

# SAFETY DATA SHEETS

According to Globally Harmonized System of Classification and Labelling of Chemicals (GHS) - Sixth revised edition

Version: 1.0

Creation Date: Aug 10, 2017

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## 1. Identification

### 1.1 GHS Product identifier

|              |        |
|--------------|--------|
| Product name | pyrene |
|--------------|--------|

### 1.2 Other means of identification

|                |        |
|----------------|--------|
| Product number | –      |
| Other names    | Pyrene |

### 1.3 Recommended use of the chemical and restrictions on use

|                 |                             |
|-----------------|-----------------------------|
| Identified uses | For industry use only. Dyes |
|-----------------|-----------------------------|

|                      |                   |
|----------------------|-------------------|
| Uses advised against | no data available |
|----------------------|-------------------|

**2.Hazard identification**

**2.1Classification of the substance or mixture**

Not classified.

**2.2GHS label elements, including precautionary statements**

|                            |                 |
|----------------------------|-----------------|
| Pictogram(s)               | No symbol.      |
| Signal word                | No signal word. |
| Hazard statement(s)        | none            |
| Precautionary statement(s) |                 |
| Prevention                 | none            |

|          |      |
|----------|------|
| Response | none |
| Storage  | none |
| Disposal | none |

## 2.3 Other hazards which do not result in classification

none

## 3. Composition/information on ingredients

### 3.1 Substances

| Chemical name | Common names and synonyms | CAS number | EC number | Concentration |
|---------------|---------------------------|------------|-----------|---------------|
| pyrene        | pyrene                    | 129-00-0   | none      | 100%          |

## 4. First-aid measures

### 4.1 Description of necessary first-aid measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

**If inhaled**

Fresh air, rest.

**In case of skin contact**

Remove contaminated clothes. Rinse and then wash skin with water and soap.

**In case of eye contact**

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

**If swallowed**

Do NOT induce vomiting. Give one or two glasses of water to drink. Refer for medical attention .

**4.2 Most important symptoms/effects, acute and delayed**

Pyrene is a carcinogenic agent and is absorbed by the skin. It is a skin irritant, a suspected mutagen, and an equivocal tumor-causing agent. Workers exposed to 3 to 5 mg/m<sup>3</sup> of pyrene exhibited some teratogenic effects. Pyrene is a polycyclic aromatic hydrocarbon (PAH). The acute toxicity of pure PAHs appears low when administered orally or dermally to rats or mice. Human exposure to PAHs is almost exclusively via the gastrointestinal and respiratory tracts, and approximately 99 percent is ingested in the diet. Despite the high concentrations of pyrene to which humans may be exposed through food, there is currently little information available to implicate diet-derived PAHs as the cause of serious health effects. (EPA, 1998)

**4.3 Indication of immediate medical attention and special treatment needed, if necessary**

Immediate first aid: Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand-valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR as necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. /Aromatic hydrocarbons and related compounds/

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**5. Fire-fighting measures**

## **5.1Extinguishing media**

### **Suitable extinguishing media**

This chemical is a combustible solid. Use dry chemical, carbon dioxide, water spray, or alcohol foam extinguishers. Poisonous gases are produced in fire. If material or contaminated runoff enters waterways, notify downstream users of potentially contaminated waters. Notify local health and fire officials and pollution control agencies. From a secure, explosion-proof location, use water spray to cool exposed containers. If cooling streams are ineffective (venting sound increases in volume and pitch, tank discolors, or shows any signs of deforming), withdraw immediately to a secure position.

## **5.2Specific hazards arising from the chemical**

When heated to decomposition, it emits acrid smoke and fumes. (EPA, 1998)

## **5.3Special protective actions for fire-fighters**

Wear self-contained breathing apparatus for firefighting if necessary.

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## **6.Accidental release measures**

### **6.1Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

### **6.2Environmental precautions**

Personal protection: particulate filter respirator adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Sweep spilled substance into covered containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder.

### **6.3Methods and materials for containment and cleaning up**

SRP: Wastewater from contaminant suppression, cleaning of protective clothing/equipment, or contaminated sites should be contained and evaluated for subject chemical or decomposition product concentrations. Concentrations shall be lower than applicable environmental discharge or disposal criteria. Alternatively, pretreatment and/or discharge to a permitted wastewater

treatment facility is acceptable only after review by the governing authority and assurance that "pass through" violations will not occur. Due consideration shall be given to remediation worker exposure (inhalation, dermal and ingestion) as well as fate during treatment, transfer and disposal. If it is not practicable to manage the chemical in this fashion, it must be evaluated in accordance with EPA 40 CFR Part 261, specifically Subpart B, in order to determine the appropriate local, state and federal requirements for disposal.

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## **7. Handling and storage**

### **7.1 Precautions for safe handling**

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Avoid exposure - obtain special instructions before use. Provide appropriate exhaust ventilation at places where dust is formed. For precautions see section 2.2.

### **7.2 Conditions for safe storage, including any incompatibilities**

Separated from strong oxidants. Keep in a well-ventilated room. Store in a cool, dry place.

