

SAFETY DATA SHEET

According to JIS Z 7253:2019
Revision date 16-Jul-2024
 Revision Number 3.05

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

Acute aquatic toxicity

Category 3

Chronic aquatic toxicity

Category 3

Pictograms**Signal word**

Warning

Hazard statements

- H315 - Causes skin irritation
- H319 - Causes serious eye irritation
- H402 - Harmful to aquatic life
- H412 - Harmful to aquatic life with long lasting effects

Precautionary statements-(Prevention)

- Wash face, hands and any exposed skin thoroughly after handling
- Wear protective gloves/protective clothing/eye protection/face protection
- Avoid release to the environment

Precautionary statements-(Response)

- 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
- IF ON SKIN: Wash with plenty of soap and water
- If skin irritation occurs: Get medical advice/attention
- Take off contaminated clothing and wash before reuse

Precautionary statements-(Storage)

- Not applicable

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	94.0857	18.02	-	-	7732-18-5
Sodium Chloride	5.0	58.44	(1)-236	*	7647-14-5
Nitric Acid	0.63	63.01	(1)-394	*	7697-37-2
Chromium(III) nitrate nonahydrate	0.0770	238.01	(1)-281	*	7789-02-8
Iron(III) nitrate nonahydrate	0.0723	404.00	(1)-355	*	7782-61-8
Manganese(II) nitrate hexahydrate	0.0520	287.04	1-470	*	17141-63-8
Copper(II) nitrate trihydrate	0.0380	241.60	(1)-296	*	10031-43-3
Cadmium nitrate tetrahydrate	0.0270	308.48	(1)-201	*	10022-68-1
Lead(II) nitrate	0.0160	331.21	(1)-488	*	10099-74-8
Zinc Nitrate Hexahydrate	0.0020	297.49	(1)-491	*	10196-18-6

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
Chromium(III) nitrate nonahydrate 7789-02-8	TWA: 0.5 mg/m ³ OEL	N/A	N/A
Iron(III) nitrate nonahydrate 7782-61-8	N/A	N/A	TWA: 1 mg/m ³ Fe
Manganese(II) nitrate hexahydrate 17141-63-8	TWA: 0.1 mg/m ³ OEL TWA: 0.02 mg/m ³ OEL ISHL/ACL: 0.05 mg/m ³	ISHL/ACL: 0.05 mg/m ³	TWA: 0.02 mg/m ³ Mn respirable particulate matter TWA: 0.1 mg/m ³ Mn inhalable particulate matter
Copper(II) nitrate trihydrate	N/A	N/A	TWA: 1 mg/m ³ Cu dust and

10031-43-3			mist
Cadmium nitrate tetrahydrate 10022-68-1	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 Cd TWA: 0.002 mg/m ³ Cd respirable particulate matter
Lead(II) nitrate 10099-74-8	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 Pb

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
Sodium Chloride	3 g/kg (Rat)	> 10000 mg/kg (Rabbit)	> 42 mg/L (Rat) 1 h
Nitric Acid	N/A	N/A	334 ppm (Rat) 0.5 h
Chromium(III) nitrate nonahydrate	3250 mg/kg (Rat)	N/A	N/A
Iron(III) nitrate nonahydrate	= 3250 mg/kg (Rat)	N/A	N/A
Manganese(II) nitrate hexahydrate	56 mg/kg (Mouse)	N/A	N/A
Copper(II) nitrate trihydrate	940 mg/kg (Rat)	N/A	N/A
Cadmium nitrate tetrahydrate	= 300 mg/kg (Rat)	N/A	N/A
Lead(II) nitrate	93 mg/kg (Rat)	N/A	N/A
Zinc Nitrate Hexahydrate	1,330 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.
Copper(II) nitrate trihydrate	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Cadmium nitrate tetrahydrate	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Lead(II) nitrate	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Zinc Nitrate Hexahydrate	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.
Copper(II) nitrate trihydrate	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Cadmium nitrate tetrahydrate	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Lead(II) nitrate	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Zinc Nitrate Hexahydrate	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.
Copper(II) nitrate trihydrate	Based on the NITE GHS classification results.
Cadmium nitrate tetrahydrate	Based on the NITE GHS classification results.
Lead(II) nitrate	Based on the NITE GHS classification results.
Zinc Nitrate Hexahydrate	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.
Copper(II) nitrate trihydrate	Based on the NITE GHS classification results.
Cadmium nitrate tetrahydrate	Based on the NITE GHS classification results.
Lead(II) nitrate	Based on the NITE GHS classification results.
Zinc Nitrate Hexahydrate	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.
Copper(II) nitrate trihydrate	Based on the NITE GHS classification results.
Cadmium nitrate tetrahydrate	Based on the NITE GHS classification results.
Lead(II) nitrate	Based on the NITE GHS classification results.
Zinc Nitrate Hexahydrate	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.
Copper(II) nitrate trihydrate	Based on the NITE GHS classification results.
Cadmium nitrate tetrahydrate	Based on the NITE GHS classification results.
Lead(II) nitrate	Based on the NITE GHS classification results.
Zinc Nitrate Hexahydrate	Based on the NITE GHS classification results.

