

# Safety Data Sheet



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

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ID Number : 4040002

Identity of Substance/Mixture : Certified Reference Material NMIJ CRM 4040-b Acrylonitrile

Recommended Use of the Chemical and Restriction on Use : This reference material can be used for calibration of analysis equipment as well as quality control of equipment and validation of analysis method/equipment. 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 : Class 2
- Acute toxicity (Oral) : Class 3
- Acute toxicity (Dermal) : Class 2
- Acute toxicity (Inhalation:vapor) : Class 2
- Skin corrosivity/irritant : Class 2
- Severe eye damages/eye irritant : Class 2A
- Skin sensitization : Class 1
- Germ-cell mutagenicity : Category 2
- Carcinogenicity : Class 2

Reproductive toxicity : Class 2  
 Particular target : Class 1 (Nervous system, liver)  
 organ/systemic toxicity : Class 3 (Respiratory tract  
 (Single exposure) irritant)  
 Class 3 (Anesthetic action)  
 Particular target : Class1 (Nervous system,  
 organ/systemic toxicity : respiratory system, blood  
 (Repeated exposure) system, testis, liver, kidney)  
 Water environment toxicity : Class 2  
 (Acute)

GHS label element :



Signal word : Danger

Hazard and toxicity: Highly flammable liquid and vapor  
 Skin irritation  
 Severe eye irritation  
 Harmful if swallowed  
 Lethal in contact with skin  
 Lethal by inhalation  
 May cause heritable genetic damage  
 May cause cancer  
 May have adverse effects on reproductive function and fetus  
 Damages to organs (nervous system, liver)  
 May be irritating to respiratory system  
 May cause drowsiness and dizziness  
 Long-term or repeated exposure may cause damages to  
 organs(nervous system, respiratory system, blood system, testis,  
 kidney, liver)  
 May cause allergic dermatitis  
 Toxic to aquatic organisms  
 Other hazard : Causes acute poisoning if inhaling a large amount of vapor or  
 and : absorbing through skin and mucous membrane. Also, contact with  
 toxicity : the skin or mucous membrane incurs burn, and causes severe  
 inflammation in contact with eyes,  
 Precautionary : [Preventive measures]  
 statement : Read and understand the safety precautions fully before handling

No eating, drinking or smoking when handling

Keep away from ignition sources such as heat, sparks, open flame and high temperature matters. No smoking.

Use explosive-proof electrical appliances, ventilation system, and lighting equipment. Prevent electrostatic discharge or sparks from catching fire.

Use individual protective equipment and ventilation system to avoid exposure.

Use respiratory protective equipment, protective gloves, protective eyeglasses, and protective mask.

Handle the material in outdoor or well ventilated area.

Do not inhale mist, vapor or spray.

Wash hands well after handling

Avoid discharging to the environment.

Do not take out the contaminated work clothing outside the work area.

[Response]

Take appropriate extinguishing measures at the time of fire.

If inhaled : Move to a fresh air, take a comfortable posture to ease breathing and rest. Seek medical advice immediately.

If swallowed: Seek medical advice immediately. Wash the mouth

If in eyes : Rinse carefully with water for several minutes.

If contact lenses are inserted, take them out if possible and continue to rinse.

Seek medical advice immediately.

If on skin : Rinse with a large amount of water using soap.

In case of irritation, seek medical advice.

If feeling unwell, seek medical advice.

[Storage]

Store in a dark place at the temperature of about  $-20\text{ }^{\circ}\text{C}$

Store in a locked area.

[Disposal]

This material or its container should be outsourced to a professional industrial waste disposal contractor licensed by the prefectural governor.

