SAFETY DATA SHEET

According to JIS Z 7253:2019
Revision date 21-Feb-2024
Revision Number 1.04

Section 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name	Multielement Standard Solution for ICH Q3D Oral Preparation
Product Code	138-18801

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

Corrosive to metals	Category 1
Acute toxicity - Inhalation (Vapors)	Category 3
Skin corrosion/irritation	Category 1
Serious eye damage/eye irritation	Category 1
Specific target organ toxicity (single exposure)	Category 2
Category 2 respiratory system	
Specific target organ toxicity (repeated exposure)	Category 2
Category 2 respiratory system, teeth	

Pictograms

Signal word Danger

Hazard statements

H290 - May be corrosive to metals
H314 - Causes severe skin burns and eye damage
H318 - Causes serious eye damage
H331 - Toxic if inhaled
H371 - May cause damage to the following organs: respiratory system
H373 - May cause damage to the following organs through prolonged or repeated exposure: respiratory system, teeth

Precautionary statements-(Prevention)

- Use only outdoors or in a well-ventilated area
- Do not breathe dust/fume/gas/mist/vapors/spray
- Wash face, hands and any exposed skin thoroughly after handling
- Wear protective gloves/protective clothing/eye protection/face protection
- Do not eat, drink or smoke when using this product
- Keep only in original container

Precautionary statements-(Response)

- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
- Immediately call a POISON CENTER or doctor/physician
- IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
- Wash contaminated clothing before reuse
- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
- IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
- Absorb spillage to prevent material damage

Precautionary statements-(Storage)

- Store in a well-ventilated place. Keep container tightly closed
- Store locked up
- Store in corrosive resistant/ container with a resistant inner liner

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	94.9	18.02	N/A	N/A	7732-18-5
Nitric Acid	5.0	63.01	(1)-394	*	7697-37-2
Nickel(II) oxide	0.025	74.69	(1)-517	*	1313-99-1
Ammonium Vanadate(V)	0.023	116.98	(1)-407	*	7803-55-6
Cobalt	0.0050	58.933	-	N/A	7440-48-4
Diarsenic Trioxide	0.0040	197.84	(1)-35,(9)-2400	*	1327-53-3
Oxalic acid dihydrate	0.0020	126.07	(2)-844	*	6153-56-6
Lead(II) nitrate	0.0010	331.21	(1)-488	*	10099-74-8
Cadmium	0.00050	112.414	-	N/A	7440-43-9

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 contaminent and methods and materials for cleaning up
Absorb dry sand, earth, sawdust and the waste. Collect empty container that can be sealed.
Recoverly, 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 alkaline substances. Avoid contact with metal. 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
Avoid contact with skin, eyes or clothing. Use personal protective equipment as required.
Storage
Safe storage conditions
Storage conditions Store away from sunlight in well-ventilated place at room temperature (under 25 °C). Keep container tightly closed. Store locked up.
Safe packaging material Polyethylene
Incompatible substances Alkali, Metals

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

Nickel(II) oxide 1313-99-1	TWA: 0.1 mg/m³ OEL ISHL/ACL: 0.1 mg/m³	ISHL/ACL: 0.1 mg/m³	TWA: 0.2 mg/m³ Ni inhalable particulate matter
Cobalt 7440-48-4	TWA: 0.05 mg/m³ OEL ISHL/ACL: 0.02 mg/m³	ISHL/ACL: 0.02 mg/m³	TWA: 0.02 mg/m³ inhalable particulate matter
Diarsenic Trioxide 1327-53-3	ISHL/ACL: 0.003 mg/m³	ISHL/ACL: 0.003 mg/m³	TWA: 0.01 mg/m³ As
Oxalic acid dihydrate 6153-56-6	N/A	N/A	TWA 1mg/m³, STEL 2mg/m³
Lead(II) nitrate 10099-74-8	TWA: 0.03 mg/m³ OEL ISHL/ACL: 0.05 mg/m³	ISHL/ACL: 0.05 mg/m³	TWA: 0.05 mg/m³ Pb
Cadmium 7440-43-9	TWA: 0.05 mg/m³ OEL ISHL/ACL: 0.05 mg/m³	ISHL/ACL: 0.05 mg/m³	TWA: 0.01 mg/m³ TWA: 0.002 mg/m³ respirable particulate matter

Personal protective equipment

Respiratory protection Gas mask for acidic gas (JIS T 8152)

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 bluish green
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	no data available
Viscosity (coefficient of viscosity)	no data available
Dynamic viscosity	no data available
Solubilities	No data available
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

Corrodes metals to generate hydrogen gas.

