



Material Safety Data Sheet

| HAZARD WARNINGS | RISK PHRASES | PROTECTIVE CLOTHING |
|--|--|---|
|  | Harmful compound, minimize exposure. Irritating to skin, eyes, and the respiratory system. This compound is a skin sensitizer. Environmental hazard. This material is very toxic to aquatic organisms and may cause long term adverse effects to the aquatic environment. CARCINOGEN. MINIMIZE EXPOSURE. MUTAGEN. MINIMIZE EXPOSURE. |  |

Section I. Chemical Product and Company Identification

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|------------------|---|---------------------------------|---|
| Chemical Name | Pentachloronitrobenzene | | |
| Catalog Number | P0032 | Supplier | TCI America 9211 N. Harbortgate St. Portland OR 1-800-423-8616 |
| Synonym | Benzene, 1,2,3,4,5-pentachloro-6-nitro- (CA INDEX NAME) | | |
| Chemical Formula | C ₆ Cl ₅ NO ₂ | | |
| CAS Number | 82-68-8 | 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 |
|-------------------------|------------|----------------|--|--|
| Pentachloronitrobenzene | 82-68-8 | Min. 97.0 (GC) | This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen. This compound is classified as a mutagen. There is no acceptable exposure limit for a mutagen. | Rat LD ₅₀ (oral) 1100 mg/kg Rat LD ₅₀ (inhalation) 1400 mg/m ³ Rat LD ₅₀ (intraperitoneal) 5 gm/kg |

Section III. Hazards Identification

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| Acute Health Effects | Harmful if ingested or inhaled. Minimize exposure to this material. Severe overexposure can result in injury 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. Skin contact may result in sensitization. Always cover all exposed skin with an impermeable layer and use proper eye protection. A OSHA/MSHA approved dust and vapor respirator is required when working with this material. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound. |
| Chronic Health Effects | CARCINOGENIC EFFECTS : Carcinogenic by RTECS criteria. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Tumorigenic effects. Mouse TDLo Oral 135 gm/kg for 77 weeks continuous Toxic Effects: Tumorigenic - Carcinogenic by RTECS criteria Lung, Thorax, or Respiration - Tumors Liver - Tumors DEVELOPMENTAL TOXICITY : Reproductive effects. Mouse TDLo Oral 1935 mg/kg, female 6-14 days of pregnancy Toxic Effects: Effects on Embryo or Fetus - Extra embryonic structures Specific Developmental Abnormalities - Eye, ear Specific Developmental Abnormalities - Urogenital system Mouse TDLo Oral 4176 mg/kg, female 6-10 days of pregnancy Toxic Effects: Effects on Embryo or Fetus - Fetotoxicity Specific Developmental Abnormalities - Central nervous system Specific Developmental Abnormalities - Craniofacial Mouse TDLo Oral 5gm/kg, female 7-16 days of pregnancy Toxic Effects: Specific Developmental Abnormalities - Craniofacial Specific Developmental Abnormalities - Musculoskeletal system Effects on Embryo or Fetus - Fetal death Repeated or prolonged exposure to this compound is not known to aggravate existing medical conditions. |

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Emergency phone number (800) 424-9300

Section IV. First Aid Measures

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| 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

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| Flammability | May be combustible at high temperature. | Auto-Ignition | Not available. |
| Flash Points | Not available. | Flammable Limits | Not available. |
| Combustion Products | These products include toxic carbon oxides (CO,CO ₂), halogenated compounds, nitrogen oxides (NO _x). 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

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| Spill Cleanup Instructions | Harmful material. Irritating material. This material is a skin sensitizer. Environmentally hazardous material. Carcinogenic material. Mutagenic material. Use a shovel to put the material into a convenient waste disposal container. Consult federal, state, and/or local authorities for assistance on disposal. |
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Section VII. Handling and Storage

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| Handling and Storage Information | HARMFUL. IRRITANT. SENSITIZER. ENVIRONMENTAL HAZARD. CARCINOGEN. MUTAGEN. 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 breathe dust. Always store away from incompatible compounds such as oxidizing agents. |
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Section VIII. Exposure Controls/Personal Protection

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| 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. 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. This compound is classified as a mutagen. There is no acceptable exposure limit for a mutagen. |

Section IX. Physical and Chemical Properties

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| Physical state @ 20°C | Solid. (White crystal.) | Solubility | Insoluble in alcohol, water (0.55mg/L 25°C). Freely soluble in chloroform, benzene, carbon disulfide. |
| Specific Gravity | 1.718 (water=1) | | |
| Molecular Weight | 295.33 | Partition Coefficient | LOG P _{ow} : 4.46 |
| Boiling Point | 328°C (622.4°F) (some dec.) | Vapor Pressure | 1.73 Pa (@ 25°C) |
| Melting Point | 147°C (296.6°F) | Vapor Density | Not available. |
| Refractive Index | Not available. | Volatility | Not available. |
| Critical Temperature | Not available. | Odor | Not available. |
| Viscosity | Not available. | Taste | Not available. |

Section X. Stability and Reactivity Data

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| 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 oxidizing agents. |

