

SAFETY DATA SHEET

According to JIS Z 7253:2019
Revision date 25-Mar-2024
 Revision Number 3.04

Section 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name	Multielement Standard Solution W-IV
Product Code	139-11871

Supplier FUJIFILM Wako Pure Chemical Corporation
 1-2 Doshomachi 3-Chome, Chuo-ku, Osaka 540-8605, Japan
 Phone: +81-6-6203-3741
 Fax: +81-6-6203-2029

Emergency telephone number +81-6-6203-3741 / +81-3-3270-8571

Recommended uses For research use only

Restrictions on use Seek expert judgment when using for purposes other than those recommended.

Section 2: HAZARDS IDENTIFICATION

GHS classification

Classification of the substance or mixture

Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2A
Respiratory sensitization	Category 1
Skin sensitization	Category 1
Carcinogenicity	Category 1A
Reproductive Toxicity	Category 1A
Acute aquatic toxicity	Category 3
Chronic aquatic toxicity	Category 2

Pictograms



Signal word

Danger

Hazard statements

- H315 - Causes skin irritation
- H319 - Causes serious eye irritation
- H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled
- H350 - May cause cancer
- H360 - May damage fertility or the unborn child
- H317 - May cause an allergic skin reaction
- H411 - Toxic to aquatic life with long lasting effects
- H402 - Harmful to aquatic life

Precautionary statements-(Prevention)

- Obtain special instructions before use
- Do not handle until all safety precautions have been read and understood
- Use personal protective equipment as required
- Wash face, hands and any exposed skin thoroughly after handling
- In case of inadequate ventilation wear respiratory protection

- Avoid breathing dust/fume/gas/mist/vapors/spray
- Contaminated work clothing should not be allowed out of the workplace
- Wear protective gloves
- Avoid release to the environment

Precautionary statements-(Response)

- IF exposed or concerned: Get medical advice/attention
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
- If eye irritation persists: Get medical advice/attention
- Take off contaminated clothing and wash before reuse
- IF ON SKIN: Wash with plenty of soap and water
- If skin irritation or rash occurs: Get medical advice/attention
- IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing
- If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician
- Collect spillage

Precautionary statements-(Storage)

- Store locked up

Precautionary statements-(Disposal)

- Dispose of contents/container to an approved waste disposal plant

Others

Other hazards Not available

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

Single Substance or Mixture Mixture

Chemical Name	Weight-%	Molecular weight	ENCS	ISHL No.	CAS RN
Water	<99.0	18.02	-	-	7732-18-5
Nitric Acid	0.63	63.01	(1)-394	*	7697-37-2
Sodium	0.10	N/A	N/A	N/A	N/A-13-1187-6
Iron	0.10	55.845	-	N/A	7439-89-6
Lead	0.10	207.2	-	N/A	7439-92-1
Manganese	0.10	54.938	-	N/A	7439-96-5
Cadmium	0.10	112.414	-	N/A	7440-43-9
Chromium	0.10	51.996	-	N/A	7440-47-3
Copper	0.10	63.546	-	N/A	7440-50-8
Zinc	0.10	65.38	-	N/A	7440-66-6

Note on ISHL No.: * in the table means announced chemical substances.

Section 4: FIRST AID MEASURES**Inhalation**

Remove to fresh air. If symptoms persist, call a physician.

Skin contact

Wash off immediately with soap and plenty of water. If symptoms persist, call a physician.

Eye contact

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediate medical attention is required.

Ingestion

Rinse mouth. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately. Do not induce vomiting without medical advice.

Protection of first-aiders

Use personal protective equipment as required.

Section 5: FIRE FIGHTING MEASURES

Suitable extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment

Unsuitable extinguishing media

No information available

Specific hazards arising from the chemical product

Thermal decomposition can lead to release of irritating and toxic gases and vapors.

Special extinguishing method

No information available

Special protective actions for fire-fighters

Use personal protective equipment as required. Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.

