

# Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
	<b>Environmental hazard.</b> This material is very toxic to aquatic organisms and may cause long term adverse effects to the aquatic environment. <b>POSSIBLE CARCINOGEN. MINIMIZE EXPOSURE.</b> Harmful compound, minimize exposure. Irritating to skin, eyes, and the respiratory system.	

## Section I. Chemical Product and Company Identification

Chemical Name	<b>Pyrene</b>		
Catalog Number	P1104	Supplier	TCI America 9211 N. Harborgate St. Portland OR 1-800-423-8616
Synonym	Benzo[def]phenanthrene		
Chemical Formula	C <sub>16</sub> H <sub>10</sub>		
CAS Number	129-00-0	In case of Emergency Call	<b>Chemtrec®</b> <b>(800) 424-9300 (U.S.)</b> <b>(703) 527-3887 (International)</b>

## Section II. Composition and Information on Ingredients

Chemical Name	CAS Number	Percent (%)	TLV/PEL	Toxicology Data
Pyrene	129-00-0	Min. 97.0 (GC)	This chemical is classified as a possible carcinogen. There is no acceptable exposure limit for a carcinogen.	Rat LC <sub>50</sub> (inhalation) 170 mg/m <sup>3</sup> Mouse LD <sub>50</sub> (intraperitoneal) 514 mg/kg Mouse LD <sub>50</sub> (oral) 800 mg/kg

## Section III. Hazards Identification

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. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.
Chronic Health Effects	<b>CARCINOGENIC EFFECTS</b> : Equivocal tumorigenic by RTECS criteria <b>MUTAGENIC EFFECTS</b> : Not available. <b>TERATOGENIC EFFECTS</b> : Tumorigenic effects: Mouse TDLO (Skin) 10 gm/kg/3 weeks intermittent Toxic Effects: Tumorigenic - Equivocal tumorigenic by RTECS criteria Skin and Appendages - Tumors <b>DEVELOPMENTAL TOXICITY</b> : Not available. Repeated or prolonged exposure to this compound is not known to aggravate existing medical conditions.

## 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	May be combustible at high temperature.	Auto-Ignition	Not available.
Flash Points	199°C (390.2°F).	Flammable Limits	Not available.
Combustion Products	These products are toxic carbon oxides (CO, CO <sub>2</sub> ).		
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.		

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Emergency phone number (800) 424-9300

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

Environmentally hazardous material. Possibly carcinogenic material. Harmful material. Irritating 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.

**Section VII. Handling and Storage**Handling and Storage  
Information

ENVIRONMENTAL HAZARD. POSSIBLE CARCINOGEN. HARMFUL. IRRITANT. 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.

**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. 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	Solid. (Crystal, powder. White, pale yellow green.)	Solubility	Soluble in toluene, ethanol, ethyl ether, benzene, carbon disulfide, ligroin; Slightly soluble in carbon tetrachloride, organic solvents.
Specific Gravity	1.271 (water=1)	Partition Coefficient	LOG P <sub>ow</sub> : 4.88
Molecular Weight	202.26	Vapor Pressure	Not applicable.
Boiling Point	393°C (739.4°F)	Vapor Density	Not available.
Melting Point	150°C (302°F)	Volatility	Not available.
Refractive Index	Not available.	Odor	Not available.
Critical Temperature	Not available.	Taste	Not available.
Viscosity	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 oxidizing agents.

**Section XI. Toxicological Information**

RTECS Number	UR2450000
Routes of Exposure	Eye Contact. Ingestion. Inhalation.
Toxicity Data	Rat LC <sub>50</sub> (inhalation) 170 mg/m <sup>3</sup> Mouse LD <sub>50</sub> (intraperitoneal) 514 mg/kg Mouse LD <sub>50</sub> (oral) 800 mg/kg
Chronic Toxic Effects	<b>CARCINOGENIC EFFECTS</b> : Equivocal tumorigenic by RTECS criteria <b>MUTAGENIC EFFECTS</b> : Not available. <b>TERATOGENIC EFFECTS</b> : Tumorigenic effects: Mouse TDLO (Skin) 10 gm/kg/3 weeks intermittent Toxic Effects: Tumorigenic - Equivocal tumorigenic by RTECS criteria Skin and Appendages - Tumors <b>DEVELOPMENTAL TOXICITY</b> : Not available. 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. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.

**Section XII. Ecological Information**

Ecotoxicity Not available.

Environmental Fate Pyrene's production and use as a starting material in the production of optical brighteners and dyes, in biochemical research and as a chemical intermediate may result in its release to the environment through various waste streams. Pyrene is a ubiquitous of  $4.5 \times 10^{-6}$  mm Hg at 25 deg C indicates pyrene will exist in both the vapor and particulate phases in the atmosphere. Vapor-phase pyrene 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 8 hours. The atmospheric lifetime of pyrene due to reaction with nitrate radicals has been estimated as about 30 days. Particulate-phase pyrene will be removed from the atmosphere by wet or dry deposition. Pyrene contains chromophores that absorb at wavelengths 290 nm and therefore may be susceptible to direct photolysis by sunlight. If released to soil, pyrene is expected to have no mobility based upon Koc values of 61,936-90,000. Volatilization from moist soil surfaces is expected to be an important fate process based upon a Henry's Law constant of  $1.19 \times 10^{-5}$  atm-cu m/mole. However, adsorption to soil is expected to attenuate volatilization. Direct photolysis by natural sunlight is also expected to be an important environmental fate process for pyrene based on photolysis studies performed on a variety of substrates. Biodegradation is expected to occur slowly, with estimated half-lives ranging from several weeks to years. If released into water, pyrene is expected to adsorb to suspended solids and sediment based upon the Koc values. Volatilization from water surfaces is expected to be an important fate process based upon this compound's Henry's Law constant. Estimated volatilization half-lives for a model river and model lake are 4.5 and 37 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 29 years if adsorption is considered. BCFs of 72-970 in trout suggest bioconcentration in aquatic organisms is moderate to high. 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 pyrene may occur through inhalation and dermal contact with this compound at workplaces where pyrene is produced or used. Monitoring data indicate that the general population will be exposed to pyrene via smoking, dermal contact and inhalation of ambient air, particularly in areas with heavy traffic or near industrial sources. Exposure may also arise from consuming contaminated 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: Environmentally hazardous material.

PIN Number UN3077

Proper Shipping Name Environmentally hazardous substance, solid, n.o.s.

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) On DSL.

EINECS Number (EEC) 204-927-3

EEC Risk Statements  
 R50- Very toxic to aquatic organisms.  
 R53- May cause long-term adverse effects in the aquatic environment.  
 R20/21/22- Harmful by inhalation, in contact with skin and if swallowed.  
 R36/37/38- Irritating to eyes, respiratory system and skin.

Japanese Regulatory Data ENCS no.: 4-782

**Section XVI. Other Information**

**Version 1.0**  
**Validated on 10/12/2011.**  
**Printed 10/12/2011.**

**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.