Safety Data Sheet

11 Mix metal standard solution

Version: V2.0.0.1

Report No.: BWB2528-2016-MSDS-US

Creation Date: 2025/09/25

Revision Date: -



*Prepared according to American OSHA HCS-2024 (29 CFR 1910.1200)

| Product identifier

Product Name	11 Mix metal standard solution
Cat No.	BWB2528-2016
CAS No.	Not applicable
EC No.	Not applicable
Molecular Formula	Not applicable

Recommended use of the product and restrictions on use

Relevant identified uses		Please consult manufacturer.
	Uses advised against	Please consult manufacturer.

Details of the supplier of the Safety Data Sheet

Name of the company	Weiyel Inc
Address of the company	Hedian Light Industrial Park, Chengguan Town, Shangcheng County, Xinyang City, Henan Province, China
Post code	465350
Telephone number	010-58103678
Fax number	010-84840368
E-mail address	info@weiyel.com

| Emergency phone number

Emergency phone number	010-58103678
Emergency phone number	UTU-28TU3878

2 Hazard(s) identification

Hazard classification according to 29 CFR 1910.1200

Skin corrosion/irritation	Category 1C
Serious eye damage/irritation	Category 1
Acute Toxicity - Inhalation	Category 2

Label elements

Hazard pictograms	
Signal word	Danger

•	Response
•	

•	
P320	Specific treatment is urgent (see related instructions on the label).
P321	Specific treatment (see related instructions on the label).
P363	Wash contaminated clothing before reuse.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P301+P330+P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse affected areas with water [or shower].
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

In case of inadequate ventilation wear respiratory protection.

Storage

	P405	Store locked up.
	P403+P233	Store in a well-ventilated place. Keep container tightly closed.
▲ Disposal		

Disposal

P501	Dispose of contents/container in accordance with local/regional/national/
	international regulations.

Other hazards

Not applicable.

protection.

P284

| Hazard description

Physical and chemical hazards

	No information available
 Health hazards 	
Inhaled	Inhalation of vapours or aerosols (mists, fumes), generated by the product during the course of normal handling, may produce severely toxic effects; these may be fatal. Corrosive product can cause irritation of the respiratory tract, with coughing, choking and mucous membrane damage.
Ingestion	Accidental ingestion of the product may be harmful to the health of the individual.
Skin Contact	The product can cause severe skin burns following direct contact with the skin.
Еуе	The product can produce severe chemical burns to the eye following direct contact. If timely and appropriate treatment is not available may cause permanent blindness.

Environmental hazards

Please refer to 12th chapter of SDS.

Composition/information on ingredients

Substance/mixture

Mixture

Component	CAS No.	EC No.	Concentration (wt, %)
Manganese	7439-96-5	231-105-1	0.01
Barium	7440-39-3	231-149-1	0.01
Vanadium	7440-62-2	231-171-1	0.01
Strontium	7440-24-6	231-133-4	0.01
Titanium	7440-32-6	231-142-3	0.01
Calcium	7440-70-2	231-179-5	0.01
Magnesium	7439-95-4	231-104-6	0.01
Iron	7439-89-6	231-096-4	0.01
Aluminium	7429-90-5	231-072-3	0.01
Potassium	7440-09-7	231-119-8	0.01
Silicon	7440-21-3	231-130-8	0.01
Nitric acid	7697-37-2	231-714-2	4.46
Water	7732-18-5	231-791-2	95.43

First-aid measures

Description of first aid measures

General advice	Immediate medical attention is required. Show this safety data sheet (SDS) to the doctor in attendance.	
Eye contact	Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician if feel uncomfortable.	
Skin contact	Take off contaminated clothing and shoes immediately. Wash off with plenty of soap and water for at least 15 minutes and consult a physician if feel uncomfortable.	
Ingestion	Never give anything by mouth to an unconscious person. Call a physician or Poison Control Center immediately.	
Inhalation	Move victim into fresh air. If breathing is difficult, give oxygen. Do not use mouth to mouth resuscitation if victim ingested or inhaled the substance. If not breathing, give artificial respiration and consult a physician immediately.	
Protecting of first-aiders	Ensure that medical personnel are aware of the substance involved. Take precautions to protect themselves and prevent spread of contamination.	

