

# Safety Data Sheet



## 1. Identification of the Substance/Mixture and the Supplier

Supplier : National Institute of Advanced Industrial Science and Technology (AIST)  
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 ID Number : 4213001

Identity of Substance/Mixture : Certified reference material NMIJ CRM 4213-a  
 Benzo[a]pyrene in 2,2,4-Trimethylpentane  
 Recommended Use of the Chemical and Restriction on Use : This CRM can be used for the calibration of instruments, or confirming the validity of analytical methods or instruments during quantification of Benzo[a]pyrene. Do not use this reference material for other purposes than testing/research.  
 This CRM is a reference material (specified in the Japanese Industrial Standard (JIS) Q 0030).

## 2. Hazards Identification

GHS Classification: Flammable liquid : Hazard Category 2  
 Skin corrosion/irritation : Hazard Category 2  
 Serious eye damage/ Eye irritation : Hazard Category 2A  
 Specific target organ toxicity/Systemic toxicity (Single exposure) : Hazard Category 1  
 Hazard Category 3 (Airway irritation)  
 Hazard Category 3 (Narcotic)  
 Aspiration hazard : Hazard Category 1  
 Toxic to the aquatic environment (Acute) : Hazard Category 1  
 Toxic to the aquatic environment (Chronic) : Hazard Category 1

GHS Label Element:



Signal Word: Danger

Hazards Statement: May irritate airways  
 May cause drowsiness or dizziness  
 Highly flammable liquid and vapor  
 May be fatal if swallowed and enters airways  
 Causes serious eye irritation  
 Very toxic to aquatic life  
 Causes damage to organs  
 Very toxic to aquatic life with long lasting effects  
 Causes skin irritation

Other Hazards Statement : -

Precautionary Statement : [Precaution]  
 Use eye protector/face protector/protective gloves.  
 Take precautions against electrostatic discharge and use explosion-proof electrical/ventilating/lighting equipment.  
 Do not eat, drink or smoke when using this reference material.  
 Wash hands thoroughly after handling this reference material.  
 Keep away from heat/sparks/open flames/hot surfaces. No smoking.  
 Avoid breathing dust/fume/mist/vapor/spray.  
 Use only outdoors or in a well-ventilated area.  
 Keep container tightly closed.  
 [First-Aid Measure]  
 In the case of fire: Use an appropriate extinguishing media for extinction.  
 If ingested: Get medical advice/attention immediately.  
 Remove/take off contaminated clothing. Wash contaminated clothing before reuse.  
 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention.  
 If inhaled: Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
 If on skin (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with running water/shower. Get medical advice/attention.  
 If exposed: Get medical advice/attention.  
 Avoid release to the environment. Collect spillage.  
 [Storage]  
 Keep container tightly closed. Store in dark environment at room temperature (15 °C to 25 °C). Store locked up.  
 [Disposal]  
 Dispose of contents/containers in accordance with national/prefectural/local regulations.

The other hazards than the above do not result in classification or

are not covered by the GHS.

### 3. Composition/Information on Ingredients

Substance/Mixture : Mixture

#### Ingredient 1

Chemical name : Benzo[*a*]pyrene  
 Synonym : 1,2-Benzopyrene  
 Chemical formula : C<sub>20</sub>H<sub>12</sub>  
 Molecular weight : 252.31  
 CAS number : 50-32-8  
 Content : About 0.009 %  
 Reference Number in : Act on the Evaluation of Chemical Substances and Regulation of  
 Gazetted List in Japan : Their Manufacture, etc. : -  
 Industrial Safety and Health Act : -

#### Ingredient 2

Chemical name : 2,2,4-trimethylpentane  
 Synonym : Iso-octane  
 Chemical formula : C<sub>8</sub>H<sub>18</sub>  
 Molecular weight : 114.23  
 CAS number : 540-84-1  
 Content : 99 % or over  
 Reference Number in : Act on the Evaluation of Chemical Substances and Regulation of  
 Gazetted List in Japan : Their Manufacture, etc. : (2)-8  
 Industrial Safety and Health Act : Published

