

# 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 : 8123001

Identity of Substance/Mixture : Certified Reference Material NMIJ CRM 8123-a Heavy Metals (Cd, Cr, Hg, Pb) in PVC Resin Pellet –High concentration  
 Recommended Use of the Chemical and Restriction on Use : This reference material can be used for controlling the precision of analysis or confirming the validity of analytical methods for chemical analysis of Heavy Metals (Cd, Cr, Hg, Pb) in PVC resin or similar polymers. Do not use this reference material for other purposes than testing/research.

## 2. Hazards identification

GHS Classification : Acute oral toxicity : Class 4  
 Acute dermal toxicity : Class 5  
 Serious eye damages/eye irritant : Class 2B  
 Carcinogenicity : Class 1A  
 Reproductive toxicity : Class 2

GHS Label element : 

Signal word : Danger  
 Hazard communication : Harmful if ingested  
 Harmful if contacted on the skin. Irritates the eye. Carcinogenic  
 Adverse effect or may affect reproductive function or fetus  
 Other hazard and toxicity : Decabrominated diphenyl ether (DBDE) is contained. (Class 1 Specified Chemical Substances No.33)  
 Precautionary statement : [Preventative Measures]  
 Handle after going through and understand all the precautionary instructions..  
 Use protective gloves/protective eyewear/protective mask when

handling.

Do not eat, drink or smoke while handling the product.

Wash the hands after handling.

[Response]

If swallowed: Drink large amount of water and induce vomit.

Seek medical advice.

If in eye: Rinse carefully with water for few minutes. Then if using contact lens, take it off if possible, and continue rinsing the eye. If eye irritation persists, seek medical advice.

If on skin: Flush with soap and water. If any abnormality, seek medical advice.

[Storage]

Store in clean environment at 15 °C to 35 °C, and avoid direct sunlight.

Store in a locked area.

[Disposal]

This CRM contains the class I specified chemicals, therefore handle this CRM in accordance with Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. and Wastes Disposal and Public Cleansing Act.

Hazards not mentioned above are either not classifiable or not applicable.

### 3. Composition/Information on Ingredients

Substance or mixture	: Mixture
Ingredient 1	
Chemical name	: Polyvinyl chloride
Synonym	: PVC
Chemical formula	: (C <sub>2</sub> H <sub>3</sub> Cl) <sub>x</sub>
Molecular weight	: -
CAS number	: 9002-86-2
Content	: Approximately 74 %
Reference Number in Gazetted List in Japan	: Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. : (6)-66 Industrial Safety and Health Act : Published
Ingredient 2	
Chemical name	: Di-isononyl phthalate
Synonym	: -
Chemical formula	: C <sub>6</sub> H <sub>4</sub> (COOC <sub>9</sub> H <sub>19</sub> ) <sub>2</sub>
Molecular weight	: 418.62
CAS number	: 28553-12-0
Content	: About 20 %
Reference Number in Gazetted List in Japan	: Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. : (3)-1307

Industrial Safety and Health Act : Published

Ingredient 3

Chemical name : Epoxidized soybean oil  
 Synonym : -  
 Chemical formula : -  
 Molecular weight : -  
 CAS number : 8013-07-8  
 Content : Approximately 2.2 %  
 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 4

Chemical name : Zinc stearate  
 Synonym :  
 Chemical formula :  $C_{36}H_{70}O_4Zn$   
 Molecular weight : 316.16  
 CAS number : 557-05-1  
 Content : Approximately 0.6 %  
 Reference Number in : Act on the Evaluation of Chemical Substances and Regulation of  
 Gazetted List in Japan Their Manufacture, etc. : (2)-615  
 Industrial Safety and Health Act : Published

Ingredient 5

Chemical name : Cadmium oxide  
 Synonym : -  
 Chemical formula : CdO  
 Molecular weight : 128.41  
 CAS number : 1306-19-0  
 Content : Approximately 0.01 %  
 Reference Number in : Act on the Evaluation of Chemical Substances and Regulation of  
 Gazetted List in Japan Their Manufacture, etc. : (1)-202  
 Industrial Safety and Health Act : Published

Ingredient 6

Chemical name : Mercury sulfide(II)  
 Synonym : -  
 Chemical formula : HgS  
 Molecular weight : 232.66  
 CAS number : 1344-48-5  
 Content : Approximately 0.11 %  
 Reference Number in : Act on the Evaluation of Chemical Substances and Regulation of  
 Gazetted List in Japan Their Manufacture, etc. : (1)-438  
 Industrial Safety and Health Act : Published

Ingredient 7

Chemical name : Chromium(III) acetylacetonate

Synonym : tris(acetylacetonato)chromium (III)  
 Chemical formula :  $C_{15}H_{21}CrO_6$   
 Molecular weight : 349.32  
 CAS number : 13681-82-8  
 Content : Approximately 0.48 %  
 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 8

