Safety Data Sheet

1. Identification of the Substance/Mixture and the Supplier

Supplier: National Institute of Advanced Industrial Science and Technology (AIST)
Address: 1-3-1, Kasumigaseki, Chiyoda, Tokyo, Japan
Office in Charge: Reference Materials Office, Center for Quality Management of Metrology, National Metrology Institute of Japan (NMIJ)
Person in Charge: Person in Charge of Certified Reference Materials
Telephone No.: +81-29-861-4059
Fax No.: +81-29-861-4009

Identity of Substance/Mixture: Certified Reference Material NMIJ CRM 7307-a
Recommended Use of the Chemical and Restriction on Use: This certified reference material can be used for quality control and validation of analysis equipment and analytical method in analysis of polycyclic aromatic hydrocarbons (PHA) in fresh water lake sediments or the related materials. Do not use this reference material for other purposes than testing/research.

2. Hazards Identification

GHS classification: Not applicable
GHS label element: -
Signal work: -
Hazards Statement: Contains carcinogen, avoid exposure
Precautionary statement: [Preventive measures]
Read and understand the safety precautions fully before handling. Avoid discharging to the environment. If necessary, use suitable personal protective equipment. Avoid being exposed entirely.
[First-Aid Measure]
If swallowed: When feeling unwell, seek medical advice.
If in eyes: Wash with plenty of water for several minutes.
If on skin: Wash with soap and a large amount of water.
If exposed or possible exposure: Seek medical advice.
Collect and recover the leaked material.
[Storage]
3. Composition/Information on Ingredients

Single/mixture product: Mixtuer
Chemical name: Fresh water lake sediment
Synonym: -
Chemical formula: -
Molecular weight: -
CAS number: -
Content: -
Reference Number in Gazetted List in Japan: Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc.: -
Industrial Safety and Health Act: -

This CRM contains minor components shown below:

Ingredient 1
Chemical name: Fluorene
Synonym: -
Chemical formula: C13H10
Molecular weight: 166.21
CAS number: 86-73-7
Content: 5.98μg/kg
Reference Number in Gazetted List in Japan: Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc.: (4)-643
Industrial Safety and Health Act: Published

Ingredient 2
Chemical name: Phenanthrene
Synonym: -
Chemical formula: C14H10
Molecular weight: 178.23
CAS number: 85-01-8
Content: 24.5μg/kg
Reference Number in Gazetted List in Japan: Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc.: (4)-635
Industrial Safety and Health Act: Published
<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Chemical name</th>
<th>Synonym</th>
<th>Chemical formula</th>
<th>Molecular weight</th>
<th>CAS number</th>
<th>Content</th>
<th>Reference Number in Gazetted List in Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ingredient 3</td>
<td>Anthracene</td>
<td></td>
<td>C14H10</td>
<td>178.23</td>
<td>120-12-7</td>
<td>3.59μg/kg</td>
<td>Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. : (4)-683 Industrial Safety and Health Act : Published</td>
</tr>
<tr>
<td>Ingredient 4</td>
<td>Fluoranthene</td>
<td></td>
<td>C16H10</td>
<td>202.25</td>
<td>206-44-0</td>
<td>25.1μg/kg</td>
<td>Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. : (4)-2 Industrial Safety and Health Act : Published</td>
</tr>
<tr>
<td>Ingredient 5</td>
<td>Pyrene</td>
<td></td>
<td>C16H10</td>
<td>202.25</td>
<td>129-00-0</td>
<td>22.2μg/kg</td>
<td>Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. : (4)-782 Industrial Safety and Health Act : Published</td>
</tr>
<tr>
<td>Ingredient 6</td>
<td>Benzo[c]phenanthrene</td>
<td></td>
<td>C18H12</td>
<td>228.29</td>
<td>195-19-7</td>
<td>3.21μg/kg</td>
<td>Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. :</td>
</tr>
<tr>
<td>Ingredient 7</td>
<td>Benz[a]anthracene</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. :</td>
</tr>
</tbody>
</table>

NMIJ CRM 7307-a
Synonym : -
Chemical formula : C18H12
Molecular weight : 228.29
CAS number : 56·55·3
Content : 7.15μg/kg
Reference Number in Gazetted List in Japan: Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. : -
Industrial Safety and Health Act : -

