

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>Irritating to skin, eyes, and the respiratory system.</p> <p>CARCINOGEN. MINIMIZE EXPOSURE.</p> <p>Air and light sensitive material.</p> <p>Store under nitrogen.</p>	   

Section I. Chemical Product and Company Identification

Chemical Name	Catechol		
Catalog Number	P0567	Supplier	TCI America 9211 N. Harborgate St. Portland OR 1-800-423-8616
Synonym	1,2-Benzenediol (CA INDEX NAME); 1,2-Dihydroxybenzene; Pyrocatechol		
Chemical Formula	C ₆ H ₆ O ₂		
CAS Number	120-80-9	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
Catechol	120-80-9	Min. 99.0 (GC)	This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen.	Rat LD ₅₀ (oral) 260 mg/kg Rabbit LD ₅₀ (dermal) 800 mg/kg Mouse LD ₅₀ (intraperitoneal) 68 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. Irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.</p> <p>Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.</p>
Chronic Health Effects	<p>CARCINOGENIC EFFECTS : Carcinogenic by RTECS criteria</p> <p>MUTAGENIC EFFECTS : Not available.</p> <p>TERATOGENIC EFFECTS : TUMORIGENIC EFFECTS</p> <p>Rat TDLo Oral; 171 gm/kg/51 weeks continuous</p> <p>TOXIC EFFECTS</p> <p>Tumorigenic - Carcinogenic by RTECS criteria</p> <p>Gastrointestinal - Tumors</p> <p>TDLo Oral; 437 gm/kg/2 years continuous</p> <p>TOXIC EFFECTS</p> <p>Tumorigenic - Carcinogenic by RTECS criteria</p> <p>Gastrointestinal - Tumors</p> <p>TDLo Oral; 7854 mg/kg/34 weeks intermittent</p> <p>TOXIC EFFECTS</p> <p>Tumorigenic - Carcinogenic by RTECS criteria</p> <p>Gastrointestinal - Tumors</p> <p>DEVELOPMENTAL TOXICITY: REPRODUCTIVE EFFECTS</p> <p>Rat TDLo Oral; 1 gm/kg; female 11 days of pregnancy</p> <p>TOXIC EFFECTS</p> <p>Effects on Fertility - Litter size (e.g., number fetuses per litter, measured before birth)</p> <p>TDLo Subcutaneous; 5 mg/kg; female 1 day prior to mating</p> <p>TOXIC EFFECTS</p> <p>Maternal Effects - Ovaries, fallopian tubes</p> <p>Repeated exposure of the eyes to a low level of dust can produce eye irritation. Repeated skin exposure can produce local skin destruction, or dermatitis. Repeated inhalation of dust can produce varying degree of respiratory irritation or lung damage. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.</p>

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.

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Emergency phone number (800) 424-9300

Section V. Fire and Explosion Data

Flammability	May be combustible at high temperature.	Auto-Ignition	510 °C (950 °F)
Flash Points	127 °C (260.6 °F).	Flammable Limits	LOWER: 1.97%
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	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. Irritating material. Carcinogenic material. Air and light sensitive 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. IRRITANT. CARCINOGEN. AIR AND LIGHT SENSITIVE. STORE UNDER INERT GAS. Keep locked up.. Keep container dry. 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. Never add water to this product. 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, acids, alkalis (bases).
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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. Be sure to use a MSHA/NIOSH approved respirator or equivalent. 
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 ~ pale yellowish-red, crystal ~ powder.)	Solubility	Very soluble in pyridine, aqueous alkalis. Soluble in water, alcohol, ether, benzene, chloroform, acetic acid.
Specific Gravity	1.344 (water=1)		
Molecular Weight	110.11	Partition Coefficient	Log P _{ow} : 0.88
Boiling Point	246 °C (474.8 °F)	Vapor Pressure	4.0 Pa (@ 20 °C)
Melting Point	105 °C (221 °F)	Vapor Density	3.8 (Air = 1)
Refractive Index	Not available.	Volatility	Not available.
Critical Temperature	Not available.	Odor	Slight characteristic.
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. Air and light sensitive. May discolor on exposure to light or air.
Incompatibilities	Reactive with oxidizing agents, acids, alkalis (bases), acid chlorides, and acid anhydrides.