Hazardous Ingredient : Benzo[*a*]pyrene, 2,2,4-trimethylpentane

### 4. First-aid Measures

If in Eyes : Rinse away thoroughly with clean water. Get medical advice/attention.  
 If on Skin : Rinse away thoroughly with clean water. Take off/Remove contaminated clothing, shoes, etc. Get medical advice/attention.  
 If Inhaled : Remove victim to fresh air and keep at rest and warm. Get medical advice/attention.  
 If Ingested : Rinse mouth with water thoroughly. Make victim drink a couple glasses of water or milk. Get medical advice/attention immediately. Do not induce vomiting. Do not make victim take anything orally if unconscious.  
 Expected Acute and : Cough, Headache, Dizziness, Nausea  
 Delayed Symptom  
 Most Critical : This reference material is flammable. If mixed with air, its vapor  
 Characteristic and : generates explosive gas mixture which may cause flammable

Symptom	explosion. Its containers may explode due to heat of fire. This reference material is volatile and may cause fire explosion in indoor/outdoor environment or sewer.
Measures to be taken to protect the person applying first aid	: Use personal protective equipment.

## 5. Fire-fighting Measures

Extinguishing Media	: Dry chemical extinguishing agent, Foam extinguishing agent, Carbon Dioxide (CO <sub>2</sub> ), Sand (Do not use water as extinguishing media.)
Fire-Specific Hazards	: In the case of fire, irritating or toxic fume (or gas) may be generated.
Specific Fire-Fighting Method	: Eliminate ignition sources at the origin of a fire and put out fire by using extinguishing media. Remove movable containers promptly to a safe place. In the case of immovable containers, cool their surroundings with sprayed water.
Protection of Fire-Fighters	: Carry out fire-fighting from the windward in order to avoid breathing hazardous gas. Use personal protective equipment.

## 6. Accidental Release Measures

Personal Precaution	: Remove potential ignition sources from the vicinity promptly. Get fire-fighting kit ready to be prepared for ignition.
Personal Protective Equipment and Emergency Procedures	: Ventilate the affected areas thoroughly, if it is in an indoor environment, until the clean-up operation is completed. Use appropriate personal protective equipment during the operation to avoid skin contact of splash etc. and inhalation of dust and gas.
Environmental Precautions	: Take precautions to prevent spillage from draining into rivers etc. to adversely impact the environment. Make it sure to appropriately treat contaminated wastewater in order to prevent untreated wastewater from being released into the surrounding environment.
Recovery and Neutralization	: Collect spillage in empty containers by getting it adsorbed to wiping cloth, rag or earth and sand, etc.
Prevention of Secondary Disaster	: Mark the restricted area with rope etc. to keep out unauthorized people. Carry out the clean-up operation from the windward and make people on the leeward side evacuate.

## 7. Handling and Storage

Handling Engineering Precautions	: Strict ban on fire. Keep away from hot surfaces and sparks. Avoid contact with strong oxidizers.
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Local and General Ventilation	:	Use local ventilation system in indoor handling areas.
Precautions for Safe Handling	:	Avoid rough handling such as turning over, dropping, giving a shock to or dragging containers. Prevent spill, overflow and scattering, and avoid vapor generation. Make a place handling this reference material a restricted area to keep out unauthorized people. Use appropriate personal protective equipment to avoid inhalation and contact with eyes, skin and clothing.
Storage		
Appropriate Storage Conditions	:	Protect from sunlight. Store in dark at room temperature (15 °C to 25 °C). Avoid storing together with oxidizers and strongly oxidizing substances. Strict ban on fire.
Safe Container Packaging Material	:	Glass

## 8. Exposure Controls/Personal Protection

### Threshold Limit Value

Not specified

### Permissible Concentration (2,2,4-trimethylpentane)

- ACGIH TLV : Not specified
- Value recommended by Japan Society for Occupational Health : Not specified

Japan Society for Occupational Health

- OSHA PEL : Not specified

### Permissible Concentration (Benzo[a]pyrene)

- ACGIH TLV : Not specified
- Value recommended by Japan Society for Occupational Health : Not specified

Japan Society for Occupational Health

- OSHA PEL : 8H TWA 0.2 mg/m<sup>3</sup>

### Engineering Controls

- |                     |   |  |
|---------------------|---|--|
| Ventilation/Exhaust | : | Keep container tightly closed and install local ventilation system when dust is generated.<br>Install facilities to rinse eyes and to wash hands and body in the vicinity of a place handling this reference material and label them.<br>Use explosion-proof equipment and take precautions against electrostatic discharge. |
|---------------------|---|--|

Safety control/ Gas detection	:	-
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|---------------------|---|--|
| Storage Precautions | : | Ventilated. Tightly closed. Keep away from strong oxidizers. |
|---------------------|---|--|

### Personal Protective Equipment (PPE)

- |                    |   |   |
|--------------------|---|---|
| Respiratory System | : | Chemical cartridge respirator for organic gas |
| Hands              | : | Protective gloves                             |

Eyes : Eye protector with side plates  
 Skin and Body : Protective clothing  
 Hygiene measure  
 Treat in accordance with rules on Industrial hygiene and Industrial safety.