Section 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

For indoor, provide adequate ventilation process until the end of working. Deny unnecessary entry other than the people involved by, for example, using a rope. While working, wear appropriate protective equipments to avoid adhering it on skin, or inhaling the gas. Work from windward, and retract the people downwind.

Environmental precautions

To be careful not discharged to the environment without being properly handled waste water contaminated.

Methods and materials for contaminant and methods and materials for cleaning up

Absorb dry sand, earth, sawdust and the waste. Collect empty container that can be sealed.

Recovery, neutralization

No information available

Secondary disaster prevention measures

Clean contaminated objects and areas thoroughly observing environmental regulations.

Section 7: HANDLING AND STORAGE

Handling**Technical measures**

Avoid contact with metal. Avoid contact with alkaline substances. Use with local exhaust ventilation.

Precautions

Do not rough handling containers, such as upsetting, falling, giving a shock, and dragging. Prevent leakage, overflow, and scattering. Not to generate steam and dust in vain. Seal the container after use. After handling, wash hands and face, and then gargle. In places other than those specified, should not be smoking or eating and drinking. Should not be brought contaminated protective equipment and gloves to rest stops. Deny unnecessary entry of non-emergency personnel to the handling area.

Safety handling precautions

Use personal protective equipment as required. Avoid contact with skin, eyes or clothing.

Storage**Safe storage conditions****Storage conditions**

Store away from sunlight in well-ventilated place at room temperature (preferably cool).
Keep container tightly closed.

Safe packaging material

Polyethylene

Incompatible substances

Metals, alkaline substances

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls

In case of indoor workplace, seal the source or use a local exhaust system. Provide the safety shower facility, and hand- and eye-wash facility. And display their position clearly.

Exposure limits

Chemical Name	JSOH (Japan)	ISHL (Japan)	ACGIH

Nitric Acid 7697-37-2	TWA: 2 ppm OEL TWA: 5.2 mg/m ³ OEL	N/A	STEL: 4 ppm TWA: 2 ppm
Lead 7439-92-1	TWA: 0.03 mg/m ³ OEL ISHL/ACL: 0.05 mg/m ³	ISHL/ACL: 0.05 mg/m ³	TWA: 0.05 mg/m ³
Manganese 7439-96-5	TWA: 0.02 mg/m ³ OEL TWA: 0.1 mg/m ³ OEL ISHL/ACL: 0.2 mg/m ³	ISHL/ACL: 0.2 mg/m ³	TWA: 0.02 mg/m ³ respirable particulate matter TWA: 0.1 mg/m ³ inhalable particulate matter
Cadmium 7440-43-9	TWA: 0.05 mg/m ³ OEL ISHL/ACL: 0.05 mg/m ³	ISHL/ACL: 0.05 mg/m ³	TWA: 0.01 mg/m ³ TWA: 0.002 mg/m ³ respirable particulate matter
Chromium 7440-47-3	TWA: 0.5 mg/m ³ OEL	N/A	TWA: 0.5 mg/m ³ inhalable particulate matter
Copper 7440-50-8	N/A	N/A	TWA: 0.2 mg/m ³ fume
Zinc 7440-66-6	5 mg/m ³	N/A	N/A

Personal protective equipment**Respiratory protection**

Protective mask

Hand protection

chemical protective gloves (JIS T 8116)

Eye protection

protective eyeglasses or chemical safety goggles (JIS T 8147)

Skin and body protection

Long-sleeved work clothes

General hygiene considerations

Handle in accordance with good industrial hygiene and safety practice.