Section XI. Toxicological Information

RTECS Number	UX1050000
Routes of Exposure	Eye Contact. Ingestion. Inhalation.
Toxicity Data	Rat LD ₅₀ (oral) 260 mg/kg Rabbit LD ₅₀ (dermal) 800 mg/kg Mouse LD ₅₀ (intraperitoneal) 68 mg/kg
Chronic Toxic Effects	CARCINOGENIC EFFECTS : Carcinogenic by RTECS criteria MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : TUMORIGENIC EFFECTS Rat TDLo Oral; 171 gm/kg/51 weeks continuous TOXIC EFFECTS Tumorigenic - Carcinogenic by RTECS criteria Gastrointestinal - Tumors TDLo Oral; 437 gm/kg/2 years continuous TOXIC EFFECTS Tumorigenic - Carcinogenic by RTECS criteria Gastrointestinal - Tumors TDLo Oral; 7854 mg/kg/34 weeks intermittent TOXIC EFFECTS Tumorigenic - Carcinogenic by RTECS criteria Gastrointestinal - Tumors DEVELOPMENTAL TOXICITY: REPRODUCTIVE EFFECTS Rat TDLo Oral; 1 gm/kg; female 11 days of pregnancy TOXIC EFFECTS Effects on Fertility - Litter size (e.g., number fetuses per litter, measured before birth) TDLo Subcutaneous; 5 mg/kg; female 1 day prior to mating TOXIC EFFECTS Maternal Effects - Ovaries, fallopian tubes Repeated exposure of the eyes to a low level of dust can produce eye irritation. Repeated skin exposure can produce local skin destruction, or dermatitis. Repeated inhalation of dust can produce varying degree of respiratory irritation or lung damage. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.
Acute Toxic Effects	Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death. Irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.

Section XII. Ecological Information

Ecotoxicity	Not available.
Environmental Fate	Catechol's production and use in the synthesis of pharmaceutical and agricultural products as well as in the rubber, chemical, photographic, dye, and oil industries may result in its release to the environment through various waste streams. Catechol is found in plants including onions, apples and crude sugar beets. If released to air, a vapor pressure of 0.00366 mm Hg at 25 deg C indicates catechol will exist solely as a vapor in the atmosphere. Vapor-phase catechol will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 2.8 hours. Catechol does not absorb at wavelengths >290 nm and therefore is not expected to be susceptible to direct photolysis by sunlight. If released to soil, catechol is expected to have moderate mobility based upon a Koc of 118. Volatilization from moist soil surfaces is not expected to be an important fate process based upon an estimated Henry's Law constant of 1.2X10 ⁻⁹ atm-cu m/mole. Catechol is not expected to volatilize from dry soil surfaces based upon its vapor pressure. Catechol reached 80-100% of its theoretical BOD within 2 weeks using an activated sludge inoculum and the Japanese MITI tests. Catechol has a residence half-life of 1 day in chernozem soil on hard carbonaceous woody loam. These studies indicate that biodegradation is expected to be an important environmental fate process. If released into water, catechol is not expected to adsorb to suspended solids and sediment based upon the Koc. Volatilization from water surfaces is not expected to be an important fate process based upon this compound's estimated Henry's Law constant. An estimated BCF of 3.2 suggests the potential for bioconcentration in aquatic organisms is low. Hydrolysis is not expected to be an important environmental fate process since this compound lacks functional groups that hydrolyze under environmental conditions. Occupational exposure to catechol may occur through inhalation and dermal contact with this compound at workplaces where catechol is produced or used. Monitoring data indicate that the general population may be exposed to catechol via inhalation of smoke generated from burning wood or fuel and through dermal contact with contaminated water.

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.
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Section XIV. Transport Information

DOT Classification	DOT CLASS 6.1: Poisonous material.
PIN Number	UN2811
Proper Shipping Name	Toxic solid, organic, n.o.s.
Packing Group (PG)	III RQ = 100 (45.4)
DOT Pictograms	

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Emergency phone number (800) 424-9300

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). CLASS D-2B: Material causing other toxic effects (TOXIC). On DSL.
EINECS Number (EEC)	204-427-5
EEC Risk Statements	R23/24/25- Toxic by inhalation, in contact with skin and if swallowed. R36/37/38- Irritating to eyes, respiratory system and skin. R45- May cause cancer.
Japanese Regulatory Data	ENCS No. 3-543

Section XVI. Other Information

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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.