








Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
  	<p>Toxic compound, do not ingest or inhale. Avoid all contact with this material.</p> <p>Photosensitizer.</p> <p>Environmental hazard.</p> <p>This material is very toxic to aquatic organisms and may cause long term adverse effects to the aquatic environment.</p> <p>CARCINOGEN. MINIMIZE EXPOSURE.</p> <p>Refrigerate.</p>	   

Section I. Chemical Product and Company Identification

Chemical Name	Hexachlorobenzene		
Catalog Number	H0053	Supplier	TCI America 9211 N. Harborgate St. Portland OR 1-800-423-8616
Synonym	Perchlorobenzene		
Chemical Formula	C ₆ Cl ₆		
CAS Number	118-74-1	<div>In case of Emergency Call</div> <div>Chemtrec® (800) 424-9300 (U.S.) (703) 527-3887 (International)</div>	

Section II. Composition and Information on Ingredients

Chemical Name	CAS Number	Percent (%)	TLV/PEL	Toxicology Data
Hexachlorobenzene	118-74-1	Min. 99.0 (GC)	This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen.	Rat LD ₅₀ (oral) 10000 mg/kg Rat LC ₅₀ (inhalation) 3600 mg/m ³ Mouse LD ₅₀ (oral) 4000 mg/kg

Section III. Hazards Identification

Acute Health Effects	<p>Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death.</p> <p>Causes photosensitivity. Exposure to light can result in allergic reactions resulting in dermatologic lesions, which can vary from sunburn-like responses to edematous, vesiculated lesions or bullae.</p> <p>Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.</p>
Chronic Health Effects	<p>CARCINOGENIC EFFECTS : Not available.</p> <p>MUTAGENIC EFFECTS : Not available.</p> <p>TERATOGENIC EFFECTS : Tumorigenic Effects.</p> <p>Rat TD Oral 5475 mg/kg/2 years continuous.</p> <p>TOXIC Effects:</p> <p>Tumorigenic – Carcinogenic by RTECS criteria.</p> <p>Liver – Tumors.</p> <p>Kidney, Ureter, and Bladder – Kidney tumors.</p> <p>Rat TDLo Oral 2738 mg/kg/2 years continuous.</p> <p>TOXIC Effects:</p> <p>Tumorigenic – Carcinogenic by RTECS criteria.</p> <p>Kidney, Ureter, and Bladder – Kidney tumors.</p> <p>Blood – Leukemia.</p> <p>Mouse TDLo Oral 6972 mg/kg/83 weeks continuous.</p> <p>TOXIC Effects:</p> <p>Tumorigenic – Neoplastic by RTECS criteria.</p> <p>Liver – Tumors.</p> <p>Blood – Lymphomas including Hodgkin's disease.</p> <p>DEVELOPMENTAL TOXICITY : Reproductive Effects.</p> <p>Rat TDLo Oral 6450 mg/kg female 1-22 days of pregnancy and 21 days after birth.</p> <p>TOXIC Effects:</p> <p>Specific Developmental Abnormalities – Blood and lymphatic system.</p> <p>Specific Developmental Abnormalities – Immune and reticuloendothelial system.</p> <p>Rat TDLo Oral 40 mg/kg female 10-13 days of pregnancy.</p> <p>TOXIC Effects:</p> <p>Specific Developmental Abnormalities – Musculoskeletal system.</p> <p>Mouse TDLo Oral 600 mg/kg female 6-17 days of pregnancy.</p> <p>TOXIC Effects:</p> <p>Effects on Newborn – Weaning or lactation index.</p> <p>Effects on Newborn – Biochemical and metabolic.</p> <p>Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.</p>

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Emergency phone number (800) 424-9300

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 for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
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	May be combustible at high temperature.	Auto-Ignition	Not available.
Flash Points	242°C (467.6°F)	Flammable Limits	Not available.
Combustion Products	These products include toxic carbon oxides (CO, CO ₂), halogenated compounds. WARNING: Highly toxic HCl gas is produced during combustion.		
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	SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. DO NOT use water jet. Consult with local fire authorities before attempting large scale fire-fighting operations.		


Section VI. Accidental Release Measures

Spill Cleanup Instructions	Toxic material. Photosensitizing material. Environmentally hazardous material. Carcinogenic material. Stop leak if without risk. DO NOT get water inside container. DO NOT touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all sources of ignition. Consult federal, state, and/or local authorities for assistance on disposal.
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Section VII. Handling and Storage

Handling and Storage Information	TOXIC. PHOTSENSITIZER. ENVIRONMENTAL HAZARD. CARCINOGENIC. REFRIGERATE. Keep locked up. Keep away from heat. Mechanical exhaust required. When not in use, tightly seal the container and store in a dry, cool place. Avoid excessive heat and light. DO NOT ingest. Do not breathe dust. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Treat symptomatically and supportively. Always store away from incompatible compounds such as oxidizing agents.
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Section VIII. Exposure Controls/Personal Protection

Engineering Controls	Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
Personal Protection	Splash goggles. Lab coat. Dust respirator. Boots. Gloves. A MSHA/NIOSH approved respirator must be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product. 
Exposure Limits	This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen.