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## **8. Exposure controls/personal protection**

### **8.1 Control parameters**

#### **Occupational Exposure limit values**

Recommended Exposure Limit: 10 Hr Time-Weighted Avg: 0.1 mg/cu m (cyclohexane-extractable fraction). /Coal tar pitch volatiles/

NIOSH considers coal tar pitch volatiles to be potential occupational carcinogens. /Coal tar pitch volatiles/

#### **Biological limit values**

no data available

### **8.2 Appropriate engineering controls**

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

### **8.3 Individual protection measures, such as personal protective equipment (PPE)**

**Eye/face protection**

Safety glasses with side-shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

**Skin protection**

Wear impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique(without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

**Respiratory protection**

Wear dust mask when handling large quantities.

**Thermal hazards**

no data available

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**9.Physical and chemical properties**

|                |                                                                                       |
|----------------|---------------------------------------------------------------------------------------|
| Physical state | Yellow green crystal                                                                  |
| Colour         | Monoclinic prismatic tablets from alcohol or by sublimation; pure pyrene is colorless |
| Odour          | no data available                                                                     |

|                                                                   |                                                           |
|-------------------------------------------------------------------|-----------------------------------------------------------|
| Melting point/<br>freezing point                                  | 250° C(dec.) (lit.)                                       |
| Boiling point or<br>initial boiling<br>point and boiling<br>range | 404° C(lit.)                                              |
| Flammability                                                      | Gives off irritating or toxic fumes (or gases) in a fire. |
| Lower and upper<br>explosion limit /<br>flammability<br>limit     | no data available                                         |
| Flash point                                                       | 0° C(lit.)                                                |
| Auto-ignition<br>temperature                                      | no data available                                         |
| Decomposition<br>temperature                                      | no data available                                         |



|                                                         |                               |
|---------------------------------------------------------|-------------------------------|
| pH                                                      | no data available             |
| Kinematic viscosity                                     | no data available             |
| Solubility                                              | less than 1 mg/mL at 22.22° C |
| Partition coefficient<br>n-octanol/water<br>(log value) | log Kow = 4.88                |
| Vapour pressure                                         | 2.28E-06mmHg at 25° C         |
| Density and/or<br>relative density                      | 1.271                         |
| Relative vapour<br>density                              | no data available             |
| Particle<br>characteristics                             | no data available             |

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## 10. Stability and reactivity

### 10.1 Reactivity

no data available

### 10.2 Chemical stability

Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

PYRENE reacts with nitrogen oxides to form nitro derivatives. It also reacts with 70% nitric acid.

### 10.4 Conditions to avoid

no data available

### 10.5 Incompatible materials

Strong oxidizers. /Coal tar pitch volatiles/

### 10.6 Hazardous decomposition products

When heated to decomposition it emits acrid smoke and irritating fumes.

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## 11. Toxicological information

### Acute toxicity

- Oral: LD50 Rat oral 2700 mg/kg
- Inhalation: no data available
- Dermal: no data available

### Skin corrosion/irritation

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no data available

**Serious eye damage/irritation**

no data available

**Respiratory or skin sensitization**

no data available

**Germ cell mutagenicity**

no data available

**Carcinogenicity**

CLASSIFICATION: D; not classifiable as to human carcinogenicity. BASIS FOR CLASSIFICATION: Based on no human data and inadequate data from animal bioassays. HUMAN CARCINOGENICITY DATA: None. ANIMAL CARCINOGENICITY DATA: Inadequate. /Based on former classification system/

**Reproductive toxicity**

no data available

**STOT-single exposure**

no data available

**STOT-repeated exposure**

no data available

**Aspiration hazard**

no data available

## 12. Ecological information

### 12.1 Toxicity

- Toxicity to fish: LC50; Species: *Oncorhynchus mykiss* (Rainbow trout, weight 3.17 g, length 6.2 cm); Conditions: freshwater, static, 11.0°C, pH 6.19; Concentration: >2000 ug/L for 24 hr /formulation
- Toxicity to daphnia and other aquatic invertebrates: EC50; Species: *Daphnia magna* (Water flea); Conditions: freshwater, renewal; Concentration: 72.7 ug/L for 7 days; Effect: growth rate />99% purity
- Toxicity to algae: EC50; Species: *Pseudokirchneriella subcapitata* (Green algae, age <24 hr); Conditions: freshwater, static; Concentration: 894000 ug/L for 72 hr; Effect: increased intoxication, immobilization /98% purity
- Toxicity to microorganisms: no data available

### 12.2 Persistence and degradability

Polycyclic aromatic hydrocarbons with 4 or less aromatic rings are degraded by microbes and are readily metabolized by multicellular organisms; biodegradation may be the ultimate fate process. /Polycyclic aromatic hydrocarbons/

### 12.3 Bioaccumulative potential

Experimental BCF values of 72(1), 457(2), and 600-970(3) have been reported in rainbow trout, goldfish and fathead minnow respectively. According to a classification scheme(4), these BCF values suggest that bioconcentration in aquatic organisms is moderate to high(SRC). Pyrene was shown to bioaccumulate in worms exposed to contaminated sediment over a 4 week incubation period, reaching a maximum concn of 60.9 ng/g and an uptake rate constant of 0.0256 hr-L(5). Pyrene had biota-sediment accumulation factors of 0.76 and 0.92 in *Elliptio complanata* and *Mya arenaria*(6). BCFs for pyrene in the amphipod *Diporeia* spp were measured as 36,329, 30,671, 16,810 and 12,316 calculated from the time-weighted avg water concns of 34.0, 51.3, 84.5 and 130.7 ug/L, respectively(7).

