in its release to the environment. If released into the atmosphere, bis(1,1-dimethylethyl)peroxide will exist solely in the vapor phase in the ambient atmosphere, based on a measured vapor pressure of 25.1 mm Hg at 25 deg C. Bis(1,1-dimethylethyl)peroxide absorbs light up to 340 nm and photolyzes to form two t-butoxy radicals. The t-butoxy radical is unstable and decomposes to form acetone and methyl radicals. A host of other products result from free radical reactions including t-butanol, methyl t-butyl ether, isobutylene oxide, ethane, and methane. An estimated Koc value of 720 suggests that bis(1,1-dimethylethyl)peroxide will have moderate mobility in soil. Volatilization from moist soil is expected to be rapid based upon an estimated Henry's Law constant of 0.012 atm-cu m/mole. Volatilization from dry soil surfaces should be important given the vapor pressure of this compound. Biodegradation data for bis(1,1-dimethylethyl)peroxide is not available. In water, bis(1,1-dimethylethyl)peroxide is expected to adsorb to sediment or particulate matter based on its Koc value. This compound is expected to volatilize from water surfaces given its estimated Henry's Law constant. Estimated half-lives from a model river and model lake are 7 hours and 5 days, respectively. Bioconcentration in aquatic organisms should be high based upon an estimated BCF value of 250. Given the commercial uses of bis(1,1-dimethylethyl)peroxide, human exposure appears to be likely from occupational situations through dermal routes. The general population will be exposed to bis(1,1-dimethylethyl)peroxide via dermal contact with products containing bis(1,1-dimethylethyl)peroxide.

Section XIII. Disposal Considerations	
Waste Disposal	Recycle to process, if possible. Consult your local regional authorities. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. Observe all federal, state and local regulations when disposing of the substance.

Section XIV. Transport Information	
DOT Classification	DOT Class 5.2: Organic peroxide.
PIN Number	UN3107
Proper Shipping Name	Organic peroxide type E, liquid
Packing Group (PG)	II
DOT Pictograms	

Section XV. Other Regulatory Information and Pictograms

TSCA Chemical Inventory (EPA)	This compound is ON the EPA Toxic Substances Control Act (TSCA) inventory list.
WHMIS Classification (Canada)	On DSL
EINECS Number (EEC)	203-733-6
EEC Risk Statements	R5- Heating may cause an explosion. R8- Contact with combustible material may cause fire. R10- Flammable. R18- In use, may form flammable/explosive vapor-air mixture. R45- May cause cancer.
Japanese Regulatory Data	ENCS No. 2-367 3-367 ; 4-367

Section XVI. Other Information

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Notice to Reader

TCl laboratory chemicals are for research purposes only and are NOT intended for use as drugs, food additives, households, or pesticides. The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our MSDS sheets are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated MSDS sheets for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, facial mask, fume hood). For proper handling and disposal, always comply with federal, state, and local regulations.