

Safety Data Sheet

1. Identification of the Substance/Mixture and the Supplier

Supplier : The National Institute of Advanced Industrial Science and Technology
 Address : 1-3-1, Kasumigaseki, Chiyoda, Tokyo, Japan
 Department : Reference Materials Office, Center for Quality Management of Metrology,
National Metrology Institute of Japan
 Person in Charge : Certified Reference Material Staff
 Phone Number : 029-861-4059 Fax Number : 029-861-4009
 Emergency Contact : Same as above

Prepared on : May 13, 2011
 Revised on : April 1, 2015
 ID Number : 7202002

Identity of Substance/Mixture : Certified reference material: NMIJ CRM 7202-b
River Water (for Trace Element Analysis - Spiked-)
(Trace Elements in River Water (Elevated Level))

Recommended Use of the Chemical and Restriction on Use : This reference material can be used for controlling analysis precision or for confirming the validity of analytical methods or instruments during the analysis of trace elements in river water or similar water samples.

Do not use this reference material for other purposes than testing/research.

2. Hazards Identification

GHS Classification : Acute toxicity (Oral) : Hazard Category 5
 Acute toxicity (Inhalation: dust and mist) : Hazard Category 5
 Skin corrosion/irritation : Hazard Category 3
 Serious eye damage/ eye irritation : Hazard Category 2A

GHS Label Element :



Signal Word : Warning
 Hazards Statement : May be harmful if swallowed
 May be harmful if inhaled
 Slight skin irritation
 Serious eye irritation

Other Hazards : Toxicity of arsenic and selenium is low as their content is below water quality criteria of tap water specified in Article 4 of the Waterworks Law (10 µg/L).

Precautionary Statement : [Precaution]
Use eye protector and face protector.
[Action]

Eye contact: Irrigate eyes carefully with water for a few minutes. Then take out contact lenses if it is possible to easily do so. Keep irrigating eyes after taking out contact lenses. Seek medical examination/treatment if eye irritation is prolonged. Seek medical attention when feeling sick.

Ingestion: Seek medical attention when feeling sick.
 Wash hands after handling this reference material.
 Seek medical examination/treatment if skin irritation develops.
 [Storage]

Store this reference material, whether its package is opened or not, in light-shielded clean environment at about 5 °C.

[Disposal]

Entrust disposal of this reference material to a professional waste disposal company licensed by prefectural government.

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 : Mixture

• Ingredient 1

Chemical Identity : Water

Chemical Formula or Structural Formula : Molecular formula : H₂O

Content : >99%

ID Number in Official Gazette : The Law Concerning the Examination and Regulation of Manufacture, etc., of Chemical Substance : -

CAS Number : 7732-18-5

• Ingredient 2

Chemical Identity : Nitric acid

Chemical Formula or Structural Formula : Molecular formula : HNO₃

Content : About 0.3 mol/L

ID Number in Official Gazette : The Law Concerning the Examination and Regulation of Manufacture, etc., of Chemical Substance : (1)-394

CAS Number : 7697-37-2

TSCA : Applicable

EINECS : 2317142

• Ingredient 3

Chemical Identity : Arsenic trioxide

Synonym : Assenious acid anhydride

Chemical Formula or Structural Formula : Molecular formula : As₂O₃

Content : 1.10 µg/kg (as As)

ID Number in Official Gazette : The Law Concerning the Examination and Regulation of Manufacture, etc., of Chemical Substance : (1)-35

CAS Number : 1327-53-3

EINECS : 2154814

• Ingredient 4

Chemical Identity : Selenium dioxide

Chemical Formula or Structural Formula : Molecular formula : SeO₂

Content : 1.00 µg/kg (as Se)

ID Number in Official Gazette : The Law Concerning the Examination and Regulation of Manufacture, etc., of Chemical Substance : (1)-546

CAS Number : 7446-08-4

EINECS : 2311947

• Other ingredients

In addition to Ingredients 2, 3 and 4, this reference material contains the elements shown in the table below, all of which are spiked to river water.