### 12.4 Mobility in soil

Experimental Koc values determined with 5 sediment samples obtained from a freshwater lake in Louisiana were 64,954, 63,372, 73,127, 65,380 and 59,675(1). The Koc values of pyrene obtained with soil samples from Flint, MI and Bordone, Canada were 61,936 and 90,000 respectively(2). Measured Koc values of 160,000, 153,000, 98,700 and 169,000 were obtained for pyrene with suspended solids and sediment from the Boston Harbor, MA(3). An experimental Koc value of 76,000 was reported for pyrene with soil obtained from a water treatment facility in

Sweden(4). Experimentally determined log Koc values between 4.9 and 5.4 were reported for pyrene with sediment obtained from Lake Michigan(5) and a log Koc value of 5.5 was reported with sediment obtained from the Boston Harbor, MA(6). Pyrene had a log Koc in sediment from Lake Ketelmeer, The Netherlands of 6.80 (3.75% organic carbon, 0-30 cm depth) and 5.95 (6.48% organic carbon, 40-120 cm depth)(7). Boston Harbor, MA sediment samples taken from South Dorchester Bay, North Quincy, Fort Point Channel and Spectacle Island had log Koc values of 3.54, 3.71, 4.32 and 4.55, respectively, in samples taken Dec 1999(9). According to a classification scheme(10), these Koc values suggest that pyrene is expected be immobile in soil.

## 12.5Other adverse effects

no data available

## 13.Disposal considerations

### 13.1Disposal methods

#### Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

#### Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

## 14.Transport information

### 14.1UN Number

|                 |              |              |
|-----------------|--------------|--------------|
| ADR/RID: UN2811 | IMDG: UN2811 | IATA: UN2811 |
|-----------------|--------------|--------------|

### 14.2UN Proper Shipping Name

|                                         |
|-----------------------------------------|
| ADR/RID: TOXIC SOLID, ORGANIC, N. O. S. |
| IMDG: TOXIC SOLID, ORGANIC, N. O. S.    |
| IATA: TOXIC SOLID, ORGANIC, N. O. S.    |

#### 14.3Transport hazard class(es)

|               |            |            |
|---------------|------------|------------|
| ADR/RID: 6. 1 | IMDG: 6. 1 | IATA: 6. 1 |
|---------------|------------|------------|

#### 14.4Packing group, if applicable

|             |          |          |
|-------------|----------|----------|
| ADR/RID: II | IMDG: II | IATA: II |
|-------------|----------|----------|

#### 14.5Environmental hazards

|             |          |          |
|-------------|----------|----------|
| ADR/RID: no | IMDG: no | IATA: no |
|-------------|----------|----------|

#### 14.6Special precautions for user

no data available

#### 14.7Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

no data available

## 15.Regulatory information

### 15.1Safety, health and environmental regulations specific for the product in question

| Chemical name                                                          | Common names and synonyms | CAS number | EC number   |
|------------------------------------------------------------------------|---------------------------|------------|-------------|
| pyrene                                                                 | pyrene                    | 129-00-0   | none        |
| European Inventory of Existing Commercial Chemical Substances (EINECS) |                           |            | Listed.     |
| EC Inventory                                                           |                           |            | Listed.     |
| United States Toxic Substances Control Act (TSCA) Inventory            |                           |            | Listed.     |
| China Catalog of Hazardous chemicals 2015                              |                           |            | Not Listed. |
| New Zealand Inventory of Chemicals (NZIoC)                             |                           |            | Listed.     |
| Philippines Inventory of Chemicals and Chemical Substances             |                           |            | Listed.     |

|                                                                             |         |
|-----------------------------------------------------------------------------|---------|
| (PICCS)                                                                     |         |
| Vietnam National Chemical Inventory                                         | Listed. |
| Chinese Chemical Inventory of Existing Chemical Substances<br>(China IECSC) | Listed. |

## 16. Other information

### Information on revision

|               |              |
|---------------|--------------|
| Creation Date | Aug 10, 2017 |
| Revision Date | Aug 10, 2017 |

### Abbreviations and acronyms

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit



- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

## References

- IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>
- HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>
- IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>
- eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: [http://www.echemportal.org/echemportal/index?pageID=0&request\\_locale=en](http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en)
- CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>
- ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>
- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: <http://www.phmsa.dot.gov/hazmat/library/erg>
- Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>
- ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

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*Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. We as supplier shall not be held liable for any damage resulting from handling or from contact with the above product.*