

Safety Data Sheet

9 Mix elements standard solution

Version : V2.0.0.1

Report No. : BWB2580-2016-MSDS-US

Creation Date : 2025/10/24

Revision Date : -



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

1 Identification

Product identifier

Product Name	9 Mix elements standard solution
Cat No.	BWB2580-2016
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
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2 Hazard(s) identification

Hazard classification according to 29 CFR 1910.1200

Acute Toxicity - Oral	Category 4
Acute Toxicity - Dermal	Category 3
Skin corrosion/irritation	Category 1B
Serious eye damage/irritation	Category 1

Label elements

Hazard pictograms	 
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Signal word	Danger
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Hazard statements

H302	Harmful if swallowed
H311	Toxic in contact with skin
H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage

Precautionary statements

◆ Prevention

P260	Do not breathe gas/mist/vapour/spray.
P264	Wash hands and other parts of the body (if related) thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P280	Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.

◆ Response

P321	Specific treatment (see related instructions on the label).
P330	Rinse mouth.
P363	Wash contaminated clothing before reuse.
P302+P352	IF ON SKIN: Wash with plenty of water.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P361+P364	Take off immediately all contaminated clothing and wash it before reuse.
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.

◆ Storage

P405	Store locked up.
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◆ Disposal

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

	Not applicable.
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Hazard description

◆ Physical and chemical hazards

	No information available
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◆ Health hazards

Inhaled	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.
Skin Contact	The product can cause severe skin burns following direct contact with the skin. Toxic in contact with skin, systemic effects may result following absorption.
Eye	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.

3 Composition/information on ingredients**| Substance/mixture**

Mixture

Component	CAS No.	EC No.	Concentration (wt, %)
Water	7732-18-5	231-791-2	88.7
Hydrogen chloride	7647-01-0	231-595-7	10
Hydrogen fluoride	7664-39-3	231-634-8	1.2
Boron	7440-42-8	231-151-2	0.0095
Germanium	7440-56-4	231-164-3	0.0095
Molybdenum	7439-98-7	231-107-2	0.0095
Niobium	7440-03-1	231-113-5	0.0095
Phosphorus	7723-14-0	231-768-7	0.0095
Rhenium	7440-15-5	231-124-5	0.0095
Thallium	7440-28-0	231-138-1	0.0095
Tungsten	7440-33-7	231-143-9	0.0095
Zirconium	7440-67-7	231-176-9	0.0095

4 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

1	Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.
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| Indication of any immediate medical attention and special treatment needed

1	Treat symptomatically.
2	Symptoms may be delayed.

5 Fire-fighting measures

| Extinguishing media

Suitable extinguishing media	Use extinguishing media suitable for surrounding area.
Unsuitable extinguishing media	There is no restriction on the type of extinguisher which may be used.

| Specific hazards arising from the substance or mixture

1	Development of hazardous combustion gases or vapor possible in the event of fire.
2	May expansion or decompose explosively when heated or involved in fire.

| Special protective equipment and precautions for fire-fighters

1	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	Use personal protective equipment, do not breathe gas/mist/vapour/spray.
2	Ensure adequate ventilation. Remove all sources of ignition. Take precautionary measures against static discharges.
3	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

1	Cut off the source of the leak as much as possible.
2	Keep leaks in a ventilated place.
3	Absorb spilled material in dry sand or inert absorbent. In case of large amount of spillage, contain a spill by bunding.
4	Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.
5	Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container.

7 Handling and storage

| Precautions for safe handling

1	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

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

8 Exposure controls/personal protection

Control parameters

◆ Occupational exposure limit values






Component	Country/Region	Limit value - Eight hours		Limit value - Short term	
		ppm	mg/m ³	ppm	mg/m ³
Hydrogen chloride	Japan - JSOH(2024–2025)	-	-	-	-
	Permissible exposure standards for workers in the workplace	-	-	-	-
	Australia	-	-	5	7.5
	Canada - Ontario	-	-	2	-
	European Union	5	8	10	15
	USA - NIOSH	-	-	5	7
Hydrogen fluoride	Japan - JSOH(2024–2025)	-	-	-	-
	Permissible exposure standards for workers in the workplace	3	2.6	6	5.2
	Australia	-	-	3	2.6
	Canada - Ontario	0.5	-	2	-
	European Union	1.8	1.5	3	2.5
	USA - ACGIH	0.5(as F)	-	-	-
Boron	Germany (DFG)	-	0.75	-	0.75
Germanium	Germany (AGS)	-	0.85	-	1.7
	Romania	-	2	-	5
Molybdenum	Australia	-	10	-	-
	Canada - Ontario	-	10	-	-
	New Zealand	-	10	-	-
	USA - ACGIH	-	3(respirable fraction)	-	-
	Austria	-	15(inhalable aerosol)	-	30(inhalable aerosol)
	Canada - Québec	-	10	-	-
Niobium	Austria	-	5(inhalable	-	10(inhalable