Most important symptoms/effects, acute and delayed

Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.

Indication of any immediate medical attention and special treatment needed

1	Treat symptomatically.

Fire-fighting measures

Symptoms may be delayed.

Extinguishing media

Suitable extinguishing media	Small fire: CO ₂ , dry chemical, dry sand, alcohol-resistant foam; Large fire: water
	spray, fog or alcohol-resistant foam; Fire involving tanks, rail tank cars or highway
	tanks: Fight fire from maximum distance or use unmanned master stream devices
	or monitor nozzles. Cool containers with flooding quantities of water until well
	after fire is out. Do not get water inside containers.
Unsuitable extinguishing media	Large fire: avoid aiming straight or solid streams directly onto the product.

Specific hazards arising from the substance or mixture

- 1 Fire may produce irritating, poisonous or corrosive gases.
- 2 Development of hazardous combustion gases or vapor possible in the event of fire.
- 3 May expansion or decompose explosively when heated or involved in fire.

Special protective equipment and precautions for fire-fighters

- As in any fire, wear self-contained breathing apparatus (MSHA/NIOSH approved or equivalent) and full protective gear.
- 2 Fight fire from a safe distance, with adequate cover.
- 3 Prevent fire extinguishing water from contaminating surface water or the ground water system.

6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

- 1 Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire.
- 2 Do not touch or walk through spilled material.
- 3 Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- 4 Use personal protective equipment, do not breathe gas/mist/vapour/spray.
- Ensure adequate ventilation. Remove all sources of ignition. Take precautionary measures against static discharges.
- 6 Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

Environmental precautions

- 1 Prevent further leakage or spillage if safe to do so.
- 2 Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up

- Do not touch or cross spills.
 It is recommended that emergency personnel wear a self-contained breathing apparatus with positive pressure and wear anti-corrosion clothing.
- 3 Transfer to a tank truck or special collector with a corrosion-resistant pump.
- 4 Do not touch broken containers and spills before putting on appropriate protective clothing.
- 5 Cut off the source of the leak as much as possible.
- 6 Keep leaks in a ventilated place.
- Absorb spilled material in dry sand or inert absorbent. In case of large amount of spillage, contain a spill by bunding.

Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

9 Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container.

Handling and storage

Precautions for safe handling

- Handling is performed in a well ventilated place. 2 Wear suitable protective equipment. 3 Avoid contact with skin and eyes.
- 4 Keep away from heat/sparks/open flames/ hot surfaces.

Conditions for safe storage, including any incompatibilities

- Keep containers tightly closed.
- 2 Keep containers in a dry, cool and well-ventilated place.
- Keep away from heat/sparks/open flames/hot surfaces. 3
- 4 Store away from incompatible materials and foodstuff containers.

Exposure controls/personal protection

| Control parameters

Occupational exposure limit values

Component	Country/Region	Limit value - Eight hours		Limit value - Short term	
		ppm	mg/m³	ppm	mg/m³
Manganese	Australia	-	1	-	-
	Canada - Ontario	-	0.2	-	-
	European Union	-	0.2	-	-
	New Zealand	-	0.2	-	-
	USA - ACGIH	-	0.02(respirab le fraction)	-	-
	USA - NIOSH	-	1	-	3
Barium	Australia	-	0.5	-	-
	Canada - Ontario	-	0.5	-	-
	European Union	-	0.5	-	-
	New Zealand	-	0.5	-	-
	USA - ACGIH	-	0.5	-	-
	USA - NIOSH	-	0.5	-	-
Vanadium	Australia	-	0.05	-	-
	New Zealand	-	0.05	-	-
	USA - OSHA	-	-	0.1	0.5
	Austria	-	0.5(inhalable aerosol)	-	1(inhalable aerosol)
	Germany (DFG)	-	0.005	-	0.01
	Latvia	-	1	-	-

