# Safety Data Sheet

National Institute of Advanced Industrial Science and Technology
AIST

## 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 |
| Emergency Contact | : | Same as above |
| | | Prepared on : November 25, 2010 |
| | | Revised on : March 31, 2017 |
| | | Reference No. : 4056001 |
| Identity of Substance/Mixture | : | Certified reference material: NMIJ CRM 4056-a<br>PFOA (Perfluorooctanoic acid) |
| 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 perfluorooctanoic acid (PFOA). Do not use this reference material for other purposes than testing/research. |

## 2. Hazards Identification

GHS Classification:

| | | |
|---|---|---|
| Corrosive to metal | : | Hazard Category 1 |
| Acute toxicity (Oral) | : | Hazard Category 4 |
| Skin corrosion/irritation | : | Hazard Category 1C |
| Serious eye damage/ Eye irritation | : | Hazard Category 1 |

GHS Label Element:

Signal Word: Danger

Hazards Statement:
May cause metal corrosion
Harmful if swallowed
Causes serious chemical burn of skin / eye damage
Harmful to aquatic organisms due to long-term environmental impact

Precautionary Statement :
［Precaution］
Do not transfer to another container.
Do not inhale.
Avoid release to environment.
Do not drink, eat or smoke when using this reference material.

Wash hands thoroughly after handling this reference material.
Use protective gloves/eye protector/face protector.
［First-Aid Measures］
If inhaled: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
If ingested: Flush mouth. Do not induce vomiting.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if possible, before rinsing eyes.
Contact with skin or hair: Take off/remove all contaminated clothing immediately. Wash exposed skin area with running water/shower.
Get medical advice/attention immediately.
Absorb spillage to prevent physical damage.
［Storage］
Store this reference material in a refrigerating and dark environment (around 4 °C). Store locked up.
［Disposal］
Entrust disposal of this reference material and its containers to a professional waste disposal company licensed by prefectural governor.

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 | : | Substance |
| Chemical Identity | : | Perfluorooctanoic acid |
| Synonym | : | 2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-pentadecafluorooctanoic acid |
| Content | : | 95 % or more |
| Chemical Formula or Structural Formula | : | $CF_3(CF_2)_6COOH$ |
| Molecuar Weight | : | 414.07 |
| Reference Number in Gazetted List in Japan | : | Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. : (2)-2659<br>Industrial Safety and Health Act : Published |
| CAS Number | : | 335-67-1 |

## 4. First-aid Measures

| | | |
|---|---|---|
| If in Eyes | : | Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Get medical advice/attention immediately. |
| If on Skin | : | Take off/remove all contaminated clothing immediately. Wash exposed skin area with plenty of soap and water. Get medical advice/attention immediately. |
| If Inhaled | : | Remove victim to fresh air and keep at rest in a position comfortable |

| | | |
|---|---|---|
| | | for breathing. Get medical advice/attention immediately. |
| If Ingested | : | Get medical advice/attention immediately. Flush mouth. Do not induce vomiting. |
| Expected Acute and Delayed Symptom | : | — |
| Most Critical Characteristic and Symptom | : | Cough, Sore throat, Abdominal pain, Nausea, Vomit, Flush, Pain, Bleary eye |
| Protection of First-Aid Responder | : | Use personal protective equipment such as rubber gloves and tightly-shielded goggles. |

## 5. Fire-fighting Measures

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|---|---|---|
| Extinguishing Media | : | Powder, Foam, Water spray, Carbon dioxide ($CO_2$) |
| Fire-Specific Hazards | : | Irritating or toxic fume (or gas) may be generated in the case of fire. |
| 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 inhalation of hazardous gas. Use personal protective equipment such as fire-proof clothing, heat-resistant clothing, protective clothing, compressed air open-circuit self-contained breathing apparatus, compressed oxygen closed-circuit self-contained breathing apparatus, rubber gloves and rubber boots. |

## 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. Rinse away the remains with plenty of water. |
| 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 | : | Handle this reference material in a well-ventilated environment.<br>Take precautions to prevent dust from scattering. |
| Local and General Ventilation | : | Handle this reference material in tightly-closed system if possible.<br>Use local ventilation if dust and/or aerosol are generated. |
| Precautions for Safe Handling | : | Avoid rough handling such as turning over, dropping, giving a shock to or dragging containers.<br>Prevent spill, overflow and scattering, and avoid vapor generation.<br>Keep container tightly closed after using this reference material.<br>Wash hands, face etc. thoroughly and gargle after handling this reference material.<br>Restrict drinking, eating and smoking to a designated area.<br>Do not bring gloves and other contaminated personal protective equipment into staff room.<br>Make a place handling this reference material a restricted area to keep out unauthorized people.<br>Use appropriate personal protective equipment to avoid inhalation and contact with eyes, skin and clothing.<br>Use corrosion-resistant equipment and tools. |

