

# 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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 Office in charge : Reference Materials Office, Center for Quality Management of Metrology, National Metrology Institute of Japan  
 Person in charge : Certified Reference Material Staff  
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 Emergency contact : Same as above

Prepared on : April 1, 2021


Revised on : July 16, 2021

Reference No. : 7204001

Identity of substance/mixture : Certified Reference Material, NMIJ CRM 7204-a Trace Elements in Seawater (Elevated Level)  
 Recommended use of the chemical and restriction on use : This reference material is intended for use in the calibration of instruments and the validation of analytical methods and instruments used for the quantification of trace elements in seawater and other water samples with high contents of salts.  
 Do not use this reference material for other purposes than testing/research.

## 2. Hazard Identification

GHS classification  
 Physical hazards : Not classified  
 Health hazards  
 Skin corrosion/irritation : Hazard Category 2  
 Severe eye damage/eye irritation : Hazard Category 2A

GHS-labeling element : 

Signal word : Warning  
 Hazard statement : Causes severe eye irritation.  
 Precautionary statement : [Precaution]  
 Use personal protective equipment (protective gloves, eye protector, etc.) to avoid exposure.  
 Wash hands and skin thoroughly after handling this reference material.  
 [Response]  
 If in eyes: Rinse cautiously with clean water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If

eye irritation persists: Get medical advice/attention.

[Storage]

Keep polypropylene container sealed in zippered aluminum bag. Protect from sunlight. Store in a clean place at temperature of 5 °C to 35 °C.

[Disposal]

Comply with applicable legislation and local government ordinance. Entrust disposal of this reference material to a professional waste disposal company licensed by prefectural governor.

Other hazards : Arsenic concentration in this reference material is less than the information National Effluent Standards (Ministry of the Environment Government of Japan) (0.1 mg As/L).

The other hazards than the above do not result in classification or are not covered by the GHS.

### 3. Composition/Information on Ingredients

Substance or mixture	: Mixture
Chemical name	: Seawater
Ingredient 1	
Chemical name	: Seawater
CAS number	: —
Content	: About 99 %
Chemical formula	: —
Molecular weight	: —
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 2	
Chemical name	: Nitric acid
CAS number	: 7697-37-2
Content	: About 0.63 %
Chemical formula	: HNO <sub>3</sub>
Molecular weight	: 63.01
Reference number in gazetted list in Japan	: Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. : (1)-394 Industrial Safety and Health Act : Published/Listed
Ingredient 3	
Chemical name	: Arsenic
CAS number	: 7440-38-2
Content	: 10.9 µg/kg
Chemical formula	: As
Molecular weight	: 74.92
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 : —
Other Ingredients	

The following metal components are added in trace amounts to this reference material.  
Cr, Mn, Fe, Ni, Cu, Zn, Se, Cd, Pb

#### 4. First-Aid Measures

- If inhaled : Remove victim to fresh air and keep warm and at rest. Get medical advice/attention.
- If on skin : Rinse away thoroughly with clean water. Remove/Take off contaminated clothing, shoes, etc. Get medical advice/attention.
- 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 swallowed : Rinse mouth thoroughly with water. Get medical advice/attention.
- Protection of first-aiders : Use personal protective equipment.

#### 5. Fire-Fighting Measures

- Suitable extinguishing media : Carbon dioxide (CO<sub>2</sub>), Powder, Sand, Water, Foam  
Use extinguishing media appropriate for surrounding fire as this reference material is incombustible.
- Unsuitable extinguishing media : No data available

#### 6. Accidental Release Measures

- Personal precautions, personal protective equipment and emergency procedures : Use appropriate personal protective equipment during the operation to avoid contact with skin, eyes, and clothes. 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 spillages 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 spillages in empty containers by getting them adsorbed to wiping cloth, rag or earth and sand, etc. Rinse away the remains with plenty of water.
- Prevention of secondary disaster : Clean up contaminated items and areas thoroughly in accordance with applicable environmental regulations.

#### 7. Handling and Storage

### Handling

- Engineering precautions/Local and general ventilation : Handle it in a well-ventilated place.  
Install safety showers, hand washing facilities and eye-washers near a handling place and clearly indicate their locations.  
Prevent this reference material from leaking, overflowing and scattering. Do not allow vapors to be emitted.  
Avoid contact with eyes, skin, and clothing.  
Avoid rough handling such as turning over, dropping, giving a shock to or dragging containers.
- Precautions for safe handling : Avoid contact with skin, eyes, and clothing. Use appropriate personal protective equipment.
- Incompatible substances or mixtures : As it is acidic, avoid contact with alkaline materials.
- Hygiene controls : Handle this reference material in accordance with industrial health and safety codes.  
Restrict drinking, eating, and smoking to a designated area.  
Wash hands, face etc. thoroughly and gargle after handling this reference material.  
Do not bring gloves and other contaminated personal protective equipment into staff room.  
Make a place handling this reference material a restricted area to keep out unauthorized people.  
Use appropriate personal protective equipment to avoid inhalation and contact with eyes, skin, and clothing.

### Storage

- Appropriate storage conditions : Protect from sunlight. Store in a clean place at temperature of 5 °C to 35 °C.
- Safe container packaging material : Polyethylene container

※ See the Certificate for the details on appropriate storage conditions and instructions for use as a reference material.

