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

1.1. Product Identifiers

Product name : Silver nitrate 0.02N Solution
Type of product : Chemical substance
Product grade : Water testing reagents
CAS No : 7761-88-8

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

Identified uses : Reagent for analysis

1.3. Details of the supplier of the safety data sheet

RYZE CHEMIE PRIVATE LIMITED
Gami Industrial Park, Unit.13, Second Floor, C Block,
Plot No.C-39-A, TTC Industrial area, Navi Mumbai,
Thane, Maharashtra-400705
Safety@ryzechemie.com

1.4. Emergency Telephone Number: +91- 9930060404

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Oxidizing solids, Category 2	H272: May intensify fire; oxidizer.
Corrosive to metals, Category 1	H290: May be corrosive to metals.
Skin corrosion, Sub-category 1A	H314: Causes severe skin burns and eye damage.
Serious eye damage, Category 1	H318: Causes serious eye damage.

Reproductive toxicity, Category 1B	H360D: May damage the unborn child.
Short-term (acute) aquatic hazard, Category 1	H400: Very toxic to aquatic life.
Long-term (chronic) aquatic hazard, Category 1	H410: Very toxic to aquatic life with long lasting effects.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :



Signal word : Danger

Hazard statements :

H272	May intensify fire; oxidizer.
H290	May be corrosive to metals.
H314	Causes severe skin burns and eye damage.
H360D	May damage the unborn child.
H410	Very toxic to aquatic life with long lasting effects.

Precautionary statements :

Prevention:

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P260	Do not breathe dust.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.

P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Reduced Labelling (<= 125 ml)

Hazard pictograms :



Signal word	Danger
Hazard Statements	
H314	Causes severe skin burns and eye damage.
H360D	May damage the unborn child.
Precautionary Statements	
P260	Do not breathe dust.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P304 + P340 + P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.1 Substances

Index-No. : 047-001-00-2

EC-No. : 231-853-9

Components

Chemical name	CAS-No. EC-No.	Concentration (% w/w)	M-Factor, SCL, ATE
Silver nitrate	7761-88-8	>= 90 - <= 100	M-Factor (Acute

	231-853-9		aquatic toxicity): 1.000 M-Factor (Chronic aquatic toxicity): 100 specific concentration limit Met. Corr. 1; H290 >= 1 % Ox. Sol. 2; H272 68 %

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice : First aiders need to protect themselves.
Show this safety data sheet to the doctor in attendance.

If inhaled : After inhalation: fresh air. Call in physician.

In case of skin contact : In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower.
Call a physician immediately.

In case of eye contact : After eye contact: rinse out with plenty of water.
Immediately call-in ophthalmologist.
Remove contact lenses.

If swallowed : After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation).
Call a physician immediately.
Do not attempt to neutralize.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing : Use extinguishing measures that are appropriate to

media		local circumstances and the surrounding environment.
Unsuitable extinguishing media	:	For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire fighting	:	Not combustible. Fire may cause evolution of: nitrogen oxides Has a fire-promoting effect due to release of oxygen. Ambient fire may liberate hazardous vapours.
Hazardous combustion products	:	Nitrogen oxides (NOx) Silver/silver oxides

5.3 Advice for firefighters

Special protective equipment for fire-fighters	:	Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.
Further information	:	Suppress (knock down) gases/vapours/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions	:	Advice for non-emergency personnel: Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

For personal protection see section 8.

6.2 Environmental precautions

Environmental precautions	:	Do not let product enter drains.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up	:	Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully. Dispose of properly. Clean up affected area. Avoid generation of dusts.