			aerosol)		aerosol)
Phosphorus	Japan - JSOH(2024–2025)	-	0.1	-	-
	Permissible exposure standards for workers in the workplace	-	0.1	-	0.3
	Australia	-	0.1	-	-
	New Zealand	-	0.1	-	-
	USA - NIOSH	-	0.1	-	-
	USA - OSHA	-	0.1	-	-
Thallium	Australia	-	0.1	-	-
	Canada - Ontario	-	0.02	-	-
	New Zealand	-	0.1	-	-
	USA - ACGIH	-	0.02(inhalable fraction)	-	-
	USA - NIOSH	-	0.1	-	-
	USA - OSHA	-	0.1	-	-
Tungsten	Permissible exposure standards for workers in the workplace	-	5	-	10
	Australia	-	5	-	10
	Canada - Ontario	-	5	-	10
	New Zealand	-	5	-	10
	USA - ACGIH	-	3(respirable fraction)	-	-
	USA - NIOSH	-	5	-	10
Zirconium	Australia	-	5	-	10
	Canada - Ontario	-	5	-	10
	New Zealand	-	5	-	10
	USA - ACGIH	-	5	-	10
	USA - NIOSH	-	5	-	10
	USA - OSHA	-	5	-	-

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, color, etc.)	Clear, colorless liquid
Odor	No information available
Odor threshold	No information available
pH	No information available
Melting point/freezing point(°C)	2 075 (Boron)
Initial boiling point and boiling range(°C)	4000 (101.325 kPa,Boron)
Flash point(Closed cup,°C)	No information available
Evaporation rate	No information available
Flammability	No information available
Upper/lower explosive limits[% (v/v)]	Upper limit : No information available ; Lower limit : No information available
Vapor pressure	No information available
Vapor density(Air = 1)	No information available
Relative density(Water=1)	2.35 (20 °C,Boron)
Solubility	Insoluble in water (Boron)
n-octanol/water partition coefficient	No information available
Auto-ignition temperature(°C)	700 (Boron)
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	In contact with active metals (alkali metals, Na, Ca etc.) causes a reaction and release hydrogen. In contact with magnesium, sodium, potassium, copper and other metals or metal acetylene may cause a fire or explosion. Mixtures with metallic acetylene, when heated, cause a fire or incandescence.
Conditions to avoid	Incompatible materials, heat, flame and spark.
Incompatible materials	Alkali, sodium, calcium, and other active metal, halogen, metal oxide, nonmetal oxide, acyl halide and metal phosphide. Magnesium, sodium, potassium, copper,

	oxidants, acetylene metal compounds, alcohols, alkanes, hydrogen and water. Metal acetylide, halogen, interhalogen, halogen oxides, nitric acid, nitrous oxide, nitrates, nitrites, halogen oxyacid salts, chromates, permanganates, inorganic peroxides, metal oxides and peroxyformic acid.
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11 Toxicological information

| Acute toxicity

Component	LD ₅₀ (oral)	LD ₅₀ (dermal)	LC ₅₀ (inhalation,4h)
Phosphorus	3.03mg/kg(Rat)	No information available	No information available
Hydrogen chloride	900mg/kg(Rabbit)	No information available	1405ppmV(Rat)
Hydrogen fluoride	No information available	No information available	653.5ppmV(Rat)
Boron	650mg/kg(Rat)	No information available	No information available

| Carcinogenicity

Component	List of carcinogens by the IARC Monographs	Report on Carcinogens by NTP	OSHA Carcinogen List
Water	Not Listed	Not Listed	Not Listed
Hydrogen chloride	Category 3	Not Listed	Not Listed
Hydrogen fluoride	Not Listed	Not Listed	Not Listed
Boron	Not Listed	Not Listed	Not Listed
Germanium	Not Listed	Not Listed	Not Listed
Molybdenum	Not Listed	Not Listed	Not Listed
Niobium	Not Listed	Not Listed	Not Listed
Phosphorus	Not Listed	Not Listed	Not Listed
Rhenium	Not Listed	Not Listed	Not Listed
Thallium	Not Listed	Not Listed	Not Listed
Tungsten	Not Listed	Not Listed	Not Listed
Zirconium	Not Listed	Not Listed	Not Listed

