

## Chemical Safety Data Sheet MSDS / SDS

**INDENO(1,2,3-C,D)PYRENE**Revision Date:2025-02-01 Revision Number:1

---

**SECTION 1: Identification of the substance/mixture and of the company/undertaking****Product identifier**

Product name : INDENO(1,2,3-C,D)PYRENE  
CBnumber : CB0761644  
CAS : 193-39-5  
EINECS Number : 205-893-2  
Synonyms : IP,INDENO(1,2,3-C,D)PYRENE

**Relevant identified uses of the substance or mixture and uses advised against**

Relevant identified uses : For R&D use only. Not for medicinal, household or other use.  
Uses advised against : none

**Company Identification**

Company : Chemicalbook  
Address : Building 1, Huihuang International, Shangdi 10th Street, Haidian District, Beijing  
Telephone : 400-158-6606

---

**SECTION 2: Hazards identification****Classification of the substance or mixture**

Carcinogenicity, Category 2

**Label elements****Pictogram(s)**

Signal word : Danger

**Hazard statement(s)**

H225 Highly Flammable liquid and vapour  
H304 May be fatal if swallowed and enters airways  
H315 Causes skin irritation  
H336 May cause drowsiness or dizziness  
H351 Suspected of causing cancer  
H370 Causes damage to organs  
H410 Very toxic to aquatic life with long lasting effects

**Precautionary statement(s)**

P210 Keep away from heat/sparks/open flames/hot surfaces. — No smoking.

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P273 Avoid release to the environment.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P281 Use personal protective equipment as required.

P311 Call a POISON CENTER or doctor/physician.

P331 Do NOT induce vomiting.

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

P501 Dispose of contents/container to.....

#### **Prevention**

P203 Obtain, read and follow all safety instructions before use.

P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...

#### **Response**

P318 IF exposed or concerned, get medical advice.

#### **Storage**

P405 Store locked up.

#### **Disposal**

P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

#### **Other hazards**

no data available

---

## SECTION 3: Composition/information on ingredients

### **Substance**

|              |                              |
|--------------|------------------------------|
| Product name | : INDENO(1,2,3-C,D)PYRENE    |
| Synonyms     | : IP,INDENO(1,2,3-C,D)PYRENE |
| CAS          | : 193-39-5                   |
| EC number    | : 205-893-2                  |
| MF           | : C22H12                     |
| MW           | : 276.33                     |

---

## SECTION 4: First aid measures

### **Description of first aid measures**

#### **If inhaled**

Fresh air, rest.

#### **Following skin contact**

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

**Following eye contact**

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

**Following ingestion**

Rinse mouth. Refer for medical attention .

**Most important symptoms and effects, both acute and delayed**

ACUTE/CHRONIC HAZARDS: Toxic. (NTP, 1992)

**Indication of any immediate medical attention and special treatment needed**

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 if 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

---

## SECTION 5: Firefighting measures

**Extinguishing media**

Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.[Sigma-Aldrich; Safety Data Sheet for Indeno

**Specific Hazards Arising from the Chemical**

Excerpt from ERG Guide 171 [Substances (Low to Moderate Hazard)]: Some may burn but none ignite readily. Containers may explode when heated. Some may be transported hot. For UN3508, be aware of possible short circuiting as this product is transported in a charged state. (ERG, 2016)

**Advice for firefighters**

In case of fire in the surroundings, use appropriate extinguishing media.

---

## SECTION 6: Accidental release measures

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

Sweep spilled substance into covered containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations. Do NOT let this chemical enter the environment.

**Environmental precautions**

Sweep spilled substance into covered containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations. Do NOT let this chemical enter the environment.

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

ACCIDENTAL RELEASE MEASURES: Personal precautions, protective equipment and emergency procedures: Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Methods and

materials for containment and cleaning up: Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.[Sigma-Aldrich; Safety Data Sheet for Indeno

---

## SECTION 7: Handling and storage

### Precautions for safe handling

Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

### Conditions for safe storage, including any incompatibilities

Provision to contain effluent from fire extinguishing. Well closed.Keep container tightly closed in a dry and well-ventilated place. Storage class (TRGS 510): Non Combustible Solids.[Sigma-Aldrich; Safety Data Sheet for Indeno

---

## SECTION 8: Exposure controls/personal protection

### Control parameters

#### Occupational Exposure limit values

MAK: skin absorption (H); carcinogen category: 2

#### Biological limit values

no data available

### Exposure controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

### Individual protection measures

#### Eye/face protection

Wear safety spectacles or eye protection in combination with breathing protection.

#### Skin protection

Protective gloves. Protective clothing.

#### Respiratory protection

Use local exhaust or breathing protection.