Titanium	Latvia	-	10	-	-
	Poland	-	10	-	15
	Romania	-	10	-	15
Aluminium	Australia	-	5(powder, pyrophoric)	-	-
	Canada - Ontario	1	-	-	-
	New Zealand	-	5(pyrophoric powder)	-	-
	USA - ACGIH	-	1(respirable fraction)	-	-
	USA - NIOSH	-	10(Inhalable fraction)	-	-
	USA - OSHA	-	15	-	-
Silicon	Australia	-	10	-	-
	Canada - Ontario	-	10	-	-
	New Zealand	-	10	-	-
	USA - NIOSH	-	10	-	-
	USA - OSHA	-	15	-	-
	Belgium	-	10	-	-
Nitric acid	Australia	2	5.2	4	10
	Canada - Ontario	2	-	4	-
	European Union	-	-	1	2.6
	New Zealand	2	5.2	4	10
	USA - ACGIH	2	-	4	-
	USA - NIOSH	2	5	4	10

| Engineering controls

- 1 Ensure adequate ventilation, especially in confined areas.
- 2 Ensure that eyewash stations and safety showers are close to the workstation location.
- 3 Use explosion-proof electrical/ventilating/lighting/equipment.
- 4 Set up emergency exit and necessary risk-elimination area.

| Personal protection equipment

General requirement		
Eye protection	Must wear appropriate anti-corrosion goggles.	
Hand protection	Must wear acid and alkali resistant chemical protective gloves.	
Respiratory protection	Must wear appropriate personal dust proof gas mask.	
Skin and body protection	Must wear acid and alkali resistant chemical protective clothing.	

9 Physical and chemical properties and safety characteristics

| Physical and chemical properties

Appearance (physical state,	yellow liquid
color, etc.)	
Odor	No information available
Odor threshold	No information available
рН	<1 (Nitric acid)
Melting point/freezing point(°C)	-41.6 (Nitric acid)
Initial boiling point and boiling	121 (Nitric acid)
range(°C)	
Flash point(Closed cup,°C)	No information available
Evaporation rate	No information available
Flammability	No information available
Upper/lower explosive	Upper limit: No information available; Lower limit: No information available
limits[%(v/v)]	
Vapor pressure	6.4kPa(20°C, Nitric acid)
Vapor density(Air = 1)	2.2 (Nitric acid)
Relative density(Water=1)	1.4 (Nitric acid)
Solubility	500000mg/L (20 °C,Nitric acid)
n-octanol/water partition	-0.21 (Nitric acid)
coefficient	
Auto-ignition temperature(°C)	No information available
Decomposition temperature(°C)	No information available
Kinematic viscosity	No information available

10 Stability and reactivity

Stability and reactivity

Reactivity	Contact with incompatible substances can cause decomposition or other chemical reactions.
Chemical stability	Stable under proper operation and storage conditions.
Possibility of hazardous reactions	Reacts severely with halogens, interhalogens or other strong oxidants, or causes a fire. May burn continuously in carbon dioxide. Ultrafine powder will self-ignite in the air at room temperature. May be oxidized quickly when exposed to air. Mixtures with metallic acetylene, when heated, cause a fire or incandescence. In contact with active metals (alkali metals, Na, Ca etc.) causes a reaction and release hydrogen.
Conditions to avoid	Incompatible materials, heat, flame and spark.
Incompatible materials	Halogen, interhalogen, strong oxidant, water and acids. Water, carbon dioxide, oxidants, halogen, interhalogen and mercury. Oxidants, halogen, interhalogen and mercury. Water, carbon dioxide, halocarbon, halogen, interhalogen, metal halide, non-metal oxides, acids, mercury and hydrazine. Metal acetylide, halogen, interhalogen, halogen oxides, nitric acid, nitrous oxide, nitrates, nitrites, halogen oxyacid salts, chromates, permanganates, inorganic peroxides, metal oxides and peroxyformic acid. Alkali, sodium, calcium, and other active metal, halogen, metal oxide, nonmetal oxide, acyl halide and metal phosphide.
Hazardous decomposition	Under normal conditions of storage and use, hazardous decomposition products
products	should not be produced.