Conditions to avoid

Extremes of temperature and direct sunlight

Incompatible materials

Alkali, Metals

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
Nickel(II) oxide	> 5000 mg/kg (Rat)	N/A	N/A
Ammonium Vanadate(V)	141 mg/kg (Rat,male)	>25000 mg/kg (Rat)	2.43 mg/L (Rat,mala) 4h
Cobalt	6171 mg/kg (Rat)	N/A	> 10 mg/L (Rat) 1 h
Diarsenic Trioxide	25 mg/kg (Rat)	N/A	N/A
Lead(II) nitrate	93 mg/kg (Rat)	N/A	N/A
Cadmium	1,140 mg/kg (Rat)	N/A	0.0031 mg/L (Rat)

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.
Nickel(II) oxide	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Ammonium Vanadate(V)	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Cobalt	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Diarsenic Trioxide	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.
Cadmium	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.
Nickel(II) oxide	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Ammonium Vanadate(V)	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Cobalt	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Diarsenic Trioxide	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.
Cadmium	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.
Nickel(II) oxide	Based on the NITE GHS classification results.
Ammonium Vanadate(V)	Based on the NITE GHS classification results.

Cobalt	Based on the NITE GHS classification results.
Diarsenic Trioxide	Based on the NITE GHS classification results.
Lead(II) nitrate	Based on the NITE GHS classification results.
Cadmium	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.
Nickel(II) oxide	Based on the NITE GHS classification results.
Ammonium Vanadate(V)	Based on the NITE GHS classification results.
Cobalt	Based on the NITE GHS classification results.
Diarsenic Trioxide	Based on the NITE GHS classification results.
Lead(II) nitrate	Based on the NITE GHS classification results.
Cadmium	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.
Nickel(II) oxide	Based on the NITE GHS classification results.
Ammonium Vanadate(V)	Based on the NITE GHS classification results.
Cobalt	Based on the NITE GHS classification results.
Diarsenic Trioxide	Based on the NITE GHS classification results.
Lead(II) nitrate	Based on the NITE GHS classification results.
Cadmium	Based on the NITE GHS classification results.

Reproductive cell mutagenicity

Chemical Name	germ cell mutagencity source information
Nitric Acid	Based on the NITE GHS classification results.
Nickel(II) oxide	Based on the NITE GHS classification results.
Ammonium Vanadate(V)	Based on the NITE GHS classification results.
Cobalt	Based on the NITE GHS classification results.
Diarsenic Trioxide	Based on the NITE GHS classification results.
Lead(II) nitrate	Based on the NITE GHS classification results.
Cadmium	Based on the NITE GHS classification results.

Carcinogenicity

Chemical Name	Carcinogenicity source information
Nitric Acid	Based on the NITE GHS classification results.
Nickel(II) oxide	Based on the NITE GHS classification results.
Ammonium Vanadate(V)	Based on the NITE GHS classification results.
Cobalt	Based on the NITE GHS classification results.
Diarsenic Trioxide	Based on the NITE GHS classification results.
Lead(II) nitrate	Based on the NITE GHS classification results.
Cadmium	Based on the NITE GHS classification results.

Chemical Name	NTP	IARC	ACGIH	JSOH (Japan)
Nickel(II) oxide 1313-99-1	Known	Group 1	A1	Group 1 Group 2B
Cobalt 7440-48-4	Reasonably Anticipated	Group 2B	A3	Group 2B
Diarsenic Trioxide 1327-53-3	Known	Group 1	A1	Group 1
Lead(II) nitrate 10099-74-8	Reasonably Anticipated	Group 2A	A3	Group 2B
Cadmium 7440-43-9	Known	Group 1	A2	Group 1

Reproductive toxicity

Chemical Name	Reproductive toxicity source information
Nitric Acid	Based on the NITE GHS classification results.
Nickel(II) oxide	Based on the NITE GHS classification results.
Ammonium Vanadate(V)	Based on the NITE GHS classification results.

Cobalt	Based on the NITE GHS classification results.
Diarsenic Trioxide	Based on the NITE GHS classification results.
Lead(II) nitrate	Based on the NITE GHS classification results.
Cadmium	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.
Nickel(II) oxide	Based on the NITE GHS classification results.
Ammonium Vanadate(V)	Based on the NITE GHS classification results.
Cobalt	Based on the NITE GHS classification results.
Diarsenic Trioxide	Based on the NITE GHS classification results.
Lead(II) nitrate	Based on the NITE GHS classification results.
Cadmium	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.
Nickel(II) oxide	Based on the NITE GHS classification results.
Ammonium Vanadate(V)	Based on the NITE GHS classification results.
Cobalt	Based on the NITE GHS classification results.
Diarsenic Trioxide	Based on the NITE GHS classification results.
Lead(II) nitrate	Based on the NITE GHS classification results.
Cadmium	Based on the NITE GHS classification results.