If this product is classified as "Chemical Substances Hazardous to Skin, etc.", use appropriate protective equipment to them.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Form**Color**

slightly blue - pale blue

Turbidity

clear

Appearance

liquid

Odor

no data available

Melting point/freezing point

no data available

Boiling point, initial boiling point and boiling range

no data available

Flammability

no data available

Evaporation rate:

no data available

Flammability (solid, gas):

no data available

Upper/lower flammability or explosive limits**Upper:**

no data available

Lower:

no data available

Flash point

no data available

Auto-ignition temperature:

no data available

Decomposition temperature:

no data available

pH

acidic (pH = 1.0)

Viscosity (coefficient of viscosity)

no data available

Dynamic viscosity

no data available

Solubilities

water and Ethanol : Miscible at any arbitrary ratio .

n-Octanol/water partition coefficient:(log Pow)

no data available

Vapour pressure

no data available

Specific Gravity / Relative density

no data available

Vapour density

no data available

Particle characteristics

no data available

Section 10: STABILITY AND REACTIVITY

Stability

Reactivity no data available
Chemical stability Stable under recommended storage conditions.

Hazardous reactions

None under normal processing

Conditions to avoid

Extremes of temperature and direct sunlight

Incompatible materials

Metals, alkaline substances

Hazardous decomposition products

Nitrogen oxides (NOx), Metal oxides

Section 11: TOXICOLOGICAL INFORMATION

Acute toxicity

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Nitric Acid	N/A	N/A	334 ppm (Rat) 0.5 h
Manganese	> 2000 mg/kg (Rat)	N/A	> 5.14 mg/L (Rat) 4 h
Cadmium	1,140 mg/kg (Rat)	N/A	0.0031 mg/L (Rat)
Copper	N/A	N/A	> 5.11 mg/L (Rat) 4 h
Zinc	630 mg/kg (Rat)	N/A	N/A

Chemical Name	Acute toxicity -oral- source information	Acute toxicity -dermal- source information	Acute toxicity -inhalation gas-source information
Nitric Acid	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Lead	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Manganese	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Cadmium	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Chromium	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Copper	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Zinc	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.

Chemical Name	Acute toxicity -inhalation vapor- source information	Acute toxicity -inhalation dust-source information	Acute toxicity -inhalation mist-source information
Nitric Acid	Based on the NITE GHS Classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS Classification results.
Lead	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Manganese	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Cadmium	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Chromium	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Copper	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Zinc	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.

Skin irritation/corrosion

Chemical Name	Skin corrosion/irritation source information
Nitric Acid	Based on the NITE GHS classification results.
Lead	Based on the NITE GHS classification results.
Manganese	Based on the NITE GHS classification results.

Cadmium	Based on the NITE GHS classification results.
Chromium	Based on the NITE GHS classification results.
Copper	Based on the NITE GHS classification results.
Zinc	Based on the NITE GHS classification results.

Serious eye damage/ irritation

Chemical Name	Serious eye damage/irritation source information
Nitric Acid	Based on the NITE GHS classification results.
Lead	Based on the NITE GHS classification results.
Manganese	Based on the NITE GHS classification results.
Cadmium	Based on the NITE GHS classification results.
Chromium	Based on the NITE GHS classification results.
Copper	Based on the NITE GHS classification results.
Zinc	Based on the NITE GHS classification results.

Respiratory or skin sensitization

Chemical Name	Respiratory or Skin sensitization source information
Nitric Acid	Based on the NITE GHS classification results.
Lead	Based on the NITE GHS classification results.
Manganese	Based on the NITE GHS classification results.
Cadmium	Based on the NITE GHS classification results.
Chromium	Based on the NITE GHS classification results.
Copper	Based on the NITE GHS classification results.
Zinc	Based on the NITE GHS classification results.

Reproductive cell mutagenicity

Chemical Name	germ cell mutagenicity source information
Nitric Acid	Based on the NITE GHS classification results.
Lead	Based on the NITE GHS classification results.
Manganese	Based on the NITE GHS classification results.
Cadmium	Based on the NITE GHS classification results.
Chromium	Based on the NITE GHS classification results.
Copper	Based on the NITE GHS classification results.
Zinc	Based on the NITE GHS classification results.

Carcinogenicity

Chemical Name	Carcinogenicity source information
Nitric Acid	Based on the NITE GHS classification results.
Lead	Based on the NITE GHS classification results.
Manganese	Based on the NITE GHS classification results.
Cadmium	Based on the NITE GHS classification results.
Chromium	Based on the NITE GHS classification results.
Copper	Based on the NITE GHS classification results.
Zinc	Based on the NITE GHS classification results.