Section IX. Physical and Chemical Properties

Physical state @ 20°C	Solid. (White Needles.)	Solubility	Soluble in diethyl ether, ether, hot benzene, chloroform, carbon disulfide. Sparingly soluble in cold alcohol, carbon tetrachloride. Insoluble in water.
Specific Gravity	2.044 (@ 23°C) (water=1)	Partition Coefficient	Log P _{ow} : 5.31
Molecular Weight	284.78	Vapor Pressure	4.9 x 10 ⁻⁵ mmHg @ 25°C
Boiling Point	323 to 326°C (613.4 to 618.8°F)	Vapor Density	9.83 (Air = 1)
Melting Point	230°C (446°F)	Volatility	Not available.
Refractive Index	Not available.	Odor	Not available.
Critical Temperature	Not available.	Taste	Not available.
Viscosity	Not available.		

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Emergency phone number (800) 424-9300

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 oxidizing agents.

Section XI. Toxicological Information

RTECS Number	DA2975000
Routes of Exposure	Eye Contact. Ingestion. Inhalation.
Toxicity Data	<p>Rat LD₅₀ (oral) 10000 mg/kg Rat LC₅₀ (inhalation) 3600 mg/m³ Mouse LD₅₀ (oral) 4000 mg/kg</p>
Chronic Toxic Effects	<p>CARCINOGENIC EFFECTS : Not available. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Tumorigenic Effects. Rat TD Oral 5475 mg/kg/2 years continuous. TOXIC Effects: Tumorigenic – Carcinogenic by RTECS criteria. Liver – Tumors. Kidney, Ureter, and Bladder – Kidney tumors. Rat TDLo Oral 2738 mg/kg/2 years continuous. TOXIC Effects: Tumorigenic – Carcinogenic by RTECS criteria. Kidney, Ureter, and Bladder – Kidney tumors. Blood – Leukemia. Mouse TDLo Oral 6972 mg/kg/83 weeks continuous. TOXIC Effects: Tumorigenic – Neoplastic by RTECS criteria. Liver – Tumors. Blood – Lymphomas including Hodgkin's disease. DEVELOPMENTAL TOXICITY : Reproductive Effects. Rat TDLo Oral 6450 mg/kg female 1–22 days of pregnancy and 21 days after birth. TOXIC Effects: Specific Developmental Abnormalities – Blood and lymphatic system. Specific Developmental Abnormalities – Immune and reticuloendothelial system. Rat TDLo Oral 40 mg/kg female 10–13 days of pregnancy. TOXIC Effects: Specific Developmental Abnormalities – Musculoskeletal system. Mouse TDLo Oral 600 mg/kg female 6–17 days of pregnancy. TOXIC Effects: Effects on Newborn – Weaning or lactation index. Effects on Newborn – Biochemical and metabolic. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.</p>
Acute Toxic Effects	<p>Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death. Causes photosensitivity. Exposure to light can result in allergic reactions resulting in dermatologic lesions, which can vary from sunburn-like responses to edematous, vesiculated lesions or bullae. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.</p>

Section XII. Ecological Information

Ecotoxicity	Not available.
Environmental Fate	<p>Hexachlorobenzene's production and use as an organic synthesis reagent and its former application as a fungicide may have resulted in its release to the environment through various waste streams. Hexachlorobenzene may also be released to the environment as a waste product in the production of several chlorinated hydrocarbons and pesticides. Based upon a vapor pressure of 4.9X10⁻⁵ mm Hg at 25 deg C, hexachlorobenzene is expected to exist in both the vapor and particulate-phase in the ambient atmosphere. Vapor-phase hexachlorobenzene is degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals with an estimated atmospheric half-life of about 2.6 years. Particulate-phase hexachlorobenzene may be physically removed from the air by wet and dry deposition. Hexachlorobenzene is expected to be immobile in soils based upon log Koc values in the range of 3.6–5.5 measured in soils and sediment. Volatilization of hexachlorobenzene from dry soil surfaces is not expected based upon the vapor pressure of this compound. Volatilization from moist soil surfaces is expected based on the Henry's Law constant of 5.8X10⁻⁴ atm-cu m/mole at 25 deg C, but this process may be attenuated due to adsorption. Hexachlorobenzene is not expected to biodegrade based on a measured half-life in soil of over 1,500 days. In water, hexachlorobenzene is expected to adsorb to sediment or particulate matter based on its measured Koc values. This compound is expected to volatilize from water surfaces given its Henry's Law constant, but adsorption may attenuate this process. Estimated volatilization half-lives for a model river and model lake are 7 and 180 hours, respectively, when neglecting adsorption. The volatilization half-life from a model pond (2 m deep) is approximately 5 years if adsorption is considered. Biodegradation is not expected in water based on aerobic and anaerobic biodegradation half-lives on the order of several years in fresh waters. Bioconcentration in aquatic organisms is very high based on BCF values in the range of 1,600 to 20,000 measured in fish. Occupational exposure may be through inhalation and dermal contact with this compound at workplaces where hexachlorobenzene is produced or used. The general population may be exposed to hexachlorobenzene via inhalation of ambient air, ingestion of food and drinking water.</p>

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 6.1: Toxic material.

PIN Number

UN2729

Proper Shipping Name

Hexachlorobenzene

Packing Group (PG)

III

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)

CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC).
On DSL.

EINECS Number (EEC)

204-273-9

EEC Risk Statements

R23/24/25- Toxic by inhalation, in contact with skin and if swallowed.
 R45- May cause cancer.
 R50- Very toxic to aquatic organisms.
 R53- May cause long-term adverse effects in the aquatic environment.

Japanese Regulatory Data

ENCS No. (3)-34, (3)-76

Section XVI. Other Information**Version 1.0****Validated on 2/28/2007.****Printed 2/28/2007.****Notice to Reader**

TCI 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.