#### Thermal hazards

no data available

---

## SECTION 9: Physical and chemical properties

### Information on basic physicochemical properties

|                |                                  |
|----------------|----------------------------------|
| Physical state | neat                             |
| Colour         | Light Yellow to Very Dark Orange |
| Odour          | no data available                |

---

|  |  |
|--|--|
| Melting point/freezing point                             | 163.6°C  |
| Boiling point or initial boiling point and boiling range | 497.1°C at 760 mmHg  |
| Flammability   | no data available  |
| Lower and upper explosion limit/flammability limit       | no data available  |
| Flash point  | 247.2°C  |
| Auto-ignition temperature                                | no data available  |
| Decomposition temperature                                | no data available  |
| pH   | no data available  |
| Kinematic viscosity                                      | no data available  |
| Solubility   | Soluble in most solvents (U.S. EPA, 1985) including low molecular weight liquid hydrocarbons such as benzene, ethylene, and toluene. |
| Partition coefficient n-octanol/water                    | log Kow = 6.70 (est)   |
| Vapour pressure  | 1.01 x 10 <sup>-10</sup> mmHg at 25 °C (McVeety and Hites, 1988)   |
| Density and/or relative density                          | 1.378 g/cm <sup>3</sup>  |
| Relative vapour density                                  | no data available  |
| Particle characteristics                                 | no data available  |

## SECTION 10: Stability and reactivity

### Reactivity

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

Upon heating, toxic fumes are formed. Decomposes on heating. This produces toxic fumes.

### Chemical stability

Stable under recommended storage conditions.[Sigma-Aldrich; Safety Data Sheet for Indeno

### Possibility of hazardous reactions

IP itself burns only with difficulty. Vigorous reactions, sometimes amounting to explosions, can result from the contact between aromatic hydrocarbons, such as INDENO(1,2,3-CD)PYRENE, and strong oxidizing agents. They can react exothermically with bases and with diazo compounds. Substitution at the benzene nucleus occurs by halogenation (acid catalyst), nitration, sulfonation, and the Friedel-Crafts reaction.

### Conditions to avoid

no data available

### Incompatible materials

Incompatible materials: Strong oxidizing agents.[Sigma-Aldrich; Safety Data Sheet for Indeno

### Hazardous decomposition products

Hazardous decomposition products formed under fire conditions - Carbon oxides.[Sigma-Aldrich; Safety Data Sheet for Indeno

## SECTION 11: Toxicological information

### Acute toxicity

- Oral: no data available
- Inhalation: no data available
- Dermal: no data available

### Skin corrosion/irritation

no data available

### Serious eye damage/irritation

no data available

### Respiratory or skin sensitization

no data available

### Germ cell mutagenicity

no data available

### Carcinogenicity

OVERALL EVALUATION: Group 2B: The agent is possibly carcinogenic to humans.

### Reproductive toxicity

no data available

### STOT-single exposure

no data available

### STOT-repeated exposure

This substance is possibly carcinogenic to humans.

### Aspiration hazard

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

---

## SECTION 12: Ecological information

### Toxicity

Toxicity to fish: no data available

Toxicity to daphnia and other aquatic invertebrates: no data available

Toxicity to algae: no data available

Toxicity to microorganisms: no data available

### Persistence and degradability

AEROBIC: In a 240 day soil microcosm study, half-lives of 600, 730, and 630 days at 10, 20, and 30 deg C, respectively, were estimated for

indeno(1,2,3-cd)pyrene(1). Half-lives for indeno(1,2,3-cd)pyrene ranged from 730 days, using a synthetic mixture of polycyclic aromatic hydrocarbons applied and incubated together in Kidman sandy loam soil, to 139 days in a mixture of oil refinery wastes applied to Kidman sandy loam soil(2). A half-life of 288 days was observed for indeno(1,2,3-cd)pyrene when applied and incubated as a single constituent in Kidman sandy loam soil(2). Biodegradation half-lives of 288 and 289 days were observed for indeno(1,2,3-cd)pyrene in Kidman and McLaurin sandy loam soils, respectively(3). In soil-water slurry systems, with actual town gas soil, indeno(1,2,3-cd)pyrene was biodegraded approx. 33% after 5 weeks incubation using a polycyclic aromatic hydrocarbon- acclimated mixed culture(4). In bench-scale biotreatability studies using a solid-phase bioremediation process (land farming chambers containing sediment and soil collected from the American Creosote Works Superfund site, Pensacola, FL), the indeno(1,2,3-cd)pyrene concentration was reduced from 29.7 to 29.2 mg/land farming chamber in unamended surface soil; 29.7 to 24.3 mg/land farming chamber in nutrient-amended surface soil; 67.8 to 54.0 mg/land farming chamber in unamended sediment; and 67.8 to 47.4 mg/land farming chamber in nutrient-amended sediment following 12 weeks incubation(5). In shake flask studies, an initial indeno(1,2,3-cd)pyrene concentration of 1.9 ug/mL was reduced to 0.9 ug/mL following 2 weeks incubation in contaminated groundwater from the American Creosote Works Superfund site, Pensacola, FL(6). Indeno(1,2,3-cd)pyrene was removed up to 95% over 36 days in an activated sludge pilot reactor, 40-65% was attributed to biodegradation(7). After 60 days of batch slurry bioremediation, the initial solid-phase indeno(1,2,3-cd)pyrene concentration of 37 ug/g was reduced to 17.1 ug/g, a 53.8% removal(8).