| Others

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Skin corrosion/irritation	Causes severe skin burns and eye damage(Category 1B)
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
Phosphorus	LC ₅₀ : 0.006mg/L (96h)(Fish)	EC ₅₀ : 0.14mg/L (48h)(Crustaceans)	No information available
Hydrogen chloride	LC ₅₀ : 20.5mg/L (96h)(Fish)	No information available	No information available
Zirconium	LC ₅₀ : 74mg/L (96h)(Fish)	No information available	No information available
Tungsten	LC ₅₀ : > 106mg/L (96h)(Fish)	EC ₅₀ : > 96mg/L (48h)(Crustaceans)	ErC ₅₀ : 31mg/L (72h)(Algae)
Germanium	LC ₅₀ : 72mg/L (96h)(Fish)	No information available	No information available
Molybdenum	LC ₅₀ : 609.1mg/L (96h)(Fish)	No information available	No information available
Hydrogen fluoride	LC ₅₀ : 51mg/L (96h)(Fish)	No information available	No information available
Thallium	LC ₅₀ : 21mg/L (96h)(Fish)	No information available	ErC ₅₀ : 0.13mg/L (96h)(Algae)

| Chronic aquatic toxicity

Component	Fish	Crustaceans	Algae or other aquatic plants
Tungsten	NOEC : ≥10mg/L(Fish)	No information available	No information available

| Persistence and degradability

Component	Persistence (water/soil)	Persistence (air)
Hydrogen fluoride	Low	Low

| Bioaccumulative potential

Component	Bioaccumulative potential	Comments
Hydrogen fluoride	Low	Log Kow=-1.38
Phosphorus	High	BCF=2310000

| Mobility in soil

Component	log Koc	Remark
Hydrogen fluoride	0.29	20 °C
Zirconium	4.61	20 °C

13 Disposal considerations

| Disposal considerations

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**

Not applicable

| IMDG-CODE**IMDG-CODE**

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

| IATA-DGR**IATA-DGR**

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

| UN-ADR**UN-ADR**

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

| 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	B	C	D	E	F	G	H	I	J	K	L	M
Water	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Hydrogen chloride	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Hydrogen fluoride	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Boron	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Germanium	✓	✓	✓	✗	✓	✗	✓	✓	✓	✗	✗	✓	✓
Molybdenum	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Niobium	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✗	✓	✓
Phosphorus	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Rhenium	✓	✓	✓	✓	✓	✓	✓	✓	✗	✗	✗	✓	✓
Thallium	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓
Tungsten	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Zirconium	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
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- [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(NZIoC)
 [F] Philippines Inventory of Chemicals and Chemical Substances(PICCS)
 [G] Korea Existing Chemicals Inventory(KECL)
 [H] Australian. Inventory of Industrial Chemical (AIICS)
 [I] 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	A	B	C
Water	×	×	×
Hydrogen chloride	×	×	×
Hydrogen fluoride	×	×	×
Boron	×	×	×
Germanium	×	×	×
Molybdenum	×	×	×
Niobium	×	×	×
Phosphorus	×	×	×
Rhenium	×	×	×
Thallium	×	×	×
Tungsten	×	×	×
Zirconium	×	×	×

- [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	A	B	C	D	E	F	G	H
Water	×	×	×	×	×	×	×	×
Hydrogen chloride	✓	✓	✓	✓	✓	✓	✓	×
Hydrogen fluoride	✓	✓	✓	✓	✓	✓	✓	×
Boron	×	×	×	×	✓	×	×	×
Germanium	×	×	×	×	×	×	×	×
Molybdenum	×	×	×	✓	✓	✓	✓	×
Niobium	×	×	×	×	×	×	×	×
Phosphorus	✓	✓	✓	✓	✓	✓	✓	×

Rhenium	×	×	×	×	×	×	×	×
Thallium	×	×	✓	✓	✓	✓	✓	×
Tungsten	×	×	×	✓	✓	✓	✓	×
Zirconium	×	×	×	✓	✓	✓	✓	×

- [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:

- “✓” Indicates that the substance included in the regulations.
 “×” No data or not included in the regulations.

16 Other information

Information on revision

Creation Date	2025/10/24
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-CODE	International Maritime Dangerous Goods 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
P _{OW}	Partition coefficient Octanol: Water	CMR	Carcinogens, mutagens or substances toxic to reproduction
BCF	Bioconcentration factor	RPE	Respiratory Protective 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.