Ingredient 8
Chemical name : Chrysene
Synonym : -
Chemical formula : C18H12
Molecular weight : 228.29
CAS number : 218·01·9
Content : 8.39μg/kg
Reference Number in Gazetted List in Japan: Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. : -
Industrial Safety and Health Act : -

Ingredient 9
Chemical name : Benzo[b]fluoranthene
Synonym : -
Chemical formula : C20H12
Molecular weight : 252.31
CAS number : 205·99·2
Content : 24.9μg/kg
Reference Number in Gazetted List in Japan: Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. : -
Industrial Safety and Health Act : -

Ingredient 10
Chemical name : Benzo[j]fluoranthene
Synonym : -
Chemical formula : C20H12
Molecular weight : 252.31
CAS number : 205·82·3
Content : 5.28μg/kg
Reference Number in Gazetted List in Japan: Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. : -
Industrial Safety and Health Act : -

Ingredient 11
Chemical name : Benzo[k]fluoranthene
Synonym : -
Chemical formula : C20H12
Molecular weight : 252.31
CAS number : 207-08-9
Content : 7.0μg/kg
Reference Number in Gazetted List in Japan : Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. : ·
Industry Safety and Health Act : ·

Ingredient 12
Chemical name : Benzo[a]fluoranthene
Synonym : ·
Chemical formula : C20H12
Molecular weight : 252.31
CAS number : 203-33-8
Content : 1.56μg/kg
Reference Number in Gazetted List in Japan : Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. : ·
Industry Safety and Health Act : ·

Ingredient 13
Chemical name : Benzo[e]pyrene
Synonym : ·
Chemical formula : C20H12
Molecular weight : 252.31
CAS number : 192-97-2
Content : 9.7μg/kg
Reference Number in Gazetted List in Japan : Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. : ·
Industry Safety and Health Act : ·

Ingredient 14
Chemical name : Benzo[a]pyrene
Synonym : ·
Chemical formula : C20H12
Molecular weight : 252.31
CAS number : 50-32-8
Content : 4.57μg/kg
Reference Number in Gazetted List in Japan : Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. : ·
Industry Safety and Health Act : ·

Ingredient 15
Chemical name : Perylene
Synonym : ·
Chemical formula : C20H12
Molecular weight : 252.31
CAS number : 198-55-0
## Ingredient 16

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Indeno[1,2,3-cd]pyrene</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonym</td>
<td>-</td>
</tr>
<tr>
<td>Chemical formula</td>
<td>C22H12</td>
</tr>
<tr>
<td>Molecular weight</td>
<td>276.33</td>
</tr>
<tr>
<td>CAS number</td>
<td>193-39-5</td>
</tr>
<tr>
<td>Content</td>
<td>5.6μg/kg</td>
</tr>
</tbody>
</table>

Reference Number in Gazetted List in Japan:
- Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc.
- Industrial Safety and Health Act

## Ingredient 17

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Benzo[ghi]perylene</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonym</td>
<td>-</td>
</tr>
<tr>
<td>Chemical formula</td>
<td>C22H12</td>
</tr>
<tr>
<td>Molecular weight</td>
<td>276.33</td>
</tr>
<tr>
<td>CAS number</td>
<td>191-24-2</td>
</tr>
<tr>
<td>Content</td>
<td>6.76μg/kg</td>
</tr>
</tbody>
</table>

Reference Number in Gazetted List in Japan:
- Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc.
- Industrial Safety and Health Act

## Ingredient 18

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Dibenz[a,h]anthracene</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonym</td>
<td>-</td>
</tr>
<tr>
<td>Chemical formula</td>
<td>C22H14</td>
</tr>
<tr>
<td>Molecular weight</td>
<td>278.34</td>
</tr>
<tr>
<td>CAS number</td>
<td>53-70-3</td>
</tr>
<tr>
<td>Content</td>
<td>0.92μg/kg</td>
</tr>
</tbody>
</table>

Reference Number in Gazetted List in Japan:
- Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc.
- Industrial Safety and Health Act