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

### 3. Composition/Information on Ingredients

|  |   |   |
|--|---|---|
| Substance or mixture                       | : | Substance   |
| Chemical name                              | : | Acrylonitrile   |
| Content                                    | : | 99.9 %  |
| Synonym                                    | : | -   |
| Chemical or structural formula             | : | CH <sub>2</sub> CHCN  |
| Molecular weight                           | : | 53.06   |
| Reference Number in Gazetted List in Japan | : | Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. : (2)-1513<br>Industrial Safety and Health Act : Published |
| CAS number                                 | : | 107-13-1  |

### 4. First-aid Measures

|   |   |  |
|---|---|--|
| If in eyes  | : | Rinse carefully with water for several minutes. If contact lenses are inserted, take them out if possible, and continue to rinse. Seek medical advice immediately. |
| If on skin  | : | Rinse with a large amount of water using soap.<br>In case of irritation, seek medical advice.  |
| If inhaled  | : | Move to a fresh air, keep warm and rest. Seek medical advice immediately.  |
| If swallowed  | : | Rinse the mouth well with water. Drink water or saline solution to induce vomiting. Seek medical advice immediately.   |
| Anticipated acute and delayed symptoms                        | : | -  |
| Most important characteristics and symptoms                   | : | -  |
| Measures to be taken to protect the person applying first aid | : | Use personal protective equipment such as rubber gloves, safety goggles.   |

### 5. Fire-fighting Measures

|                                      |   |   |
|--------------------------------------|---|---|
| Extinguishing media                  | : | Powder, carbon dioxide, foam (Absolutely no use of water)       |
| Specific hazards at the time of fire | : | May form irritating or toxic fume (or gas) at the time of fire. |
| Specific extinguishing               | : | Remove any combustible sources from the seat of fire and        |

- measures : 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 : Extinguishing activities on windward side, avoid inhaling toxic gases. Use protective equipment such as fire-resistant protective clothing, heat resistant protective clothing, protective clothing, self-contained compressed air breathing apparatus, closed circuit breathing apparatus, rubber gloves, rubber boots, etc.

## 6. Accidental Release Measures

- Personal precautions : Keep away from fire sources. Promptly remove any ignition sources from around the material. Ready for a fire by keeping an appropriate extinguisher at hand
- Protective equipment and emergency procedure : If released indoor, ventilate well until the treatment is completed.  
Use suitable protective equipment to protect the skin from airborne droplets and avoid inhaling dust and gas.
- Environmental precaution : To prevent causing environmental impact, do not release the spilled material into rivers, etc. directly. Treat the contaminated waste water appropriately before discharging to the environment.
- Recovery, neutralization : Adsorb the spilled liquid to waste cloth or to sand and soil and wipe off completely. Collect everything used to clean up the spillage in an airtight container. Wash away the contaminated area with a large amount of water.
- Measures to prevent secondary accident : Rope-off the leaked area and restrict access only to the authorized persons. Evacuate the people on the leeward and work on the windward side.

## 7. Handling and Storage

- Handling
- Technological counter measures : Keep away from fire sources  
Avoid contact with high temperature matters, sparks, strong oxidizers, etc.
- Local ventilation/general ventilation : Use local exhaust ventilation system when handling indoor

- Precautions for safe handling : Do not treat the container roughly, no dropping, knocking down or dragging  
Prevent the fume to form by avoiding leakage, spillage or overflow.  
Eating, drinking or smoking only at the designated areas  
Take off the contaminated protective equipment such as gloves, etc. when going to rest areas, common areas.  
Entering the handling area only by the authorized persons.  
Use suitable protective equipment to prevent inhaling, coming in contact with eyes, skin and the clothing
- Storage  
Appropriate condition : Use explosion proof structured electrical equipment in the storage area, and ground all the equipment.  
Store in a dark clean place at the temperature of about  $-20\text{ }^{\circ}\text{C}$ .  
Keep the container airtight in well ventilated place.  
Keep away from source of ignition and strong oxidizers.  
Store in a locked area.
- Safe packing material : Glass

## 8. Exposure Controls/Personal Protection

### Administrative levels

2 ppm

### Occupational exposure levels

- ACGIH TLV-TWA : 2 ppm
- Japan Society for : 2 ppm, 4.3 mg/m<sup>3</sup> (Skin)

### Occupational Health

#### Recommended

#### Reference Value

- OSHA PEL TWA : air TWA 2 ppm CL 10 ppm/15 min (air)

### Facility engineering

- Ventilation, exhaust : Seal the source or use local exhaust ventilation system when handling indoor.  
Install safety shower, hand/eye washer, and indicate their location conspicuously.