Carcinogenicity

Chemical Name	Carcinogenicity source information
Nitric Acid	Based on the NITE GHS classification results.
Copper(II) nitrate trihydrate	Based on the NITE GHS classification results.
Cadmium nitrate tetrahydrate	Based on the NITE GHS classification results.
Lead(II) nitrate	Based on the NITE GHS classification results.
Zinc Nitrate Hexahydrate	Based on the NITE GHS classification results.

Chemical Name	NTP	IARC	ACGIH	JSOH
Cadmium nitrate tetrahydrate 10022-68-1	Known	Group 1	A2	Group 1
Lead(II) nitrate 10099-74-8	Reasonably Anticipated	Group 2A	A3	Group 2B

Reproductive toxicity

Chemical Name	Reproductive toxicity source information
Nitric Acid	Based on the NITE GHS classification results.
Copper(II) nitrate trihydrate	Based on the NITE GHS classification results.
Cadmium nitrate tetrahydrate	Based on the NITE GHS classification results.
Lead(II) nitrate	Based on the NITE GHS classification results.
Zinc Nitrate Hexahydrate	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.
Copper(II) nitrate trihydrate	Based on the NITE GHS classification results.
Cadmium nitrate tetrahydrate	Based on the NITE GHS classification results.
Lead(II) nitrate	Based on the NITE GHS classification results.
Zinc Nitrate Hexahydrate	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.
Copper(II) nitrate trihydrate	Based on the NITE GHS classification results.
Cadmium nitrate tetrahydrate	Based on the NITE GHS classification results.
Lead(II) nitrate	Based on the NITE GHS classification results.
Zinc Nitrate Hexahydrate	Based on the NITE GHS classification results.

Aspiration hazard

Chemical Name	Aspiration Hazard source information
Nitric Acid	Based on the NITE GHS classification results.
Copper(II) nitrate trihydrate	Based on the NITE GHS classification results.
Cadmium nitrate tetrahydrate	Based on the NITE GHS classification results.
Lead(II) nitrate	Based on the NITE GHS classification results.
Zinc Nitrate Hexahydrate	Based on the NITE GHS classification results.

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity

Chemical Name	Algae/aquatic plants	Fish	Crustacea
Sodium Chloride	N/A	LC50 : <i>Lepomis macrochirus</i> 5560 - 6080 mg/L 96 h LC50 : <i>Lepomis macrochirus</i> 12946 mg/L 96 h LC50 : <i>Pimephales promelas</i> 6020 - 7070 mg/L 96 h LC50 : <i>Pimephales promelas</i> 7050 mg/L 96 h LC50 : <i>Pimephales promelas</i> 6420 - 6700 mg/L 96 h LC50 : <i>Oncorhynchus mykiss</i> 4747 - 7824 mg/L 96 h	EC50 : <i>Daphnia magna</i> 1000 mg/L 48 h EC50 : <i>Daphnia magna</i> 340.7 - 469.2 mg/L 48 h
Nitric Acid	N/A	LC50 : <i>Gambusia affinis</i> 72 mg/L 96 h	N/A
Copper(II) nitrate trihydrate	N/A	N/A	LC50 : <i>Ceriodaphnia affinis</i> 9.5 µg/L 48 h
Lead(II) nitrate	N/A	N/A	LC50 : <i>Gammaridae</i> 0.124 mg/L 96 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.
Copper(II) nitrate trihydrate	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Cadmium nitrate tetrahydrate	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Lead(II) nitrate	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Zinc Nitrate Hexahydrate	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	Not applicable
IMDG	Not regulated

UN number	-
Proper shipping name:	
UN classification	
Subsidiary hazard class	
Packing group	
Marine pollutant (Sea)	Not applicable
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	Not applicable

Section 15: REGULATORY INFORMATION

Japanese regulations

Fire Service Act	Not applicable
Poisonous and Deleterious Substances Control Law	Not applicable
Industrial Safety and Health Act	Lead Compounds (Enforcement Order Attached Table 4, Ordinance on Prevention of Lead Poisoning Art.1-4, MHLW Notification No.91 of 1972)
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-)	Not applicable
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
Soil Contamination Control Law	Designated Hazardous Substances

Section 16: OTHER INFORMATION

Key literature references and sources for data etc.	NITE: National Institute of Technology and Evaluation (JAPAN) ://www.chem-info.nite.go.jp/chem/chrip/chrip_search/systemTop 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	The following contents were revised. Hazards identification. Composition/information on ingredients. Exposure controls/personal protection. Toxicological information. Ecological information. Regulatory information.

Disclaimer

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