Safety Data Sheet

Revision date: 28.04.2023	*Version: 7.3*	*Print date: 28.04.2023*

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Trade name/designation:	Arsenic standard solution, 1,000 mg/l As in dil. nitric acid (from As) ARISTAR® standard for ICP
Product No.:	45504
CAS No.:	not applicable
Other means of identification:	none

1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses:	Scientific research and development

1.3 Details of the supplier of the safety data sheet

Singapore

VWR Singapore Pte Ltd.

Street	18 Gul Drive
Postal code/City	Singapore 629468
Telephone	+65 6505 0760
Telefax	+65 6264 3780
E-mail (competent person)	SDS@avantorsciences.com

1.4 Emergency phone number

Telephone	+65 (0) 6505 0760 (office hours: 8 am-5 pm)

SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

Hazard classes and hazard categories	Hazard statements
Substance or mixture corrosive to metals, category 1	H290
Skin irritation, category 2	H315
Eye irritation, category 2	H319
Carcinogenicity, category 1B	H350

2.2 Label elements

Hazard pictograms

Signal word: Danger

Hazard statements	
H290	May be corrosive to metals.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H350	May cause cancer.

Precautionary statements	
P201	Obtain special instructions before use.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P264	Wash … thoroughly after handling.
P234	Keep only in original container.
P202	Do not handle until all safety precautions have been read and understood.
P302+P352	IF ON SKIN: Wash with plenty of water/…
P362+P364	Take off contaminated clothing and wash it before reuse.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313	IF exposed or concerned: Get medical advice/attention.
P321	Specific treatment (see … on this label).
P332+P313	If skin irritation occurs: Get medical advice/attention.
P337+P313	If eye irritation persists: Get medical advice/attention.
P390	Absorb spillage to prevent material damage.
P405	Store locked up.
P406	Store in a corrosive resistant/… container with a resistant inner liner.
P501	Dispose of contents/container to …

2.3 Other hazards

none

SECTION 3: Composition/information on ingredients

3.1 Substances

not applicable

3.2 Mixtures

Composition / Information on ingredients

Substance name	Concentration	Identifier	Hazard classes and hazard categories
Nitric acid	1 - 3%	CAS No.: 7697-37-2	Ox. Liq. 2 - H272 Met. Corr. 1 - H290 Acute Tox. 1 - H330 Skin Corr. 1A - H314
Arsenic acid	0.1 - 1%	CAS No.: 7778-39-4	Carc. 1A - H350 Aquatic Chronic 1 - H410 Acute Tox. 3 - H301+H331

SECTION 4: First aid measures

4.1 Description of first aid measures

General information

Remove victim out of the danger area. Do not leave affected person unattended. Change contaminated, saturated clothing.

After inhalation

Remove casualty to fresh air and keep warm and at rest. If unconscious but breathing normally, place in recovery position and seek medical advice. When in doubt or if symptoms are observed, get medical advice.

In case of skin contact

Take off contaminated clothing and wash it before reuse. After contact with skin, wash immediately with plenty of water and soap. In case of skin reactions, consult a physician.

After eye contact:

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.

In case of ingestion

Rinse mouth immediately and drink plenty of water. Never give anything by mouth to an unconscious person or a person with cramps. Get medical advice/attention.

Self-protection of the first aider

First aider: Pay attention to self-protection!

4.2 Most important symptoms and effects, both acute and delayed

Irritant and corrosive effects: Causes serious eye irritation. Causes skin irritation. May cause respiratory irritation. Cough. Dyspnoea.