Element	Certified Value Mass Fraction ($\mu\text{g}/\text{kg}$)	Expanded Uncertainty Mass Fraction ($\mu\text{g}/\text{kg}$)
B	47.8	0.9
Al	17.0	0.5
Cr	4.65	0.06
Mn	4.93	0.13
Fe	29.8	0.4
Ni	1.05	0.03
Cu	9.88	0.13
Zn	9.83	0.20
Rb	0.651	0.018
Sr	32.7	0.6
Mo	0.184	0.006
Cd	0.98	0.03
Sb	0.0103	0.0004
Ba	5.69	0.11
Pb	1.002	0.018

Element	Certified Value Mass Fraction (mg/kg)	Expanded Uncertainty Mass Fraction (mg/kg)
Na	3.64	0.06
Mg	1.23	0.04
K	0.833	0.023
Ca	4.51	0.15

Hazardous Ingredient : Nitric acid, Arsenic trioxide and Selenium dioxide

4. First-Aid Measures

◇ Eye Contact

1. Irrigate eyes thoroughly with clean water.
2. Seek medical examination/treatment.

◇ Skin Contact

1. Flush exposed skin area thoroughly with clean water.
2. Take off contaminated clothing and shoes. Seek medical examination/treatment.

◇ Inhalation

1. Move the person to fresh air and keep him/her at rest and warm.
2. Seek medical examination/treatment.

◇ Ingestion

1. Have the person drink a large amount of water or milk.
2. Do not make the person vomit. Seek medical examination/treatment immediately.

5. Fire-Fighting Measures

Extinguishing Media	: CO ₂ , powder, sand, water, foam
Fire-Specific Hazards	: -
Specific Fire-Fighting Method	: -
Protection of Fire-Fighters	: Use personal protective equipment such as fireproof clothing, heat-resistant rescue suit, protective clothing, air respirator, closed-circuit SCBA, rubber gloves and rubber boots.

6. Accidental Release Measures

1. Prevent this reference material from flowing into drain sewers and public waterways.
2. In the event of massive spill, use earth, sand, etc. for spill prevention and recover this reference material.

7. Handling and Storage

Handling

- Use eye protector/face protector.
- Avoid contact with eyes, skin and clothing.
- Avoid vapor inhalation.
- Avoid prolonged or repeated exposure.
- Refrain from eating, drinking and smoking while handling this reference material.
- Wash hands thoroughly after handling this reference material.
- Avoid vapor generation and provide sufficient ventilation.
- Prevent this reference material from contacting with inflammables and organic matters.
- Do not use this reference material for other purposes than testing.

Storage

- Store this reference material in light-shielded clean environment at about 5 °C.

8. Exposure Controls/Personal Protection

Safety Precaution

Not specified

Cut-Off Value/Concentration Limit

Not specified

Permissible Concentration (Nitric acid)

- | | | |
|---|---|--------------------------------|
| • ACGIH TLV-TWA (2006) | : | 5.2 mg/m ³
2 ppm |
| • ACGIH TLV-STEL (2006) | : | 10 mg/m ³
4 ppm |
| • Value recommended by Japan Society for Occupational Health (2006) | : | 5.2 mg/m ³
2 ppm |
| • MSHA TWA | : | 5 mg/m ³
2 ppm |
| • OSHA PEL TWA | : | 5 mg/m ³
2 ppm |

Permissible Concentration (Arsenic trioxide)

- | | | |
|------------------------|---|--------------------------------|
| • ACGIH TLV-TWA (2003) | : | 0.01 mg/m ³ (as As) |
| • OSHA PEL TWA | : | 0.01 mg/m ³ (as As) |

Permissible Concentration (Selenium dioxide)