6.4 Reference to other sections

For disposal considerations see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling	:	Work under hood. Do not inhale substance/mixture.
Advice on protection against fire and explosion	:	Keep away from open flames, hot surfaces and sources of ignition.
Hygiene measures	:	Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	:	No metal containers.
Further information on storage conditions	:	Protected from light. Tightly closed. Keep locked up or in an area accessible only to qualified or authorized persons. Do not store near combustible materials.
Storage class (TRGS 510)	:	5.1B, Oxidizing hazardous materials
Further information on storage stability	:	Recommended storage temperature sees product

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

Occupational Exposure Limits

8.2 Exposure controls

Personal protective equipment

Eye/face protection	:	Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safety goggles

Hand protection

Material	:	Nitrile rubber
Break through time	:	480 min
Glove thickness	:	0,11 mm
Protective index	:	Full contact

Manufacturer	:	KCL 741 Dermatril® L
Material	:	Nitrile rubber
Break through time	:	480 min
Glove thickness	:	0,11 mm
Protective index	:	Splash contact
Manufacturer	:	KCL 741 Dermatril® L
Remarks	:	This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Skin and body protection	:	protective clothing
Respiratory protection	:	required when dusts are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.
Recommended Filter type:	:	Filter type P3

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer.
These measures have to be properly documented.

Environmental exposure controls

Advice	:	Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	:	solid
Form	:	crystals
Color	:	colourless
Odor	:	odourless
Odor Threshold	:	Not applicable

Melting point/ range	:	212 °C
Boiling point/boiling range	:	440 °C Decomposes on heating.
Flammability	:	No data available
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Flash point	:	Not applicable
Autoignition temperature	:	Not applicable
Decomposition temperature	:	No data available
pH	:	No data available
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	No data available
Flow time	:	No data available
Solubility(ies) Water solubility	:	2.150 g/l (20 °C)
Partition coefficient: n-octanol/water	:	Not applicable for inorganic substances
Vapor pressure	:	No data available
Relative density	:	No data available
Density	:	4,350 g/cm3
Bulk density	:	ca. 2.350 kg/m3
Relative vapour density	:	No data available

9.2 Other information

Explosives	:	Not classified as explosive.
Oxidizing properties	:	The substance or mixture is classified as oxidizing with the category 2.
Burning rate	:	No data available
Metal corrosion rate	:	May be corrosive to metals.
Evaporation rate	:	No data available
Molecular weight	:	169,87 g/mol

SECTION 10: Stability and reactivity

10.1 Reactivity

No data available

10.2 Chemical stability

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

10.3 Possibility of hazardous reactions

Hazardous reactions : Risk of explosion with:

Acetaldehyde
Acetylene
Nitriles
Ammonia
ammonium hydroxide
azides
combustible substances
carbides
ethanol
Fluoroacetylene
Hydrazine hydrate
acetylidene
Sodium hydroxide
Nitromethane
Organic Substances
phosphorus
phosphorus hydrogen
sulfur
Titanium
Zinc
charcoal
Activated charcoal
Ammonia

with
ethanol
Ammonia
with
Sodium hydroxide solution
powdered magnesium
with
Water
Risk of ignition or formation of inflammable gases or vapours with:
arsenic
oxidisable substances
Exothermic reaction with:

nonmetals
oxidisable substances
iodides
strong reducing agents
halogen-halogen compounds

10.4 Conditions to avoid

Conditions to avoid : no information available

10.5 Incompatible materials

No data available

10.6 Hazardous decomposition products

In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
Oral: No data available
Inhalation: No data available
Dermal: No data available

Skin corrosion/irritation
Skin - reconstructed human epidermis (RhE)
Result: Causes severe burns. - 3 - 60 min
(OECD Test Guideline 431)

Serious eye damage/eye irritation
Eyes - Rabbit
Result: Causes serious eye damage.
Remarks: (ECHA)
Remarks: Risk of permanent damage due to staining of the cornea.

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
Test Type: Micronucleus test
Test system: Human lymphocytes
Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 487
Result: negative
Test Type: In vitro mammalian cell gene mutation test
Test system: mouse lymphoma cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: Positive results were obtained in some in vitro tests.

Test Type: Micronucleus test
Species: Rat

Application Route: Gavage
Method: OECD Test Guideline 474
Result: Positive results were obtained in some in vivo tests.

Carcinogenicity
No data available

Reproductive toxicity
May damage the unborn child.