Section XI. Toxicological Information

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| RTECS Number | DA6650000 |
| Routes of Exposure | Eye Contact. Ingestion. Inhalation. |
| Toxicity Data | Rat LD ₅₀ (oral) 1100 mg/kg Rat LD ₅₀ (inhalation) 1400 mg/m ³ Rat LD ₅₀ (intraperitoneal) 5 gm/kg |
| Chronic Toxic Effects | CARCINOGENIC EFFECTS : Carcinogenic by RTECS criteria. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Tumorigenic effects. Mouse TDLo Oral 135 gm/kg for 77 weeks continuous Toxic Effects: Tumorigenic - Carcinogenic by RTECS criteria Lung, Thorax, or Respiration - Tumors Liver - Tumors DEVELOPMENTAL TOXICITY : Reproductive effects. Mouse TDLo Oral 1935 mg/kg, female 6-14 days of pregnancy Toxic Effects: Effects on Embryo or Fetus - Extra embryonic structures Specific Developmental Abnormalities - Eye, ear Specific Developmental Abnormalities - Urogenital system Mouse TDLo Oral 4176 mg/kg, female 6-10 days of pregnancy Toxic Effects: Effects on Embryo or Fetus - Fetotoxicity Specific Developmental Abnormalities - Central nervous system Specific Developmental Abnormalities - Craniofacial Mouse TDLo Oral 5gm/kg, female 7-16 days of pregnancy Toxic Effects: Specific Developmental Abnormalities - Craniofacial Specific Developmental Abnormalities - Musculoskeletal system Effects on Embryo or Fetus - Fetal death Repeated or prolonged exposure to this compound is not known to aggravate existing medical conditions. |
| Acute Toxic Effects | Harmful if ingested or inhaled. Minimize exposure to this material. Severe overexposure can result in injury 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. Skin contact may result in sensitization. Always cover all exposed skin with an impermeable layer and use proper eye protection. A OSHA/MSHA approved dust and vapor respirator is required when working with this material. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound. |

Section XII. Ecological Information

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| Ecotoxicity | Not available. |
| Environmental Fate | Pentachloronitrobenzene's production may result in its release to the environment through various waste streams; its use as a fungicide will result in its direct release to the environment. If released to air, a vapor pressure of 5.0X10 ⁻⁵ mm Hg at 20 deg C indicates pentachloronitrobenzene will exist in both the vapor and particulate phases in the atmosphere. Vapor-phase pentachloronitrobenzene 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 6 years. Particulate-phase pentachloronitrobenzene will be removed from the atmosphere by wet or dry deposition. Pentachloronitrobenzene does contain chromophores that absorb at wavelengths greater than 290 nm and therefore may be susceptible to direct photolysis by sunlight. If released to soil, pentachloronitrobenzene is expected to be immobile based upon a Koc of 20,000. Volatilization from moist soil surfaces is expected to be an important fate process based upon an estimated Henry's Law constant of 4.4X10 ⁻⁵ atm-cu m/mole. However, adsorption to soil is expected to attenuate volatilization. An average soil half-life of 468 days suggests that biodegradation is not an important environmental fate process in soil. If released into water, pentachloronitrobenzene is expected to adsorb to suspended solids and sediment based upon the Koc. Results of river: sediment biodegradation studies on pentachloronitrobenzene reveal first-order rate constants that are not that much different than those in sterile water, first order biodegradation rate constant of 0.00456-0.00481/hr vs 0.00380 for a sterile sediment:water system, suggesting that biodegradation is not an important environmental fate process in water. Volatilization from water surfaces is expected to be an important fate process based upon this compound's estimated Henry's Law constant. Estimated volatilization half-lives for a model river and model lake are 39 hours and 17 days, respectively. However, volatilization from water surfaces is expected to be attenuated by adsorption to suspended solids and sediment in the water column. The estimated volatilization half-life from a model pond is 44 months if adsorption is considered. A BCF range of of 238 to 1,140 suggests bioconcentration in aquatic organisms is high to very high. Hydrolysis is not expected to be an important environmental fate process since this compound lacks functional groups that hydrolyze under environmental conditions. Aqueous photolysis half-lives of 2.5 days and 26.8 hours at pH 5 have been reported. Occupational exposure to pentachloronitrobenzene may occur through inhalation and dermal contact with this compound at workplaces where pentachloronitrobenzene is produced or used. Monitoring and use data indicate that the general population may be exposed to pentachloronitrobenzene via inhalation of ambient air, ingestion of food and drinking 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.

Section XIV. Transport Information

DOT Classification

DOT CLASS 9: Miscellaneous

PIN Number

UN3077

Proper Shipping Name

Environmentally hazardous substance, solid, n.o.s.

Packing Group (PG)

III **RQ = 100 (45.4)**

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-2B: Material causing other toxic effects (TOXIC).
On NDSL.

EINECS Number (EEC)

201-435-0

EEC Risk Statements

R20/21/22- Harmful by inhalation, in contact with skin and if swallowed.
 R36/37/38- Irritating to eyes, respiratory system and skin.
 R43- May cause sensitization by skin contact.
 R45- May cause cancer.
 R46- May cause heritable genetic damage.
 R47- May cause birth defects.
 R50- Very toxic to aquatic organisms.
 R53- May cause long-term adverse effects in the aquatic environment.

Japanese Regulatory Data

ENCS No. 3-461

Section XVI. Other Information**Version 1.0****Validated on 1/5/2011.****Printed 1/5/2011.****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.