### Bioaccumulative potential

An estimated BCF of 12,000 was calculated in fish for indeno(1,2,3-cd)pyrene(SRC), using an estimated log Kow of 6.70(1) and a regression-derived equation(1). According to a classification scheme(2), this BCF suggests the potential for bioconcentration in aquatic organisms is very high(SRC), provided the compound is not metabolized by the organism(SRC). Polyaromatic hydrocarbons, including indeno(1,2,3-cd)pyrene, have been shown to be rapidly metabolized by some aquatic organisms(3). A BCF of approximately  $1 \times 10^4$  was measured in the amphipod *Rhepoxynius abronius* after 10 days exposure to indeno(1,2,3-cd)pyrene(4). The biota-sediment accumulation factor (BSAF) for indeno(1,2,3-cd)pyrene determined using oligochaete worm (*Lumbriculus variegatus*) was 1.7 and 0.0094 in Lake Erie sediment from Vermilion, OH and Dunkirk, NY, respectively(5). The BSAF of indeno(1,2,3-cd)pyrene was measured in polychaete (*Nereis diversicolor*) and gastropod (*Hinia reticulata*) exposed to sediment from three harbors in Norway at 0.0022-0.010 and 0.008-0.016(6).

### Mobility in soil

Using a structure estimation method based on molecular connectivity indices(1), the Koc of indeno(1,2,3-cd)pyrene can be estimated to be  $1.9 \times 10^6$ (SRC). According to a classification scheme(2), this estimated Koc value suggests that indeno(1,2,3-cd)pyrene is expected to be immobile in soil. Log Koc values of 6.84 to 6.88 and 6.8 were determined for indeno(1,2,3-cd)pyrene with dissolved and particulate organic material, respectively, from Lake Ketelmeer at 20 deg C(3). The log Koc value of indeno(1,2,3-cd)pyrene measured in sediment from San Francisco Bay was 6.93(4). The log Koc values for indeno(1,2,3-cd)pyrene in 34 sediment samples was 5.78-8.82(5). [

### Toxics Screening Level

The initial risk screening level and secondary risk screening level (SRSL) for benzo(a)pyrene (B(a)P) are  $6 \times 10^{-4}$  µg/m<sup>3</sup> and  $6 \times 10^{-3}$  µg/m<sup>3</sup>, respectively. The IRSRL and SRSL were derived from the inhalation unit risk (IUR) factor for B(a)P of  $1.76 \times 10^{-3}$  per µg/m<sup>3</sup> ( $1.1 \times 10^{-3}$  per µg/m<sup>3</sup> multiplied by an age-dependent adjustment factor or ADAF of 1.6).

### Other adverse effects

no data available

---

## SECTION 13: Disposal considerations

### Disposal 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.

---

## SECTION 14: Transport information

### **UN Number**

ADR/RID: UN2811 (For reference only, please check.)

IMDG: UN2811 (For reference only, please check.)

IATA: UN2811 (For reference only, please check.)

### **UN Proper Shipping Name**

ADR/RID: TOXIC SOLID, ORGANIC, N.O.S. (For reference only, please check.)

IMDG: TOXIC SOLID, ORGANIC, N.O.S. (For reference only, please check.)

IATA: TOXIC SOLID, ORGANIC, N.O.S. (For reference only, please check.)

### **Transport hazard class(es)**

ADR/RID: 6.1 (For reference only, please check.)

IMDG: 6.1 (For reference only, please check.)

IATA: 6.1 (For reference only, please check.)

### **Packing group, if applicable**

ADR/RID: I (For reference only, please check.)

IMDG: I (For reference only, please check.)

IATA: I (For reference only, please check.)

### **Environmental hazards**

ADR/RID: No

IMDG: No

IATA: No

### **Special precautions for user**

no data available

### **Transport in bulk according to IMO instruments**

no data available

---

## SECTION 15: Regulatory information

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

#### **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.

#### **PICCS**

Not Listed.

#### **Vietnam National Chemical Inventory**

Listed.

#### **IECSC**

Not Listed.

#### **Korea Existing Chemicals List (KECL)**

Not Listed.

---

## **SECTION 16: Other information**

### **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?pageSize=0&request\\_locale=en](http://www.echemportal.org/echemportal/index?pageSize=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/>

## Other Information

Indeno(1,2,3-cd)pyrene is present as a component of polycyclic aromatic hydrocarbons (PAH) content in the environment usually resulting from the incomplete combustion or pyrolysis of organic matters, especially fossil fuels and tobacco. ACGIH recommends environment containing Indeno(1,2,3-c,d)pyrene should be evaluated in terms of the TLV-TWA for coal tar pitch volatile, as benzene soluble 0.2 mg/m<sup>3</sup>. Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken.

### Disclaimer:

The information in this MSDS is only applicable to the specified product, unless otherwise specified, it is not applicable to the mixture of this product and other substances. This MSDS only provides information on the safety of the product for those who have received the appropriate professional training for the user of the product. Users of this MSDS must make independent judgments on the applicability of this SDS. The authors of this MSDS will not be held responsible for any harm caused by the use of this MSDS.