- Safety management, gas detection : Measuring instrument, detector

- Storage precaution : Ventilate along the floor surface. Keep the container

airtight.

Keep away from flammable substances, reducing agents and strong oxidizers.

Protective equipment

|                   |   |  |
|-------------------|---|--|
| Respiratory organ | : | Respiratory protective equipment, air-supplied respirators to protect from cyanide fume, |
| Hand              | : | Protective gloves  |
| Eyes              | : | Protective eyeglasses  |
| Skin and body     | : | Protective work clothing   |

## 9. Physical and Chemical Properties

|  |   |   |
|--|---|---|
| • Appearance, etc.   | : | Liquid  |
| • Color  | : | Clear and transparent   |
| • Odor   | : | Slightly pungent odor   |
| • pH   | : | No data   |
| • Melting point  | : | -83 °C to -84 °C  |
| • Boiling point  | : | 78 °C to 79 °C  |
| • Flashing point   | : | 0 °C±2.5 °C   |
| • Explosive range  | : | 3 % to 17 % (v/v)   |
| • Vapor pressure   | : | 147 hPa to 153 hPa (25 °C)  |
| • Relative vapor density(Air=1)                            | : | 1.84 (Air=1)  |
| • Specific gravity or bulk specific gravity                | : | 0.808 (20/4 °C)   |
| • Solubility   | : | Water soluble (9.3 g/100 g water, 20 °C), soluble in most organic solvent |
| • <i>n</i> -Octanol/water partition coefficient (Log Po/w) | : | -0.92   |
| • Auto-ignition temperature                                | : | 481 °C  |

## 10. Stability and Reactivity

◇Stability

- Polymerizes when heated under the influence of light, base or peroxidative agent.

◇Reactivity

- Violent combustion or explosion when heated. Decomposes and forms toxic nitrogen oxide and hydrogen. Causes fire or explosion by reacting violently with oxidizers or alkali cyanide.

◇Conditions to avoid

- Sunlight, open flame, high temperature, sparks, static electricity and other sources of ignition, and oxidizers.
- ◇ Hazardous decomposition products
  - Carbon monoxide, nitrogen oxide.