Aspiration hazard

Chemical Name	Aspiration Hazard source information
Nitric Acid	Based on the NITE GHS classification results.
Nickel(II) oxide	Based on the NITE GHS classification results.
Ammonium Vanadate(V)	Based on the NITE GHS classification results.
Cobalt	Based on the NITE GHS classification results.
Diarsenic Trioxide	Based on the NITE GHS classification results.
Lead(II) nitrate	Based on the NITE GHS classification results.
Cadmium	Based on the NITE GHS classification results.

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity

Chemical Name	Algae/aquatic plants	Fish	Crustacea
Nitric Acid	*N/A*	*LC50 : Gambusia affinis 72 mg/L 96 h*	*N/A*
Nickel(II) oxide	*EC50:Pseudokirchneriella subcapitata 127.3 mg/L 72 h*	*LC50:Brachydanio rerio 100 mg/L 96 h*	*EC50:Daphnia magna >100 mg/L 48 h*
Ammonium Vanadate(V)	*N/A*	*LC50:Fundulus heteroclitus 13.5 mg/L 96h*	*N/A*
Cobalt	*N/A*	*LC50:Brachydanio rerio 100 mg/L 96 h*	*N/A*
Diarsenic Trioxide	*N/A*	*LC50:Oncorhynchus mykiss 18.8 - 21.4 mg/L 96 h LC50:Pimephales promelas 135 mg/L 96 h LC50:Oncorhynchus mykiss 1000 mg/L 96 h*	*EC50 : Artemia franciscana 0.257 mg/L 24 h*
Oxalic acid dihydrate	*N/A*	*N/A*	*EC50: Daphnia magna 15 mg/L 48 h*
Lead(II) nitrate	*N/A*	*N/A*	*LC50 : Gammaridae 0.124 mg/L 96 h*
Cadmium	*ErC50 : Pseudokirchneriella*	*LC50:Cyprinus carpio*	*EC50 : Daphnia magna*

	subcapitata *0.07 mg/L 72 h*	*0.002 mg/L 96 h* *LC50:Oncorhynchus mykiss* *0.003 mg/L 96 h* *LC50:Oryzias latipes* *0.016 mg/L 96 h*	*0.0244 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.
Nickel(II) oxide	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Ammonium Vanadate(V)	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Cobalt	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Diarsenic Trioxide	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.
Cadmium	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
UN number UN2031
Proper shipping name: Nitric acid
UN classfication 8
Subsidiary hazard class
Packing group II
Marine pollutant Not applicable

IMDG
UN number UN2031
Proper shipping name: Nitric acid
UN classfication 8
Subsidiary hazard class
Packing group II
Marine pollutant (Sea) Not applicable
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code No information available

IATA
UN number UN2031
Proper shipping name: Nitric acid

UN classfication	8
Subsidiary hazard class	
Packing group	II
Environmentally Hazardous Substance	Not applicable

Section 15: REGULATORY INFORMATION

Japanese regulations

Fire Service Act	Not applicable
Poisonous and Deleterious Substances Control Law	Poisonous Substances 1st. Grade
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) Group 3 Specified Chemical Substance, (Ordinance on Prevention of Hazards Due to Specified Chemical Substances Art.2 Para.1, Item 6) Lead Compounds (Enforcement Order Attached Table 4, Ordinance on Prevention of Lead Poisoning Art.1-4, MHLW Nortification No.91 of 1972)
Industrial Safety and Health Act (2024~)	【2024.4.1~】Chemical Substances Hazardous to Skin, etc.(Regulations Article 594-2 Paragraph 1)
Regulations for the carriage and storage of dangerous goods in ship	Corrosive Substances (Ordinance Art.3, Ministry of Transportation Ordinance Regarding Transport by Ship and Storage, Attached Table 1)
Civil Aeronautics Law	Corrosive Substances (Ordinance Art.194, MITL Nortification for Air Transportation of Explosives etc., Attached Table 1)
Marine Pollution Prevention Law	Enforcement ordinance Appendix No. 1 Noxious liquid substance Category Y
Pollutant Release and Transfer Register Law (2023.4.1-)	Not applicable
Water Pollution Control Act	Harmful Substances (Law Art.2, Enforcement Order Art.2, Ordinace Designating Wastewater Standards Art.1)
Export Trade Control Order	Not applicable
Air Pollution Control Law	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-)
Nitric Acid 7697-37-2 (5.0)	-	Applicable	-
Ammonium Vanadate(V) 7803-55-6 (0.023)	Applicable	-	-
Diarsenic Trioxide 1327-53-3 (0.0040)	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 Oraganic Chemistry , SSOCJ, Koudansha Scientific Co.Ltd.
Chemical Dictionary, Kyouritsu Publishing Co., Ltd.
etc

Record of SDS revisions	The following contents were revised. Prodauct and company Identification. Composition/information on ingredients. Exposure controls/personal protection. Stability and reactivity. 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