

PYRENE**ICSC: 1474**

**Date of Peer
Review:
November
2003**

Benzo (d,e,f) phenanthrene
beta-Pyrene

CAS # 129-00-0 $C_{16}H_{10}$
 RTECS # UR2450000 Molecular mass: 202.26
 UN #
 EC #

TYPES OF HAZARD / EXPOSURE	ACUTE HAZARDS / SYMPTOMS	PREVENTION	FIRST AID / FIRE FIGHTING
FIRE	Gives off irritating or toxic fumes (or gases) in a fire.	NO open flames, NO sparks, and NO smoking.	Water spray, carbon dioxide, dry powder, alcohol-resistant foam, or polymer foam.
EXPLOSION			
EXPOSURE			
Inhalation		Avoid inhalation of dust.	Fresh air, rest.
Skin	Redness.	Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
Eyes	Redness.	Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
Ingestion		Do not eat, drink, or smoke during work.	Do NOT induce vomiting. Give plenty of water to drink. Refer for medical attention.
SPILLAGE DISPOSAL		PACKAGING & LABELLING	
Sweep spilled substance into containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder. Do NOT let this chemical enter the environment. (Extra personal protection: P2 filter respirator for harmful particles.)		Do not transport with food and feedstuffs. EU Classification UN Classification	
EMERGENCY RESPONSE		STORAGE	

Separated from strong oxidants. Keep in a well-ventilated room.

IPCS

International
Programme
on
Chemical
Safety



Prepared in the context of cooperation between the International Programme on Chemical Safety and the Commission of the European Communities © IPCS, CEC 1999

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IMPORTANT DATA

PHYSICAL STATE; APPEARANCE:
PALE YELLOW OR COLOURLESS SOLID IN VARIOUS FORMS

CHEMICAL DANGERS:
The substance decomposes on heating producing irritating fumes.

OCCUPATIONAL EXPOSURE LIMITS:
TLV not established. MAK not established.

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation, through the skin and by ingestion.

INHALATION RISK:
Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.

EFFECTS OF SHORT-TERM EXPOSURE:
Exposure to sun may provoke an irritating effect of pyrene on skin and lead to chronic skin discoloration.

PHYSICAL PROPERTIES

Boiling point: 404°C
Melting point: 151°C
Density: 1.27 g/cm³
Solubility in water: 0.135 mg/l at 25°C
Vapour pressure, Pa at °C: 0.08

Octanol/water partition coefficient as log Pow:
4.88

ENVIRONMENTAL DATA

Bioaccumulation of this chemical may occur in crustacea, in fish, in milk, in algae and in molluscs. It is strongly advised that this substance does not enter the environment.

NOTES

Pyrene is one of many polycyclic aromatic hydrocarbons - standards are usually established for them as mixtures, e.g., coal tar pitch volatiles. However, pyrene may be encountered as a laboratory chemical in its pure form. Health effects of exposure to the substance have not been investigated adequately. See ICSC 1415 Coal-tar pitch.

ADDITIONAL INFORMATION

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PYRENE

VOL.: 32 (1983) (p. 431)

CAS No.: 129-00-0

5. Summary of Data Reported and Evaluation

5.1 Experimental data

Pyrene was tested for carcinogenicity in several experiments by skin application to mice, and no skin tumour was observed. It was also tested in several studies in the mouse-skin initiation-promotion assay, with inconclusive results. When tested on mice skin simultaneously with benzo[*a*]pyrene it enhanced the carcinogenic effects of benzo[*a*]pyrene.

A study in mice by subcutaneous injection was inadequate for evaluation of carcinogenicity.

Intratracheal administration to hamsters of pyrene attached to haematite did not produce tumours.

No data on the teratogenicity of this compound were available.

Pyrene has been tested extensively in both in-vitro and in-vivo short-term tests. It was negative in assays for differential survival in DNA-repair-proficient/-deficient strains of bacteria and was mutagenic in some assays in *Salmonella typhimurium* in the presence of an exogenous metabolic system. Tests for genetic activity in yeast were negative. It was not mutagenic to *Drosophila melanogaster*. It did induce mutations and unscheduled DNA synthesis in some in-vitro assays in mammalian cells. Pyrene did not induce morphological transformation. In tests in mammals *in-vivo* it did not induce sister chromatid exchange or micronuclei.

There is *limited evidence* that pyrene is active in short-term tests.

5.2 Human data

Pyrene is present as a major component of the total content of polynuclear aromatic compounds in the environment. Human exposure to pyrene occurs primarily through the smoking of tobacco, inhalation of polluted air and by ingestion of food and water contaminated by combustion effluents.

5.3 Evaluation

The available data provide no evidence that pyrene *per se* is carcinogenic to experimental animals.

Subsequent evaluation: Suppl. 7 (1987) (p. 71: **Group 3**)

Synonyms

- Benzo(*def*)phenanthrene
- β -Pyrene