## 8. Exposure Controls/Personal Protection

- Threshold limit value :  
Not specified
- Permissible concentration (nitric acid)
- ACGIH TLV-TWA : STEL: 4 ppm, TWA: 2 ppm
  - Values recommended by Japan Society for Occupational Health : 2 ppm, 5.2 mg/m<sup>3</sup>
  - OSHA PEL TWA : 8H TWA 2 ppm, 5 mg/m<sup>3</sup>
- Engineering control
- Ventilation/Exhaust : Local exhaust ventilation system or general ventilation

- system
- Safety control/Gas detection : Measuring instrument, Detector tube
  - Storage precautions : Ventilate along floor surface. Keep container tightly closed.
- Personal protective equipment
- Respiratory system : Protective mask, if necessary
  - Hands : Impervious protective gloves
  - Eyes : Eye protector (Goggle type)
  - Skin and body : Protective clothing with long sleeves, Protective boots, Protective apron

## 9. Physical and Chemical Properties and Safety Characteristics

Appearance, etc.	: Liquid
Color	: Colorless
Odor	: Odorless
Melting point	: About 0 °C
Boiling point	: About 100 °C
Flammability	: Incombustible
Explosive range	: No data available
Flashing point	: Incombustible
Auto-ignition temperature	: No-data available
pH	: Strong acid (pH<2)
Kinematic viscosity	No data available
Solubility	: Miscible with water and ethanol in all proportions
<i>n</i> -Octanol/water partition coefficient (log Po/w)	: No data available
Vapor pressure	: No data available
Density and/or relative density	: 1.028 g/cm <sup>3</sup> (15 °C), 1.026 g/cm <sup>3</sup> (20 °C), 1.025 g/cm <sup>3</sup> (25 °C),
Relative vapor density (air=1)	: No data available
Particle characteristics	: No data available

## 10. Stability and Reactivity

Reactivity	: No data
Stability	: Stable under recommended storage conditions
Possibility of hazardous reactions	: No possibility in normal processing
Conditions to avoid	: Sunlight, Heat
Incompatible materials	: Alkali substances
Hazardous decomposition products	: Nitrogen oxides (NO <sub>x</sub> )

## 11. Toxicological Information

[As nitric acid]

- Acute toxicity : Oral Human LD<sub>50</sub>=430 mg/kg  
Inhalation Rat LC<sub>50</sub>=130 mg/m<sup>3</sup>/4 h  
Dermal Rat TDL<sub>0</sub>=150 ml/kg
- Skin corrosion/irritation : There is a report of serious corrosivity of nitric acid (liquid and vapor) on human skin. Even short exposures can damage skin.
- Serious eye damage/eye irritation : If in eyes, nitric acid causes serious chemical burn and may cause corneal opacity, visual impairment and eventually blindness.
- Respiratory or skin sensitization : No data available
- Germ cell mutagenicity : No data available
- Carcinogenicity : No data available
- Reproductive toxicity : No data available
- Specific target organ toxicity (single exposure) : Classified as Category 3 (Airway irritation) based on the following reports: Cough, headache, nausea, chest pain, dyspnea, bronchoconstriction, respiratory dysfunction, pulmonary edema, oral exposure to oral, esophageal, gastric corrosion necrosis, pneumonia were observed through inhalation exposure for humans. For rats, inhalation exposure of 8 ppm (0.02 mg / L) has been reported to cause widespread inflammation of the airways, rhinitis, bronchitis, pneumonia, and pulmonary edema at 49 ppm (0.12 mg /L).
- Specific target organ toxicity (repeated exposure) : It was reported that occupational inhalation exposure caused tooth erosion for 3 of 32 workers. It was also been reported that exposure to nitric acid vapor and mist causes chronic bronchitis and that more severe exposure causes chemical pneumonitis and tooth erosion, especially canines and incisors. For laboratory animals, there are no test results for exposure to this substance.
- Aspiration hazards : No data available

Section “Toxicological Information” is prepared based on the information on the raw materials because no information on the mixture is available.

## 12. Ecological Information

[As nitric acid]

- Ecotoxicity : Crustaceans (Daphnia magna): 48 hours EC<sub>50</sub> = 0.492 mg/L
- Persistence and degradability : No data available

Bioaccumulative potential : No data available  
 Mobility in soil : No data available  
 Harmful effects on ozone layer : No data available

### 13. Disposal Considerations

Residual wastes : 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

International regulations

UN number : 2031  
 Shipping name : Nitric acid with concentration of 20 % or less, excluding fuming nitric acid  
 UN classification : Class 8  
 Packing group : PG II  
 Marine pollutant : N/A

Japanese domestic regulations

Transport by road/rail : Comply with Fire Service Act, High-Pressure Gas Safety Act  
 Transport by sea : Comply with Ship Safety Act and Act on Port Regulations  
 Transport by air : Comply with Civil Aeronautics Act

### 15. Regulatory Information

- ◇Poisonous and Deleterious Substances Control Act
  - Article 2 Appended Table 1 Poisonous Substances  
(Arsenic compounds and preparations which contain Arsenic compounds)
- ◇Ship Safety Act
  - Regulations for the Carriage and Storage of Dangerous Goods in Ships Article 3 Corrosive substance
- ◇Civil Aeronautics Act
  - Enforcement Order: Article 194, Corrosive substance
- ◇Act for the Prevention of Marine Pollution and Maritime Disasters
  - Enforcement Order Appendix 1 Hazardous Liquid Substance Class Y Substance
- ◇Water Pollution Control Act
  - Hazardous substances (Article 2, Enforcement Order: Article 2, Article 1 of Ministerial

Order that sets effluent standards)

© This SDS was originally prepared for the use of the reference material in Japan, and therefore Section 15 “Regulatory Information” covers only those laws and regulations which are enacted and enforced in Japan. In case of using this reference material, it is necessary to refer to and apply relevant laws and regulations of the country in which it is 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.

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