11 Toxicological information

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Acute toxicity

Component	LD ₅₀ (oral)	LD ₅₀ (dermal)	LC ₅₀ (inhalation,4h)
Silicon	3160mg/kg(Rat)	No information available	No information available
Manganese	9000mg/kg(Rat)	No information available	No information available
Iron	30000mg/kg(Rat)	No information available	No information available

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Carcinogenicity

Component	List of carcinogens by the IARC Monographs	Report on Carcinogens by NTP	OSHA Carcinogen List
Manganese	Not Listed	Not Listed	Not Listed
Barium	Not Listed	Not Listed	Not Listed
Vanadium	Not Listed	Not Listed	Not Listed
Strontium	Not Listed	Not Listed	Not Listed
Titanium	Not Listed	Not Listed	Not Listed
Calcium	Not Listed	Not Listed	Not Listed
Magnesium	Not Listed	Not Listed	Not Listed
Iron	Not Listed	Not Listed	Not Listed
Aluminium	Not Listed	Not Listed	Not Listed
Potassium	Not Listed	Not Listed	Not Listed
Silicon	Not Listed	Not Listed	Not Listed
Nitric acid	Not Listed	Not Listed	Not Listed
Water	Not Listed	Not Listed	Not Listed

Others

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Skin corrosion/irritation	Causes severe skin burns and eye damage(Category 1C)	
Serious eye damage/irritation	Causes serious eye damage(Category 1)	
Skin sensitization	Based on available data, the classification criteria are not met	
Respiratory sensitization	Based on available data, the classification criteria are not met	
Reproductive toxicity	Based on available data, the classification criteria are not met	
STOT-repeated exposure	Based on available data, the classification criteria are not met	
Aspiration hazard	Based on available data, the classification criteria are not met	
Germ cell mutagenicity	Based on available data, the classification criteria are not met	

12 Ecological information

| Acute aquatic toxicity

Component	Fish	Crustaceans	Algae or other aquatic plants
Silicon	LC ₅₀ :100mg/L (96h)(Fish)	No information available	No information available
Calcium	No information available	EC ₅₀ : 49.1mg/L (48h)(Crustaceans)	No information available

Manganese	LC ₅₀ : 1800mg/L	EC ₅₀ : 40mg/L	No information available
	(96h)(Fish)	(48h)(Crustaceans)	
Aluminium	LC ₅₀ : 1.55mg/L (96h)(Fish)	No information available	No information available
Magnesium	LC ₅₀ :541 mg/L (96h)(Fish)	No information available	No information available
Vanadium	LC ₅₀ : 0.693mg/L (96h)(Fish)	No information available	No information available
Iron	LC ₅₀ : 1.29mg/L (96h)(Fish)	No information available	No information available
Strontium	LC ₅₀ : > 40.3mg/L (96h)(Fish)	No information available	ErC ₅₀ : > 43.3mg/L (72h)(Algae)

| Chronic aquatic toxicity

Component	Fish	Crustaceans	Algae or other aquatic plants
Strontium	NOEC : ≥41.4mg/L(Fish)	No information available	No information available

| Persistence and degradability

Persistence and degradability No information available

Bioaccumulative potential

Bioaccumulative potential No information available

| Mobility in soil

Component	Component log Koc Remark						
Magnesium	1.12	20 °C					
Silicon	1.00	20 ℃					

13 Disposal considerations

| Disposal considerations

<u> </u>	
Waste chemicals	Before disposal should refer to the relevant national and local laws and
	regulation. Recommend the use of incineration disposal.
Contaminated packaging	Containers may still present chemical hazard when empty. Keep away from hot
	and ignition source of fire. Return to supplier for recycling if possible.
Disposal recommendations	Refer to section waste chemicals and contaminated packaging.