Chemical name : Lead (II) chromate  
 Synonym : Chrome yellow  
 Chemical formula :  $PbCrO_4$   
 Molecular weight : 323.2  
 CAS number : 1344-37-2  
 Content : Approximately 0.15 %  
 Reference Number in : Act on the Evaluation of Chemical Substances and Regulation of  
 Gazetted List in Japan Their Manufacture, etc. : (5)-5161  
 Industrial Safety and Health Act : Published

#### Ingredient 9

Chemical name : Decabrominated diphenyl ether (DBDE)  
 Synonym : Deca-bromo-diphenyl ether  
 Chemical formula :  $C_{12}Br_{10}O$   
 Molecular weight : 959.17  
 CAS number : 1163-19-5  
 Content : Approximately 0.01 %  
 Reference Number in : Act on the Evaluation of Chemical Substances and Regulation of  
 Gazetted List in Japan Their Manufacture, etc. : (3)-2846  
 Industrial Safety and Health Act : Published

### 4. First-aid Measures

- ◇If in eyes : Flush with plenty of clean water, carefully  
 If using contact lens, take it out if possible, keep rinsing.  
 If the irritation persists, seek medical advice.
- ◇If on skin : Flush with soap and plenty of clean water. In case of abnormality,  
 seek medical advice
- ◇If swallowed : Drink a lot of water and induce vomit, wash the mouth thoroughly  
 with water. Seek medical advice.
- ◇Measures to be : Use personal protective equipment.  
 taken to protect  
 the person  
 applying first aid

### 5. Fire-fighting Measures

Extinguishing media : Water, dry chemical, foam

- Specific hazards at the time of fire : Generates toxic gas by combustion (HCl, CO, CO<sub>2</sub>)
- Specific extinguishing measures : -
- Protecting fire-fighting personnel : Extinguish from windward. Use personal protective equipment such as fire-resistant clothing, self-contained compressed air breathing apparatus, etc.

## 6. Accidental Release Measures

- Sweep up the spilled material and collect them in an empty container
- Prevent this reference material from flowing into drain sewers and public waterways.

## 7. Handling and Storage

### Handling

- Use protective eyewear/protective clothing
- Avoid contact with eyes, skin
- Do not eat, drink or smoke while handling
- Wash hands thoroughly after handling
- Avoid fire close to the product.
- Installing ground wire, etc. preferable as antistatic device
- Lock and store strictly.

### Storage

- Condition for safe storage : Store in clean environment at 15 °C to 35 °C, and avoid direct sunlight.  
Lock and store strictly.

※ Refer to the Certificate for the appropriate condition of the certified reference materials storage and the usage precautions.

## 8. Exposure Controls/Personal Protection

### Permissible concentration

#### (Cadmium Oxide)

- ACGIH TLV-TWA (2000) : 0.01 mg/m<sup>3</sup> (total powder dust, as Cd)  
0.002 mg/m<sup>3</sup> (inhalant powder dust, as Cd)
- Japan Society for Occupational Health recommended reference value (1998) : 0.05 mg/m<sup>3</sup> (as Cd)

#### • OSHA PEL TWA

: 0.2 mg/m<sup>3</sup> (as Cd)

### Permissible concentration

#### (Lead chromate)

- ACGIH TLV-TWA (2000) : 0.05 mg/m<sup>3</sup> (as Pb)  
0.012 mg/m<sup>3</sup> (as Cr(VI))
- Japan Society for Occupational Health recommended reference value (1998) : 0.1 mg/m<sup>3</sup> (as Pb)  
0.05 mg/m<sup>3</sup> (as Cr(VI))

### Permissible concentration

(Acetylacetonate Chromium)

- ACGIH TLV-TWA (2007) : 0.5 mg/m<sup>3</sup> (as Cr(III))
- Japan Society for Occupational Health recommended reference value (2007) : 0.5 mg/m<sup>3</sup> (as Cr(III))

Permissible concentration

(Mercuric sulphide)

- ACGIH TLV-TWA (2001) : 0.025 mg/m<sup>3</sup> (as Hg)
- Japan Society for Occupational Health recommended reference value (2001) : 0.025 mg/m<sup>3</sup> (as Hg)

Permissible Concentration (Decabrominated diphenyl ether (DBDE))

- Not established

Facility equipment installation

- Installation of local ventilation equipment preferable if using the product indoor
- Install hand and eye wash station close to the working place, and mark the location conspicuously

Protective equipment

- Protective eyewears
- Protective polyethylene gloves
- Use appropriate self-contained compressed air breathing apparatus, etc. in case of fire.

## 9. Physical and Chemical Properties

- Appearance, etc. : Solid
- Color : Milky white
- 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 : No data
- Solubility :
  - Polyvinyl chloride  
Not soluble in water. Not soluble in most organic solvents, but soluble in ketone types, THF types
  - Di-isonoyl phthalate  
Water solubility 0.006 mg/L (20 °C). Soluble in organic solvents such as alcohol, ether, etc.
- *n*-Octanol/water partition coefficient (Log Po/w) : No data
- Auto-ignition temperature : No data
- Decomposition temperature : No data
- Flammability : Do not ignite at normal temperature

## 10. Stability and Reactivity

- ◇Stability
  - Stable under normal condition
- ◇Reactivity
  - Stable under normal condition
- ◇Condition to avoid
  - Fire, static
- ◇Hazardous decomposition products
  - Generate toxic gases (HCl, CO, CO<sub>2</sub>) if combusted.