Chemical Name	NTP	IARC	ACGIH	JSOH (Japan)
Lead 7439-92-1	Reasonably Anticipated	Group 2A	A3	Group 2B
Cadmium 7440-43-9	Known	Group 1	A2	Group 1
Chromium 7440-47-3	N/A	Group 3	N/A	N/A

Reproductive toxicity

Chemical Name	Reproductive toxicity source information
Nitric Acid	Based on the NITE GHS classification results.
Lead	Based on the NITE GHS classification results.
Manganese	Based on the NITE GHS classification results.
Cadmium	Based on the NITE GHS classification results.
Chromium	Based on the NITE GHS classification results.
Copper	Based on the NITE GHS classification results.
Zinc	Based on the NITE GHS classification results.

STOT-single exposure

Chemical Name	STOT -single exposure- source information
Nitric Acid	Based on the NITE GHS classification results.
Lead	Based on the NITE GHS classification results.
Manganese	Based on the NITE GHS classification results.
Cadmium	Based on the NITE GHS classification results.
Chromium	Based on the NITE GHS classification results.
Copper	Based on the NITE GHS classification results.
Zinc	Based on the NITE GHS classification results.

STOT-repeated exposure

Chemical Name	STOT -repeated exposure- source information
Nitric Acid	Based on the NITE GHS classification results.
Lead	Based on the NITE GHS classification results.
Manganese	Based on the NITE GHS classification results.
Cadmium	Based on the NITE GHS classification results.
Chromium	Based on the NITE GHS classification results.
Copper	Based on the NITE GHS classification results.
Zinc	Based on the NITE GHS classification results.

Aspiration hazard

Chemical Name	Aspiration Hazard source information
Nitric Acid	Based on the NITE GHS classification results.
Lead	Based on the NITE GHS classification results.
Manganese	Based on the NITE GHS classification results.
Cadmium	Based on the NITE GHS classification results.
Chromium	Based on the NITE GHS classification results.
Copper	Based on the NITE GHS classification results.
Zinc	Based on the NITE GHS classification results.

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity

Chemical Name	Algae/aquatic plants	Fish	Crustacea
Nitric Acid	N/A	LC50 : <i>Gambusia affinis</i> 72 mg/L 96 h	N/A
Lead	N/A	LC50: <i>Cyprinus carpio</i> 0.44 mg/L 96 h LC50: <i>Oncorhynchus mykiss</i> 1.17 mg/L 96 h LC50: <i>Oncorhynchus mykiss</i> 1.32 mg/L 96 h	EC50: <i>water flea</i> 600 µg/L 48 h
Manganese	ErC50 : <i>Desmodesmus</i> 4.5 mg/L 72 h	LC50: >3.6mg/L (96h, <i>Oncorhynchus mykiss</i>)	N/A
Cadmium	ErC50 : <i>Pseudokirchneriella subcapitata</i> 0.07 mg/L 72 h	LC50: <i>Cyprinus carpio</i> 0.002 mg/L 96 h LC50: <i>Oncorhynchus mykiss</i> 0.003 mg/L 96 h LC50: <i>Oryzias latipes</i> 0.016 mg/L 96 h	EC50 : <i>Daphnia magna</i> 0.0244 mg/L 48 h
Copper	EC50: <i>Pseudokirchneriella subcapitata</i> 0.031 - 0.054 mg/L 96 h static EC50: <i>Pseudokirchneriella subcapitata</i> 0.0426 - 0.0535 mg/L 72 h static	LC50: <i>Pimephales promelas</i> 0.2 mg/L 96 h LC50: <i>Oncorhynchus mykiss</i> 0.052 mg/L 96 h LC50: <i>Cyprinus carpio</i> 0.8 mg/L 96 h	EC50: <i>Daphnia magna</i> 0.03 mg/L 48 h
Zinc	ErC50 : <i>Pseudokirchneriella subcapitata</i> 0.15 mg/L 72 h	LC50 : <i>Oncorhynchus mykiss</i> 0.24 mg/L 96 h	EC50: <i>Daphnia magna</i> 0.139 - 0.908 mg/L 48 h

Other data

Chemical Name	Short-term (acute) hazardous to the aquatic environment source information	Long-term (chronic) hazardous to the aquatic environment source information
Nitric Acid	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Lead	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Manganese	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Cadmium	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Chromium	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Copper	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Zinc	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.