14 Transport information

Label and Mark

Transporting Label



IMDG-CODE

UN number	2031	
UN proper shipping name	NITRIC ACID	other than red fuming, with less than 65% nitric acid

Transport hazard class	8
Transport subsidiary hazard	None
class	
Packing group	П
Marine pollutant (Yes or no)	No

IATA-DGR

UN number	2031
UN proper shipping name	NITRIC ACID other than red fuming, with less than 65% nitric acid
Transport hazard class	8
Transport subsidiary hazard	None
class	
Packing group	п

UN-ADR

UN number	2031
UN proper shipping name	NITRIC ACID other than red fuming, with less than 65% nitric acid
Transport hazard class	8
Transport subsidiary hazard	6.1
class	
Packing group	п

Transport in bulk according to IMO instruments

◆ Transport in bulk according to Annex II of MARPOL and the IBC code

Not Available

◆ Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code

Not Available

◆ Transport in bulk in accordance with the IGC Code

Not Available

Others

Precautions for transport

Transport vehicles should be equipped with the appropriate variety and quantity of fire equipment and emergency equipment leakage during transport. Before transport, should be preceded by checking whether container integrity, sealing. The transport unit must be placarded and marked in accordance with relevant transporting requirements.

15 Regulatory information

International chemical inventory

Component	A	В	С	D	Е	F	G	Н	I	J	K	L	M
Manganese	√	√	√	√	√	√	√	√	√	√	√	√	V
Barium	√	√	√	√	√	√	√	√	√	√	√	√	√
Vanadium	√	√	√										
Strontium	√	V	√	√	√	√	√	√	√	√	√	√	√
Titanium	√												

Calcium	1	√	√	√	√	√	√	√	√	√	√	√	√
Magnesium	√	√	√	√	√	√	√	√	√	√	√	√	√
Iron	1	√	√	√	1	√	√	√	1	√	√	1	1
Aluminium	√	√	√	√	√	√	√	√	√	√	√	√	√
Potassium	√	√	√	√	√	√	√	√	√	×	√	√	√
Silicon	√	V											
Nitric acid	√	√	√	√	√	√							
Water	√	√	√	√	√	√	V	√	√		√	√	√

- [A] China Inventory of Existing Chemical Substances(IECSC)
- [B] European Inventory of Existing Commercial Chemical Substances(EC inventory)
- [C] United States Toxic Substances Control Act Inventory(TSCA)
- [D] Canadian Domestic Substances List(DSL)
- [E] New Zealand Inventory of Chemicals(NZloC)
- [F] Philippines Inventory of Chemicals and Chemical Substances(PICCS)
- [G] Korea Existing Chemicals Inventory(KECL)
- [H] Australian. Inventory of Industrial Chemical (AIICS)
- [1] Japan Inventory of Existing & New Chemical Substances(ENCS)
- [J] Thailand Existing Chemicals Inventory(TECI)
- [K] Mexico National Inventory of Chemical Substances (INSQ)
- [L] Russia Inventory of Existing Substances (DRAFT)
- [M] Inventory of Existing Chemical Substances in Taiwan, China (TCSI)

List of Chemical Substances under International Conventions

Component	Α	В	С
Manganese	×	×	×
Barium	×	×	×
Vanadium	×	×	×
Strontium	×	×	×
Titanium	×	×	×
Calcium	×	×	×
Magnesium	×	×	×
Iron	×	×	×
Aluminium	×	×	×
Potassium	×	×	×
Silicon	×	×	×
Nitric acid	×	×	×
Water	×	×	×