## 9. Physical and Chemical Properties

- Appearance, etc. : Liquid
- Color : Clear and colorless
- Odor : No data
- pH : No data
- Melting point : No data
- Boiling point : No data
- Flashing point : No data
- Explosive range : No data
- Vapor pressure : No data
- Relative vapor density(Air=1) : No data
- Specific gravity or bulk specific gravity : 0.6919 g/mL (20 °C)
- Solubility : No data
- *n*-Octanol/water partition coefficient (Log Po/w) : No data
- Auto-ignition temperature : No data

## 10. Stability and Reactivity

### Stability

- No data available

### Reactivity

- No data available

### Conditions to Avoid

- Sunlight, heat, open flame, high temperature, spark, static electricity, other ignition sources

### Hazardous Decomposition Products

- Carbon monoxide (CO)

## 11. Toxicological Information

- 2,2,4-trimethylpentane
- Acute toxicity Oral Rat TDLo: 2500 mg/kg/5D-I (RTECS)
- Benzol[a]pyrene
- Acute toxicity Dermal Rat LD50 : 50 mg/kg (RTECS)  
 Abdominal cavity Mouse LDLo : 500 mg/kg (RTECS)  
 Oral Mouse TDLo : 100 mg/kg (RTECS)
- Skin Corrosion/Irritation Skin irritation Mouse 14 µg light (RTECS)

Germ Cell Mutagenicity	Positive results based on the in-vivo inter-generation mutagenicity study (dominant lethal test) using mice (EHC 202 (1998), ATSDR (1995)).
Carcinogenicity	Classified in B2 (IRIS (2005)) by EPA in 1994. Classified in Group 2A by IARC (IARC Suppl.7 (1987)), 2A by Japan Society for Occupational Health (2005), A2 by ACGIH (ACGIH 7 <sup>th</sup> (2001)), R by NTP (NTP RoC 11 <sup>th</sup> (2005)) and Category 2 by EU (EU-Annex I (2005))
Reproductive Toxicity	Effects on fertility was observed in oral administration study using pregnant mice at dose indicating no general toxicity in mother animals though the effects are strain-dependent, based on EHC 202 (1998), CERI Hazard Data Book (1997), IARC 32 (1983) and ATSDR (1995).
Specific target organ toxicity/Systemic toxicity (Repeated exposure)	Myelo-suppression was observed in the oral administration study using mice at dose within the guidance value range of Category 2 though it is strain-dependent, based on EHC 202 (1998), CERI Hazard Data Book (1997), IARC 32 (1983) and ATSDR (1995).

## 12. Ecological Information

### Persistence and Degradability

- Persistence: 0 % by BOD

### Bioaccumulative Potential

- Concentration rate: 440 to 580 (Concentration: 10 µg/l):460 to 650 (Concentration: 1 µg/L)

### Ecotoxicity

- *Oryzias latipes* LC50: 0.561 mg/L/96hr.
- Crustacea (*Daphnia magna*): 24 hours EC50=40 µg/L (Benzo[a]pyrene)
- Persistence: 0 % by BOD

## 13. Disposal Considerations

- Incineration method

## 14. Transport Information

UN Number : 1262

UN : Class 3

### Classification

Shipping Name : Octanes

Packing Group : PG II

ICAO/IATA : Glass 3 Grade II

Marine : Not applicable

### Pollutant

Precautions : Transport this reference material carefully while keeping it away from direct sunlight and fire and preventing accidental release due to falling,

overturning, etc.

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## 15. Regulatory Information

### Fire Defense Law

- Dangerous substance 4 Class 1 petroleum (insoluble in water) Danger Rating 2

### Industrial Safety and Health Law

- Article 57-2 (Enforcement Order: Article 18-2) Hazardous substance whose name, etc. must be notified

### Ship Safety Law

- Flammable liquid

### Air Pollution Control Act

- Hazardous air pollutant
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## 16. Other Information

### Others

The information in this document is not intended to be exhaustive and is based on currently available information and data. The measures given in this document are applicable only to normal handling conditions. When handling this reference material under special conditions etc., it is recommended to take safety measures appropriate to each specific application and context of use. This document is intended to provide information and not intended to guarantee anything in handling this reference material.

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