4.3 Indication of any immediate medical attention and special treatment needed

No special information on medical attention and special treatment available.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Co-ordinate fire-fighting measures to the fire surroundings.
Water spray.
ABC-powder
Carbon dioxide (CO2).
Nitrogen

Extinguishing media which must not be used for safety reasons

Full water jet

5.2 Special hazards arising from the substance or mixture

In case of fire may be liberated:
Pyrolysis products, toxic

5.3 Advice for firefighters

Non-combustible corrosive substances (liquid).
In case of fire and/or explosion do not breathe fumes.
In case of insufficient ventilation and/or through use, explosive/highly flammable mixtures may develop.
Vapours are heavier than air, spread along floors and form explosive mixtures with air.
Special protective equipment for firefighters:
Wear a self-contained breathing apparatus and chemical protective clothing.

Use water spray jet to protect personnel and to cool endangered containers.
DO NOT fight fire when fire reaches explosives.
Do not allow run-off from fire-fighting to enter drains or water courses.
Do not inhale explosion and combustion gases.
Use caution when applying carbon dioxide in confined spaces. Carbon dioxide can displace oxygen.
Use water spray jet to protect personnel and to cool endangered containers.
In case of fire: Evacuate area.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel: Wear personal protection equipment (refer to section 8). Avoid contact with eyes and skin. Do not breathe gas/fumes/vapour/spray. Remove victim out of the danger area. Provide adequate ventilation. First Aid, decontamination, treatment of symptoms.

6.2 Environmental precautions

Do not allow to enter into surface water or drains. The product is an acid. Before discharge into sewage plants the product normally needs to be neutralised.

6.3 Methods and material for containment and cleaning up

Take up mechanically, placing in appropriate containers for disposal. Absorb with liquid-binding material (sand, diatomaceous earth, acid- or universal binding agents). Rinse affected areas with water. Dispose according to local legislation. Ventilate affected area.

6.4 Reference to other sections

Personal protection equipment: see section 8 Disposal information: see section 13

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advices on safe handling
Avoid contact with eyes and skin.
Do not breathe vapour.
Do not inhale spray vapour.
Use personal protective equipment as required.
Measures to prevent fire, aerosol and dust generation
Usual measures for fire prevention.
Measures required to protect the environment
Do not empty into drains.
Collect spillage.

7.2 Conditions for safe storage, including any incompatibilities

Recommended storage temperature: no data available
Storage class: no data available
Storage: Keep container tightly closed and in a well-ventilated place. Keep/Store only in original container. Protect from moisture.
Packaging materials: Glass Polyethylene (PE) PP (Polypropylene) Unsuitable material for taking up: Metal container

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredient (Designation)	Source	Country	parameter	Limit value	Remark
Nitric acid	Workplace Safety and Health (General Provisions) Regulations, WORKPLACE SAFETY AND HEALTH ACT (CHAPTER 354A, SECTION 65)	SG	LTV	2 ppm - 5.2 mg/m³	
Nitric acid	Workplace Safety and Health (General Provisions) Regulations, WORKPLACE SAFETY AND HEALTH ACT (CHAPTER 354A, SECTION 65)	SG	STV	4 ppm - 10 mg/m³	

8.2 Exposure controls

8.2.1 Appropriate engineering controls

no data available

8.2.2 Personal protection equipment

no data available

Eye/face protection

no data available

Recommendation: no data available

Skin protection

Wear suitable gloves. When handling with chemical substances, protective gloves must be worn with the CE-label including the four control digits. In the case of wanting to use the gloves again, clean them before taking off and air them well. Check leak tightness/impermeability prior to use.

<u>By short-term hand contact</u>

Suitable material:	NBR (Nitrile rubber)
Thickness of the glove material:	0,12 mm
Breakthrough time::	> 480 min
Recommended glove articles:	VWR 112-0998

By long-term hand contact

Suitable material:	NBR (Nitrile rubber)
Thickness of the glove material:	0,38 mm
Breakthrough time::	> 480 min
Recommended glove articles:	VWR 112-3717 / 112-1381

Respiratory protection

no data available

Suitable respiratory protection apparatus:	no data available
Recommendation:	no data available
Suitable material:	no data available
Recommendation:	no data available