## 11. Toxicological Information

|  |   |  |         |                                 |
|--|---|--|---------|---------------------------------|
| Acute toxicity   | : | Oral   | rats    | LD50 : 78 mg/kg                 |
|  |   | Inhalation   | rats    | LC50 : 333 ppm/4H mg/kg (RTECS) |
|  |   | Subcutaneous   | rats    | LD50 : 148 mg/kg                |
|  |   | Abdominal cavity   | rats    | LD50 : 65 mg/kg (RTECS)         |
|  |   | Skin   | rats    | LD50 : 75 mg/kg                 |
|  |   | Oral   | mice    | LD50 : 27 mg/kg (RTECS)         |
|  |   | Abdominal cavity   | mice    | LD50 : 46 mg/kg                 |
|  |   | Skin   | mice    | LD50 : 25 mg/kg (RTECS)         |
| Skin corrosivity/<br>irritation                                    | : | Skin irritation  | rabbits | 500 mg severe (EU-RAR)          |
| Severe damage to<br>eyes/<br>eye irritation                        | : | Eye irritation   | rabbits | 100 mg moderate (RTECS)         |
| Respiratory<br>Sensitization                                       | : | No data available  |         |                                 |
| Germ cell<br>mutagenicity :  |   | Existing chemical substance listed as a mutagenic chemical (Labor Standards Bureau Notification No. 452, 2, 5. 7 1996).<br>Germ cell mutagenicity tests in microorganisms: inactivation rate $3.2 \times 10$ revertants/mg<br>Chromosomal aberration test in mammalian cultured cell: D20 rate 0.020 mg/ml, CERI·NITE Hazard Assessment Report No.64 (2003)、CICADS 39 (2002)、EU-RAR No.32 (2004) |         |                                 |
| Carcinogenicity  | : | Classified as R in NTP (2005), as 2B in IARC (1999)  |         |                                 |
| Reproductive toxicity  | : | Teratogenicity test on rats observed visceral abnormality and skeletal disorder in baby animals at the dose level toxic to mother animals described in CERI·NITE Hazard Assessment Report No.64 (2003)   |         |                                 |
| Particular target<br>organ/ systemic toxicity<br>(Single exposure) | : | As for humans, from the descriptions 'mild jaundice, twitch' (CERI·NITE CERI·NITE Hazard Assessment Report No.64 (2003)), 'effects on central nervous system and liver' (CICAD 39 (2002)) and 'irritation of eyes, nose and throat, twitch,  |         |                                 |



unconsciousness, respiratory arrest' (NICNAS (2000)) etc., the nervous system and liver are considered as the target organs: also observed irritation of the respiratory system. Moreover, because the recovery of the affected nervous system was seen in some cases, the effect on nervous system may be temporal, which indicates anesthetic action (CERI·NITE Hazard Assessment Report No.64 (2003))

Particular target organ/  
systemic toxicity  
(Repeated exposure)

As for humans, 'symptoms involving central nervous system such as malaise, headache, neurasthenia' (CERI Hazard Data 96-3 (1997)), 'pain in eyes, nose, throat, respiratory tract' (CERI·NITE Hazard Assessment Report No.64 (2003)), 'reduction in hemoglobin concentration, red blood cells and white blood cells, and immune suppression' (EU-RAR No.32 (2004)) etc.

As for experimental animals, 'reduction in sperm and hypokinesia, casts formed in collecting duct system, subacute bronchitis, localized necrosis of the liver, localized gliosis of the brain and perivascular cuffing,' (CERI·NITE Hazard Assessment Report No.64 (2003)) etc.

## 12. Ecological Information

Degradability, concentration

- Degradability; 41 % to 74 % by BOD

Bioaccumulation

- No data available

Ecotoxicity

- Crustacean (Mysid shrimp or Mysidopsis bahia) 96H LC<sub>50</sub>=5.81 mg/L (CERI·NITE Hazard Assessment Report 2005)

## 13. Disposal Considerations

- Incinerate in an incinerator equipped with scrubber.

## 14. Transport Information

UN number : 1093  
 UN classification : Class 3, 6.1  
 Material name : Acrylonitrile(Stabilizer contained)  
 Container grade : PG I

Marine pollutant : Harmful liquid substance(Type B)  
Precautions : Transfer with caution by avoiding direct sunlight. Prevent the container from leakage or spillage by dropping, falling, etc. Keep away from fire sources.

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## 15. Regulatory Information

### ◇Fire Service Act

- Hazardous Material Category 4 No 1 Petroleum (water insoluble) Hazard Class 2

### ◇Poisonous and Deleterious Substances Control Act

- Deleterious Substance Packaging Grade 3

### ◇Industrial Safety and Health Act

- Article 57 (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. 7
- Ordinance on Prevention of Hazards Due to Specified Chemical Substances Specified Group 2 substance.

### ◇Ship Safety Act

- Ignitable liquid

### ◇Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof

- Class 1 Designated Chemical Substances No. 9

◇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 material in other countries should be referred to and by application of the relevant laws and regulations of the country in which the material will be used.

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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. This document is prepared based on JIS Z7253:2012.

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