Storage

| | | |
|---|---|---|
| Appropriate Storage Conditions | : | Store in a closed container in a sunlight-shielded well-ventilated cool environment. |
| Incompatible Substances | : | No data available |
| Safe Container Packaging Material | : | Glass |

## 8. Exposure Controls/Personal Protection

Threshold Limit Value/Concentration Limit

Not specified

Permissible Concentration

| | | |
|---|---|---|
| ・ACGIH　TLV-TWA (2000) | : | Not specified |
| ・Value recommended by Japan Society for Occupational Health (1998) | : | 0.005 mg/m$^3$ (Not applicable to women of childbearing potential) |
| ・OSHA PEL TWA | : | Not specified |

Engineering Controls

| | | |
|---|---|---|
| Ventilation/Exhaust | : | Install a tightly-closed system or local ventilation system |
| Safety control/ | : | Measuring equipment, Detecting tube |

Gas detection

Storage Precautions : Ventilated along floor surface. Tightly closed. Keep away from combustible materials, reducing agents and strong oxidizers.

Personal Protective Equipment (PPE)

Respiratory System : Dust protective mask, Compressed air open-circuit self-contained breathing apparatus, Air-supplied respirator, etc.

Hands : Protective gloves

Eyes : Eye protector, Face protector when necessary

Skin and Body : Impervious protective clothing, protective boots when necessary

Hygiene measure

Treat in accordance with rules on Industrial hygiene and Industrial safety.

## 9. Physical and Chemical Properties

| | | |
|---|---|---|
| ・Appearance, etc. | : | Powder |
| ・Color | : | White |
| ・Odor | : | No data |
| ・pH | : | No data |
| ・Melting point | : | 52 °C to 54°C |
| ・Boiling point | : | 189 °C |
| ・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 | : | Easily-soluble in ethanol and acetone and hardly-soluble in water |
| ・*n*-Octanol/water partition coefficient (Log Po/w) | : | No data |
| ・Auto-ignition temperature | : | No data |

## 10. Stability and Reactivity

Stability

・Stable in normal conditions

Reactivity

・No data available

Conditions to Avoid

・Sunlight, Heat

Hazardous Decomposition Products

・Carbon monoxide (CO), Fluorine compound

## 11. Toxicological Information

Acute Toxicity Abdominal cavity Rat LD50＝189 mg/kg (RTECS)

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|---|---|
| Skin Corrosion/ Irritation | No data available |
| Serious Eye Damage/ Eye Irritation | No data available |
| Germ Cell Mutagenicity | No data available |
| Carcinogenicity | No data available |

## 12. Ecological Information

Persistence and Degradability

Persistent: based on the existing chemical substance safety check

5 % by BOD

0 % by HPLC

3 % by TOC

Bioaccumulative Potential

5.1～9.4 (Animal under test: Carp, Test period: 28 days, Test concentration: 5 μg/L)

(Note: Normal BCF: 3.1 (Test concentration: 50 μg/L))

Ecotoxicity

Cyprinodont LC50/96H: 100 mg/L

## 13. Disposal Considerations

Residual Waste : Incineration method

Spray residual waste together with excessive combustible solvent or fuel such as heavy oil into fire chamber of incinerator equipped with afterburner and scrubber and incinerate it at as high temperature as possible.

＜Note＞

・Use alkali (sodium hydroxide) solution to clean scrubber.

・Use an incinerator suitable for incinerate organic halogen compound.

Dispose of this reference material in accordance with applicable legislation and local government ordinance.

When the above-mentioned treatments are not possible, entrust disposal of residual waste to a professional waste disposal company licensed by prefectural governor.

Contaminated Container and Package : Dispose of containers after thoroughly removing their contents.

## 14. Transport Information

| | | |
|---|---|---|
| UN Number | : | 3261 |
| UN Classification | : | Class 8 (Corrosive substance) |
| Shipping Name | : | Other corrosive substance (organic)(solid)(acidic) |
| Packing Group | : | PG Ⅲ |

| | | |
|---|---|---|
| ICAO/IATA | : | Class 3　Grade Ⅲ |
| Marine Pollutant | : | Not applicable |
| Precautions | : | When transporting this reference material, make it sure that its containers are not leaky, load it in a way to prevent turning over, dropping and being damaged, and take appropriate measures to avoid collapse. |

## 15. Regulatory Information

Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc.

Class 2 Chemical substance subject to Type 2 monitoring

Ship Safety Law (Dangerous Material Rule)

Corrosive substance

Civil Aeronautics Act

Corrosive substance

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.530.

## 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.