## 11. Toxicological Information

- |  |   |
|--|---|
| Acute toxicity (Oral)                  | <ul style="list-style-type: none"> <li>• Polyvinyl chloride : LD50(rat) 2000mg/kg and over</li> <li>• Di-isonoyl phthalate : LD50(rat) 10 g/kg and over</li> <li>• Cadmium oxide : oral mouse LD50: 72 mg/kg, rat LD50: 72 mg/kg</li> <li>• Lead chromate : oral mouse LD50: &gt;12 g/kg</li> <li>• Acetylacetonate Chromium : oral rat LD50: 3360 mg/kg</li> <li>• Mercuric sulphide : no data</li> <li>• Additive component(epoxidized soybean oil, about2.2 %) designated as Class 4 based on LD50 (rat) 22.5 mL/kg</li> </ul> |
| Acute toxicity (Dermal)                | <ul style="list-style-type: none"> <li>• Additive component(epoxidized soybean oil, about 2.2 %) designated as Class 5 due to local effect described as ‘may cause minor inflammation upon contact with human skin etc. though rare’</li> </ul>   |
| Serious damage to the eye/eye irritant | <ul style="list-style-type: none"> <li>• Di-isonoyl phthalate<br/>Rabbit 0.1ml/72H mild irritation</li> <li>• Designated as Class 2B containing Class 2B Di-isonoyl phthalate about 20 %, Class 2B Zinc stearate about 0.6 %, Class 2B Decabromodiphenylether about 0.01 %</li> </ul>   |
| Carcinogenicity                        | <ul style="list-style-type: none"> <li>• Designated as Class 1A containing Class 1A Lead chromate 0.15 %</li> </ul>   |
| Reproductive toxicity                  | <ul style="list-style-type: none"> <li>• Designated as Class 2 containing Class 2 Lead chromate 0.15 %</li> </ul>   |
| Other toxicological information        | <ul style="list-style-type: none"> <li>• Japan Society for Occupational Health classifies Chrome as ‘Group 2’respiratory sensitizer</li> <li>• Japan Society for Occupational Health classifies Chrome as ‘Group 1’dermal sensitizer</li> </ul>   |

※ Lacking information of this CRM as composite, the toxicological information is based on the raw materials. This product is stable under normal conditions and does not elute toxic additive components; however, when handling under particular condition such as at high temperature, appropriate safety measures should be taken.

## 12. Ecological Information

- Degradability, concentration
  - No data available
- Bioaccumulation
  - No data available
- Ecotoxicity
  - No data available

### 13. Disposal Considerations

- Residual Waste : · This standard substance contains decabrominated diphenyl ether and should be handled appropriately, taking into account that it is Class I Specified Chemical Substance of the Law Concerning the Examination and Regulation of Manufacture, etc.  
· It corresponds to industrial waste and waste plastics of "Waste Disposal and Public Cleaning Law" (Waste Disposal Law). In accordance with the waste disposal method, Disposal of this reference material should be entrusted to a professional waste disposal company licensed by a prefectural governor.
- Contaminated Container and Package : Dispose of this CRM in accordance with applicable legislation and local government ordinance. Entrust disposal of this CRM to a professional waste disposal company licensed by the prefectural governor.

### 14. Transport Information

- UN Number : Not applicable  
 UN Classification : -  
 Shipping Name : -  
 Packing Group : -  
 ICAO/IATA : Not applicable  
 Marine Pollutant : Not applicable  
 Precautions : Store in a clean environment at room temperature, avoid direct sunlight. Handle carefully, avoid fall or drop, etc., prevent collapse or damages to containers

### 15. Regulatory Information

- ◇ Industrial Safety and Health Law
    - Article 57-2 (Enforcement Order: Article 18) Hazardous substance whose name, etc. must be labeled.
    - Article 57-2 (Enforcement Order: Article 18-2) Hazardous substance whose name, etc. must be notified No. 142 (Chrome and its compounds), No. 411 (Lead and its inorganic compounds), No. 315 (Mercury and its inorganic compounds)
  - ◇ Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Chemical Substances Control Law)
    - Type 1 Specific Compound (Decabrominated diphenyl ether, No. 33)
  - ◇ Act on grasping emission amount of specified chemical substances to the environment and promoting improvement of management
    - Class I designated chemical substances (Decabrominated diphenyl ether, No. 1 - 255)
- ◎ **This SDS is originally prepared for the use of the material in Japan, thus the stated laws and regulations are stipulated and carried out in Japan. The use of the product in other countries should be referred to and by application of the relevant laws and regulations of the country in which the product will be used.**

### 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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