## Ingredient 19

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Naphthalene</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonym</td>
<td>-</td>
</tr>
<tr>
<td>Chemical formula</td>
<td>C10H8</td>
</tr>
<tr>
<td>Molecular weight</td>
<td>128.17</td>
</tr>
<tr>
<td>CAS number</td>
<td>91-20-3</td>
</tr>
<tr>
<td>Content</td>
<td>34.4μg/kg</td>
</tr>
</tbody>
</table>

Reference Number in Gazetted List in Japan:
- Act on the Evaluation of Chemical Substances and Regulation of
Gazetted List in Japan Their Manufacture, etc. : (4)-311
Industrial Safety and Health Act : Published

Ingredient 20
Chemical name : Triphenylene
Synonym : -
Chemical formula : C18H12
Molecular weight : 228.29
CAS number : 217-59-4
Content : 6.74μg/kg
Reference Number in Gazetted List in Japan : Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. : -
Industrial Safety and Health Act : -

4. First-aid Measures
If in eyes
1. Rinse well with clean water.
2. Seek medical advice
If on skin
1. Rinse well with clean water.
2. Take off the contaminated clothing, shoes, etc. Seek medical advice.
If inhaled
1. Move to get a fresh air, keep warm and rest
2. Seek medical advice
If swallowed
1. Wash the mouth well with water.
2. Seek medical advice

5. Fire-fighting Measures
Extinguishing media : Extinguishing agents appropriate to the surrounding area
Specific hazards at the time of fire : Nonflammable
Specific extinguishing measures : Remove any ignition source from the seat of fire and extinguish using appropriate extinguishing agent. Transfer the movable container to a safe place promptly. If impossible to transfer, use water spray to cool the periphery.
Protecting fire-fighting personnel : Fire resistant clothing, heat resistant clothing, protective clothing, respiratory protective device, oxygen closed circuit self-contained breathing apparatus, rubber gloves, rubber boots

6. Accidental Release Measures
By preventing the dust and particulate from scattering, collect the leaked/spilled material as much as possible in an empty container and then wash away with water.
7. Handling and Storage

Handling
- Avoid contact with eyes, skin, clothing
- Avoid inhaling dust and particulate
- Avoid long-term or repeated exposure
- No eating, drinking or smoking when handling.
- Wash well the parts that may have been exposed to the material when handling
- Avoid contact with open flame, spark or high temperature material. Do not heat.
- Avoid contact or mix with oxidizers

[Storage]
- Store at a room temperature. Protect from light, avoid high temperature or humidity.
- Keep the container airtight at all times.

8. Exposure Controls/Personal Protection

Precaution for safety management :
- Not established.
  - Keep away from fire.

Administrative level :
- Not established

Occupational exposure level
- ACGIH TLV-TWA : Not established
- Japan Society for Occupational Health Recommended Reference Value : Not established

Ventilation, exhaust
- Local ventilation system or general ventilation system (when handling large amount, protect from dust and particulate generated)

Protective equipment
- Respiratory protective device
- Safety goggle

Hygiene measure
- Treat in accordance with rules on Industrial hygiene and Industrial safety.

9. Physical and Chemical Properties

- Appearance, etc. : Powder
- Color : No data
- 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 : No data
specific gravity
  • Solubility : Insoluble in water
  • \( n \)-Octanol/water partition coefficient (Log Po/w) : No data
  • Auto-ignition temperature : No data

10. Stability and Reactivity
Stability
  • Stable under normal condition
Reactivity
  • No data available
Conditions to avoid
  • No data available
Hazardous decomposition products
  • No data available

11. Toxicological Information
Skin corrosivity/irritation : Possible irritant
Severe damage to eyes/eye irritation : Possible irritant
Respiratory sensitization : When a large amount of dust and particulate is absorbed and accumulated at the respiratory organ, it may cause adverse effects on the respiratory system.

12. Ecological Information
Degradability, concentration
  • No data available
Bioaccumulation
  • No data available
Ecotoxicity
  • No data available

13. Disposal Considerations
  • Entrust disposal of this reference material to a professional waste disposal company licensed by prefectural governor.

14. Transport Information
UN Number : Not applicable
UN Classification : Not applicable
Shipping Name : -
Packing Group : -
ICAO/IATA : Not applicable
Marine Pollutant : Not applicable
Precautions : Avoid dropping, falling, etc. and transport with caution.

15. Regulatory Information

- No applicable laws and regulations

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.