

# 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  
 Person in Charge : Certified Reference Material Staff  
 Telephone No. : +81-29-861-4059 Fax No. : +81-29-861-4009  
 Emergency Contact : Same as above

Prepared on : August 29, 2007  
 Revised on : August 31, 2022  
 ID Number : 1017001

Identity of Substance/Mixture : Certified reference material: NMIJ CRM 1017-a  
 Stainless Steel for EPMA  
 Recommended Use of the Chemical and Restriction on Use : This certified reference material (CRM) is intended to use in calibrating concentration of elements during the electron probe micro analyzer (EPMA) analysis of Cr, Ni and Fe in stainless Steel. 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 : Respiratory organ : Hazard Category 1 sensitization  
 Skin Sensitization : Hazard Category 1  
 Germ cell mutagenicity : Hazard Category 2  
 Carcinogenicity : Hazard Category 2

GHS label element:



Signal Word : Danger  
 Hazard and toxicity : May cause an allergic skin reaction.  
 Suspect of causing genetic defects.  
 May cause allergy, asthma or breathing difficulty if inhaled.  
 May cause cancer.  
 Other Hazards Statement : Powder of iron-chromium alloy may cause eye irritation.  
 May cause metal fume fever.

Precautionary Statement : May cause respiratory tract irritation.  
 [Precaution]  
 Do not breathe dust, mist, vapors, etc.  
 Avoid release to the environment.  
 Do not eat, drink or smoke when using this product.  
 Use appropriate personal protective equipment.  
 Wash personal protective equipment thoroughly after use.  
 Wash hands thoroughly after handling.  
 Use protective globes.  
 When dust is generated, seal the source, and wear respiratory protection equipment.  
 [Action]  
 If inhaled: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice/attention if you feel unwell.  
 If swallowed: Rinse mouth. Do not induce vomiting. Immediately get medical advice/attention.  
 If in eyes: Rinse with running water for several minutes. Get medical advice/attention.  
 If on skin: Remove/Take off all contaminated clothing and adhered materials. Rinse skin with running water and soap. Immediately get medical advice/attention if you feel unwell.  
 If exposed: Get medical advice/attention.  
 [Storage]  
 This CRM should be kept in locked and keyed.  
 Keep out direct sun light and high relative humidity. Store this CRM in a clean place at normal room temperature.  
 [Disposal]  
 Dispose of this reference material in accordance with applicable legislation and local government ordinance.  
 Entrust disposal of this reference material to a professional waste disposal company licensed by prefectural governor.

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

### 3. Composition/Information on Ingredients

Substance or mixture : Mixture (Alloy)  
 Chemical name : Stainless steel  
 Synonym : SUS  
 Chemical formula : Cr, Ni, Fe  
 Molecular weight : -  
 CAS number : Chromium: 7440-47-3, Nickel:7440-02-0, Iron:7439-89-6  
 Content : Chromium: 25.029 %, Nickel: 20.081 %, Iron: 54.833 %  
 Reference Number in : Act on the Evaluation of Chemical Substances and Regulation

Gazetted List in Japan of Their Manufacture, etc. : -  
Industrial Safety and Health Act : -  
CAS No. : Chromium: 7440-47-3, Nickel:7440-02-0, Iron:7439-89-6  
Hazardous substance : Nickel, Chromium

#### 4. First-aid Measures

If in Eyes : Rinse cautiously with clean water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention immediately.

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 thoroughly with water. Do not induce vomiting, if it is not the instructions from a doctor. Get medical advice/attention when feeling unwell.

Predicted immediate and delayed symptoms : Diarrhea, nausea, loss of consciousness, vomiting.

Most important symptom/effect : Skin sensitization.

Protecting Personnel in emergency measures : Wear protective equipment such as rubber gloves, eye protective goggles.

#### 5. Fire-fighting Measures

Extinguishing Media : Use extinguishing media for peripheral fire.

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 such as fire protection clothing, heat-resistant clothing, protective clothing, breathing apparatus, circulating oxygen respirator, rubber gloves, and rubber boots.

#### 6. Accidental Release Measures

Personal Precaution : May cause allergy, use appropriate personal protective equipment.

Personal Protective Equipment and Emergency : 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

Procedures		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 the contaminated items in an empty container.
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	:	Do not handle with bare hands.
Local and General Ventilation	:	When dust is generated, seal the source, and provide local exhaust ventilation or central ventilation.
Precautions for Safe Handling	:	Do not handle until all safety precautions have been read and understood. Do not bring out contaminated work clothing out of the workplace. Use appropriate personal protective equipment if necessary. Avoid breathing dust / fume / gas / mist / vapors / spray. Wash the contaminated clothing before re-used. Avoid contact with water and acid. Avoid hot and humid environment.