Persistence and degradability	No information available
Bioaccumulative potential	No information available
Mobility in soil	No information available
Hazard to the ozone layer	No information available

Section 13: DISPOSAL CONSIDERATIONS

Waste from residues

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated container and contaminated packaging

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Section 14: TRANSPORT INFORMATION

ADR/RID	Not regulated
UN number	-
Proper shipping name:	
UN classification	
Subsidiary hazard class	
Packing group	
Marine pollutant	Yes
IMDG	Not regulated
UN number	-
Proper shipping name:	
UN classification	
Subsidiary hazard class	
Packing group	
Marine pollutant (Sea)	Yes
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	No information available
IATA	Not regulated
UN number	-
Proper shipping name:	
UN classification	
Subsidiary hazard class	
Packing group	
Environmentally Hazardous Substance	Yes

Section 15: REGULATORY INFORMATION

Japanese regulations

Fire Service Act	Not applicable
Poisonous and Deleterious Substances Control Law	Not applicable
Industrial Safety and Health Act	Harmful Substances Whose Names Are to be Indicated on the Label (Law Art.57) Notifiable Substances (Law Art.57-2) Substances designated by the Minister of Health, Labor and Welfare as carcinogenic(Ordinance on Industrial Safety and Health Art.577, Para.2) 【2024.4.1~】 Chemical Substances Hazardous to Skin, etc.(Regulations Article 594-2 Paragraph 1)
Industrial Safety and Health Act (2024-)	
Regulations for the carriage and storage of dangerous goods in ship	Not applicable
Civil Aeronautics Law	Not applicable
Pollutant Release and Transfer Register Law (2023.4.1-)	Specified Class 1 No. Specified Class 1-No. 75,697
Water Pollution Control Act	Harmful Substances (Law Art.2, Enforcement Order Art.2, Ordinance Designating Wastewater Standards Art.1) Specified substances(Law Art.2 Para.4, Enforcement Order Art.3-3)
Export Trade Control Order	Not applicable
Air Pollution Control Law	Hazardous Air Pollutants, Hazardous Air Pollutants
Soil Contamination Control Law	Designated Hazardous Substances

Chemical Name	Poisonous and Deleterious Substances Control Law	Industrial Safety and Health Act Substances (Law Art.57-2)	Pollutant Release and Transfer Register Law (2023.4.1-)
Lead 7439-92-1 (0.10)	-	Applicable	Applicable
Manganese 7439-96-5 (0.10)	-	Applicable	-
Cadmium 7440-43-9 (0.10)	-	Applicable	Applicable
Chromium 7440-47-3 (0.10)	-	Applicable	-
Copper 7440-50-8 (0.10)	-	Applicable	-

Section 16: OTHER INFORMATION

Key literature references and sources for data etc.

NITE: National Institute of Technology and Evaluation (JAPAN)
<http://www.safe.nite.go.jp/japan/db.html>
 IATA dangerous Goods Regulations
 RTECS:Registry of Toxic Effects of Chemical Substances
 Japan Industrial Safety and Health Association GHS Model SDS
 Dictionary of Synthetic Organic Chemistry , SSOCJ, Koudansha Scientific Co.Ltd.
 Chemical Dictionary, Kyouritsu Publishing Co., Ltd.
 etc

Record of SDS revisions Disclaimer

The following contents were revised. Regulatory information.

This SDS is according to JIS Z 7253: 2019. The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

GHS Classification is according to JIS Z 7252:2019. *JIS: Japanese Industrial Standards

End of Safety Data Sheet