Additional information

no data available

8.2.3 *Environmental exposure controls*

no data available

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

(a) Appearance	
Physical state:	liquid
Colour:	no data available
(b) Odour:	no data available
(c) Odour threshold:	no data available

Safety relevant basic data

(d) pH:	<2.0
(e) Melting point/freezing point:	no data available
(f) Initial boiling point and boiling range:	83 °C
(g) Flash point:	no data available
(h) Evaporation rate:	no data available
(i) Flammability (solid, gas):	not applicable
(j) Flammability or explosive limits	
Lower explosion limit:	no data available
Upper explosion limit:	no data available
(k) Vapour pressure:	18.51 mmHg
(l) Vapour density:	0.62
(m) Density:	1.02 g/cm³
(n) Solubility(ies)	
Water solubility:	miscable
(o) Partition coefficient: n-octanol/water:	no data available
(p) Auto-ignition temperature:	no data available
(q) Decomposition temperature:	not applicable
(r) Viscosity	
Kinematic viscosity:	no data available
Dynamic viscosity:	no data available
(s) Explosive properties:	not applicable
(t) Oxidising properties:	not applicable
(u) Particle characteristics:	does not apply to liquids

9.2 Other information

Bulk density:	no data available
Refraction index:	no data available
Dissociation constant:	no data available
Surface tension:	no data available
Henry's Law Constant:	no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

This material is non-reactive under normal conditions.

10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature).

10.3 Possibility of hazardous reactions

Violent reaction with:
Oxidising agent, strong.
Strong acid
Alkali (lye)
Perchlorates

10.4 Conditions to avoid

Protect from moisture.
Keep away from heat.
Possible decomposition might be provoken.

10.5 Incompatible materials

Light metal
Metal.

10.6 Hazardous decomposition products

no data available

10.7 Additional information

no data available

SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute effects

Acute oral toxicity:
Nitric acid - LDLo: > 430 mg/kg - Human - (Sax)

Arsenic acid - LD50: > 48 mg/kg - Rat - (CHP)

Arsenic acid - LD50: 114.4 mg/kg - Mouse - (EPA OPP 81-1 (Acute Oral Toxicity))

Acute dermal toxicity:
Arsenic acid - LD50: 2000 mg/kg - Rabbit - (EPA OPP 81-2 (Acute Dermal Toxicity))

Acute inhalation toxicity:
Nitric acid - LC50: > 2.65 mg/l (4 h) - Rat - (OECD 403)

Arsenic acid - LC50: 1.04 mg/L - Mouse - (EPA OPP 81-3 (Acute inhalation toxicity))

Irritant and corrosive effects:
Primary irritation to the skin:
Causes skin irritation.

Irritation to eyes:
Causes serious eye irritation.

Irritation to respiratory tract:
not applicable

Respiratory or skin sensitisation
In case of skin contact: not sensitising
After inhalation: not sensitising

STOT-single exposure
not applicable

STOT-repeated exposure
not applicable

CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)
Carcinogenicity
May cause cancer.

Germ cell mutagenicity
No indications of human germ cell mutagenicity exist.

Reproductive toxicity
No indications of human reproductive toxicity exist.

Aspiration hazard
not applicable

Other adverse effects
no data available

Additional information
no data available

11.2 Information on other hazards:

This product does not contain a substance that has endocrine disrupting properties with respect to humans as no components meets the criteria.

SECTION 12: Ecological information

12.1 Ecotoxicity

Fish toxicity:
no data available

Daphnia toxicity:
no data available

Algae toxicity:
no data available

Bacteria toxicity:
no data available

12.2 Persistence and degradability

no data available

12.3 Bioaccumulative potential

Partition coefficient: n-octanol/water: no data available

12.4 Mobility in soil:

no data available

12.5 Results of PBT/vPvB assessment

not applicable

12.6 Endocrine disrupting properties

This product does not contain a substance that has endocrine disrupting properties with respect to the environment.