### Storage

Appropriate Storage Conditions	:	Store in clean and dry place such as a desiccator at normal room temperature.
Safe Container	:	Plastics container
Packaging Material		

※ Please refer the certificate about the details of appropriate storage conditions and precautions for the use as reference material.

## 8. Exposure Controls/Personal Protection

### Threshold Limit Value

- Regulation for waste water less than 2 mg/l(Chromium)

### Permissible Concentration (Chromium)

- ACGIH TLV-TWA (2000) : 0.5 mg/m<sup>3</sup>
- Values recommended by Japan Society for Occupational Health : 0.5 mg/m<sup>3</sup>

### Japan Society for Occupational Health

(2000)	
• OSHA PEL TWA	: 1 mg/m <sup>3</sup>
Permissible Concentration (Nickel)	
• ACGIH TLV-TWA	: 1.5 mg/m <sup>3</sup>
(2000)	
• Values recommended by	: 1 mg/m <sup>3</sup>
Japan Society for Occupational Health	
(2000)	
• OSHA PEL TWA	: 1 mg/m <sup>3</sup>
Facility engineering	
• Ventilation, exhaust	: Local exhaust ventilation system or general ventilation system
• Safety management/ gas detector	: Measuring instrument, detector tube
• Storing precaution	: Keep away from acids.
Personal Protective equipment	
• Respiratory protection	: Protective dust mask, if necessary
• Hands	: Protective gloves
• Eyes	: Eye protector (Goggle type as necessary)
• 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.	: Solid, Rectangular piece of about 3 mm × 10 mm × 10 mm
• 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 specific gravity	: No data
• Solubility	: No data
• <i>n</i> -Octanol/water partition coefficient (Log P <sub>o/w</sub> )	: No data
• Auto-ignition temperature	: No data

## 10. Stability and Reactivity

◇Stability

- Stable in normal conditions
- ◇Reactivity
  - Reactivity is weak.
- ◇Conditions to Avoid
  - Contact with water or oxidizing substances may cause rust.
- ◇Hazardous Decomposition Products
  - No data

## 11. Toxicological Information

### • Chromium

Respiratory Sensitization	Japan Society for Occupational Health: For humans, this reference material probably causes respiratory sensitization.
Skin Sensitization	ECETOC Technical Report 45 (1992): Metal chromium, chromium alloy and chromium plating, as they are, do not cause skin sensitization. When they are dissolved due to moisture and when humans are exposed to chromium ions, however, skin sensitization may be caused.
Germ Cell Mutagenicity	IARC 49 (1999): Positive in the in-vivo somatic mutagenicity (chromosome aberration of rats' peripheral blood lymphocytes) test
Specific Target Organ Toxicity/Systemic Toxicity (Single Exposure)	SITTIG (47th (2002)) and HSFS (2000): May cause metal fume fever HSDB (2005): Respiratory tract irritation was reported.

### • Nickel

Respiratory Sensitization	Japan Society for Occupational Health (2005) Respiratory tract substance (Group 2) Japan Society of Occupational Allergy, and DFG Respiratory tract substance
Skin Sensitization	Japan Society for Occupational Health (2005) Skin Sensitization substance (Group 1) Japan Society of Occupational Allergy, and DFG Skin Sensitization substance
Carcinogenicity	NTP (2005) R (as Nickel metal) IARC (1990) 2B (as Nickel metal)
Specific Target Organ Toxicity/Systemic Toxicity (Single Exposure)	Based on the description "Damage and hydrops on alveolar wall in alveoli area, and serious tubulonecrosis in kidney" (ATSDR (2005)), it was assumed that respiratory apparatus and kidney are the target organs.
Specific target organ / systemic toxicity (repeated exposure)	Based on the descriptions "Pleurisy, pneumonia, hemostasis, and hydrops" (CaPSAR (1994)), "Increase in lamellar body combined to alveoli was observed" (ATSDR (2005)), and so on, it was assumed that respiratory apparatus is the target organ.
Water environment	Although L(E)C50 ≤ 100mg/L data is available, behavior in the

toxicity (chronic)

water is unknown because it is metal.

## 12. Ecological Information

Persistence and Degradability

- No data available

Bioaccumulative Potential

- No data available

Ecotoxicity

- No data available

## 13. Disposal Considerations

- Dispose in accordance with applicable regional, national and local laws and regulations.

- Dispose of containers after thoroughly removing their contents.

## 14. Transport Information

UN Number : Not applicable

UN Classification : Not applicable

Shipping Name : -

Packing Group : -

ICAO/IATA : -

Marine Pollutant : Not applicable

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

## 15. Regulatory Information

◇Pollutant Release and Transfer Register (PRTR) Law

- Class 1 Designated Chemical Substance

◇ Occupational Safety and Health Law

- Chemical substances which result in illness

◇Air Pollution Control Act

- Hazardous Air Pollutants

◎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.

## 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.

---