- [A] The Montreal Protocol on Substances that Deplete the Ozone Layer
- [B] Stockholm Convention on Persistent Organic Pollutants (POPs)
- [C] Rotterdam Convention on the prior informed consent procedure for certain hazardous chemicals and pesticides in international trade

US chemical inventory

Component	Α	В	С	D	Е	F	G	Н
Manganese	√	×	×	√	√	√	√	×
Barium	×	×	×	V	V	√	√	×
Vanadium	×	×	×	V	V	√	√	×
Strontium	×	×	×	×	V	×	√	×
Titanium	×	×	×	×	√	×	√	×
Calcium	×	×	×	√	√	√	√	×
Magnesium	×	×	×	V	V	√	√	×
Iron	×	×	×	×	×	×	×	×
Aluminium	×	×	×	V	V	√	√	×
Potassium	×	×	×	√	√	√	√	×
Silicon	×	×	×	√	√	√	×	×
Nitric acid	×	√	V	√	√	√	√	×
Water	×	×	×	×	×	×	×	×

- [A] US Clean Air Act (CAA)- Section 112, Hazardous Air Pollutants
- [B] US SARA 302- Extremely Hazardous Substance List
- [C] US CERCLA- Hazardous Substances List
- [D] US Massachusetts Right-to-Know Substance List
- [E] US New Jersey Right to Know Hazardous Substance List
- [F] US Pennsylvania Right to Know Hazardous Substance List
- [G] US New York City Right-to-Know Hazardous Substance List
- [H] US California Proposition 65 List

Note:

- " $\sqrt{}$ " Indicates that the substance included in the regulations.
- "x" No data or not included in the regulations.

16 Other information

Information on revision

Creation Date	2025/09/25
Revision Date	-
Reason for revision	-

Reference

- [1] IPCS: The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home.
- [2] IARC, website: http://www.iarc.fr/.
- [3] OECD: The Global Portal to Information on Chemical Substances, website: https://www.echemportal.org/echemportal/.
- [4] CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple.
- [5] NLM: ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp.
- [6] EPA: Integrated Risk Information System, website: http://cfpub.epa.gov/iris/.
- [7] U.S. Department of Transportation: ERG, website: http://www.phmsa.dot.gov/hazmat/library/erg.
- [8] Germany GESTIS-database on hazard substance, website: http://gestis-en.itrust.de/.

Abbreviations and acronyms

CAS	Chemical Abstracts Service	UN	The United Nations

PC-STEL Short term exposure limit OECD Organization for Economic Co-operation and Development

PC-TWA Time Weighted Average IMDG- International Maritime Dangerous Goods CODE

		CODE	
MAC	Maximum Allowable Concentration	IARC	International Agency for Research on Cancer
DNEL	Derived No Effect Level	ICAO	International Civil Aviation Organization
PNEC	Predicted No Effect Concentration	IATA	International Air Transportation Association
NOEC	No Observed Effect Concentration	ACGIH	American Conference of Governmental Industrial Hygienists
LC ₅₀	Lethal Concentration 50%	NFPA	National Fire Protection Association
LD_{50}	Lethal Dose 50%	NTP	National Toxicology Program
EC ₅₀	Effective Concentration 50%	PBT	Persistent, Bioaccumulative, Toxic
EC_X	Effective Concentration X%	vPvB	very Persistent, very Bioaccumulative
Pow	Partition coefficient Octanol: Water	CMR	Carcinogens, mutagens or substances toxic to reproduction
BCF	Bioconcentration factor	RPE	RespiratoryProtective Equipment
ED	Endocrine disruptor	HCS	Hazard Communication Standard

Disclaimer

This Safety Data Sheet (SDS) was prepared according to OSHA HCS-2024. The data included was derived from international authoritative database and provided by the enterprise. Other information was based on the present state of our knowledge. We try to ensure the correctness of all information. However, due to the diversity of information sources and the limitations of our knowledge, this document is only for user's reference. Users should make their independent judgment of suitability of this information for their particular purposes. We do not assume responsibility for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.