12.7 Other adverse effects

no data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Appropriate disposal / Product
Dispose according to local legislation. Consult the appropriate local waste disposal expert about waste disposal. Before discharge into sewage plants the product normally needs to be neutralised.

Waste code product: no data available

Appropriate disposal / Package
Dispose according to local legislation. Handle contaminated packages in the same way as the substance itself.

Additional information
no data available

SECTION 14: Transport information

Land transport (ADR/RID)

14.1	UN number or ID number:	3264
14.2	UN proper shipping name:	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID SOLUTION)
14.3	Transport hazard class(es):	8
	Classification code:	C1
	Hazard label(s):	8
14.4	Packing group:	III
14.5	Environmental hazards:	No
14.6	Special precautions for user:	
	Hazard identification number (Kemler No.):	80
	Tunnel restriction code:	E (Passage forbidden through tunnels of category E.)

Sea transport (IMDG)

14.1	UN number or ID number:	3264
14.2	UN proper shipping name:	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID SOLUTION)
14.3	Transport hazard class(es):	8
	Classification code:	
	Hazard label(s):	8
14.4	Packing group:	III
14.5	Environmental hazards:	No
	Marine pollutant:	No
14.6	Special precautions for user:	
	Segregation group:	1
	EmS-No.	F-A S-B
14.7	Maritime transport in bulk according to IMO instruments	
	not relevant	

Air transport (ICAO-TI / IATA-DGR)

14.1	UN number or ID number:	3264
14.2	UN proper shipping name:	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID SOLUTION)
14.3	Transport hazard class(es):	8
	Classification code:	
	Hazard label(s):	8
14.4	Packing group:	III
14.5	Special precautions for user:	

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

National regulations

- Workplace Safety and Health Act
- Workplace Safety and Health (Permissible Exposure Levels of Toxic Substances) Order
- Environmental Protection and Management Act (EPMA) - Second Schedule, Part 1, Control of Hazardous Substances
- Maritime and Port Authority of Singapore (MPA) - Dangerous Goods, Petroleum and Explosives Regulations

SECTION 16: Other information

Abbreviations and acronyms

ACGIH - American Conference of Governmental Industrial Hygiensts
ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road
AGS - Committee on Hazardous Substances (Ausschuss für Gefahrstoffe)
CLP - Regulation on Classification, Labelling and Packaging of Substances and Mixtures
DFG - German Research Foundation (Deutsche Forschungsgemeinschaft)
DNEL - Derived No Effect Level
Gestis - Information system on hazardous substances of the German Social Accident Insurance (Gefahrstoffinformationssystem der Deutschen Gesetzlichen Unfallversicherung)
IATA-DGR - International Air Transport Association-Dangerous Goods Regulations
ICAO-TI - International Civil Aviation Organization-Technical Instructions
IMDG - International Maritime Code for Dangerous Goods
KOSHA - Korea Occupational Safety and Health Agency
LTV - Long Term Value
NIOSH - National Institute for Occupational Safety and Health
OSHA - Occupational Safety & Health Administration
PBT - Persistent, Bioaccumulative and Toxic
PNEC - Predicted No Effect Concentration
RID - Regulation concerning the International Carriage of Dangerous Goods by Rail
STV - Short Term Value
SVHC - Substances of Very High Concern
vPvB - very Persistent, very Bioaccumulative

Key literature references and sources for data

This Safety Data Sheet has been prepared based on information available for public as TOXNET information, European Chemicals Agency (ECHA) substance dossier, papers from international cancer research institutes (IARC Monographs), U.S. National Toxicology Program data, U.S. Agency for Toxic Substances and Disease Control (ATSDR), PubChem websites and SDS from our raw material manufacturers.

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28.04.2023	7.3	28.04.2023

Additional information

Indication of changes	Section 3
	If you need an explanation of the change, contact the supplier (SDS@avantorsciences.com).

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.