- | | | |
|--|---|-------------------------------|
| • ACGIH TLV-TWA (2003) | : | 0.2 mg/m ³ (as Se) |
| • OSHA PEL TWA | : | 0.2 mg/m ³ (as Se) |
| • Value recommended by Japan Society for | : | 0.1 mg/m ³ (as Se) |

Occupational Health (2003)
 Engineering Controls
 Personal Protective Equipment (PPE)

Use appropriate PPEs such as

- gas mask (for acid vapors)
- impermeable protective gloves
- goggle-type eye protector
- PPE for respiration

9. Physical and Chemical Properties

• Appearance etc.	:	Liquid
• Color	:	Clear and colorless
• Odor	:	Irritating odor
• pH	:	About 1.3
• Vapor Pressure	:	No data available
• Density	:	1.000 g/cm ³ (25 °C)
• Boiling Point	:	About 100 °C
• Melting Point	:	About 0 °C
• Flash Point	:	No data available
• Spontaneous Ignition Point	:	No data available
• Solubility	:	Freely mixed with water

10. Stability and Reactivity

- ◇ Stability
 - Stable in normal conditions
- ◇ Reactivity
 - React with alkali substances
- ◇ Conditions to avoid
 - Sunlight and contact with alkali substances

11. Toxicological Information

Acute Toxicity (RTECS)	(Nitric acid)			
	Oral	Hamster	LDL ₀ :	430 mg/kg
	Inhalation	Rat	LC50 :	130 mg/m ³ /4H
	Dermal	Rat	TDL ₀ :	150mL/kg
		(Arsenic trioxide)		
	Oral	Mouse	LD ₅₀ :	31.5 mg/kg
	Oral	Rat	LD ₅₀ :	14.6 mg/kg
		(Selenium dioxide)		
	Oral	Mouse	LD ₅₀ :	23.3 mg/kg
	Oral	Rat	LD ₅₀ :	63.1 mg/kg

12. Ecological Information

Persistence and Degradability

- No data available

Bioaccumulative Potential

- No data available

Ecotoxicity

- No data available

13. Disposal Considerations

- Entrust disposal of this reference material to a professional waste disposal company licensed by prefectural government.

14. Transport Information

UN Number	: 2031
UN Classification	: Class 8
Shipping Name	: Nitric acid other than fuming nitric acid with concentration of 20 weight % or less
Packing Group	: PG II
ICAO/IATA	: Glass 8 Group II
Marine Pollutant	: Hazardous liquid substance (Class C)
Precautions	: Transport this reference material carefully while keeping it away from direct sunlight and paying due attention to avoid accidental release due to dropping and turning over and fire.

15. Applicable Legislation

- ◇ Poisonous and Deleterious Substances Control Act
 - Article 2 Appendix Table 1: Toxic Substance (Arsenic compounds and formulation containing arsenic compounds)
 - Article 2 Appendix Table 1: Toxic Substance (Selenic compounds and formulation containing selenic compounds)
- ◇ Ship Safety Law
 - Hazardous Materials Regulations; Article 3; Hazardous Materials Notification Appendix Table; No.3 Corrosive Substance
- ◇ Civil Aeronautics Law
 - Regulations for the Enforcement; Article 194; Hazardous Materials Notification Appendix Table; No.11 Corrosive Substance
- ◇ Port Regulation Law
 - Regulations for the Enforcement; Article 12; Hazardous Materials Notification; Corrosive Substance

16. Other Information**Others**

The information in this Safety Data Sheet is not intended to be exhaustive and is based on currently available information and data. The precautions given in this data sheet are applicable only to normal handling conditions. When handling this reference material under special conditions etc., it is recommended to take safety precautions appropriate to each specific application and context of use. This Safety Data Sheet (SDS) is intended to provide information and not intended to guarantee anything in handling the reference material. This Safety Data Sheet (SDS) is prepared based on JIS Z7253, and presents identical information to Material Safety Data Sheet (MSDS) prepared based on JIS Z7250:2010.