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

11.2 Additional Information

Endocrine disrupting properties

Product:

Assessment	The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Repeated dose toxicity - Rat - male and female - Oral - 52 Days - No observed adverse effect level - >= 250 mg/kg

May cause argyria (a slate-gray or bluish discoloration of the skin and deep tissues due to the deposit of insoluble albuminate of silver)., Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer.
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12: Ecological information

12.1 Toxicity

Components:

Silver nitrate:

Toxicity to fish	:	LC50 (Pimephales promelas (fathead minnow)): 0,0012 mg/l End point: mortality Exposure time: 96 h Test Type: semi-static test Analytical monitoring: yes Method: US-EPA
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 0,00022 mg/l End point: mortality Exposure time: 48 h Test Type: semi-static test Analytical monitoring: yes Remarks: (ECHA)
Toxicity to algae/aquatic plants	:	ErC50 (Raphidocelis subcapitata (freshwater green alga)): 0,00252 mg/l Exposure time: 72 h Test Type: static test Analytical monitoring: yes Method: OECD Test Guideline 201 GLP: yes EC10 (Raphidocelis subcapitata (freshwater green alga)): 0,00046 mg/l Exposure time: 72 h Test Type: static test Analytical monitoring: yes Method: OECD Test Guideline 201 GLP: yes
M-Factor (Acute aquatic toxicity)	:	1.000
Toxicity to fish (Chronic toxicity)	:	NOEC: 0,000351 mg/l Exposure time: 34 d Species: Pimephales promelas (fathead minnow) Test Type: flow-through test Analytical monitoring: yes GLP: yes Remarks: (ECHA)
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	EC10: 0,0027 mg/l Exposure time: 21 d Species: Daphnia magna (Water flea) Test Type: semi-static test Analytical monitoring: yes

Remarks: (ECHA)

M-Factor (Chronic aquatic toxicity): 100

12.2 Persistence and degradability

Components:

Silver nitrate:

Biodegradability : Remarks: The methods for determining the biological degradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

Components:

Silver nitrate:

Bioaccumulation : Species: Cyprinus carpio (Carp)
Exposure time: 41 d
Temperature: 20 °C
Bioconcentration factor (BCF): 70

Partition coefficient: n-octanol/water : Remarks: Not applicable for inorganic substances

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Product:

Assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

No data available

12.7 Other adverse effects

Product:

Additional ecological information : Biological effects:

Forms corrosive mixtures with water even if diluted.

Discharge into the environment must be avoided.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

SECTION 14: Transport information

14.1 UN number or ID number

ADR : UN 1493

IMDG : UN 1493

IATA : UN 1493

14.2 UN proper shipping name

ADR : SILVER NITRATE

IMDG : SILVER NITRATE

IATA : Silver nitrate

14.3 Transport hazard class(es)

	Class	Subsidiary risks
ADR	5.1	
IMDG	5.1	
IATA	5.1	

14.4 Packing group

ADR

Packing group	:	II
Classification Code	:	O2
Hazard Identification Number	:	50
Labels	:	5.1
Tunnel restriction code	:	(E)

IMDG

Packing group	:	II
Labels	:	5.1

EmS Code	:	F-A, S-Q

IATA (Cargo)

Packing instruction (cargo aircraft)	:	562
Packing instruction (LQ)	:	Y544
Packing group	:	II
Labels	:	Division 5.1 - Oxidizing substances

IATA_P (Passenger)

Packing instruction (passenger aircraft)	:	558
Packing instruction (LQ)	:	Y544
Packing group	:	II
Labels	:	Division 5.1 - Oxidizing substances

14.5 Environmental hazards

ADR

Environmentally hazardous	:	yes

IMDG

Marine pollutant	:	yes

14.6 Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

14.7 Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

SECTION 15: Regulatory information

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

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII)	:	Not applicable
REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59).	:	Not applicable
Regulation (EU) No 2024/590 on substances that deplete the ozone layer	:	Not applicable
Regulation (EU) 2019/1021 on persistent organic pollutants (recast)	:	Not applicable
REACH - List of substances subject to authorisation (Annex XIV)	:	Not applicable

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.	P8	OXIDIZING LIQUIDS AND SOLIDS
	E1	ENVIRONMENTAL HAZARDS

Other regulations:

Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable.

Take note of Dir 94/33/EC on the protection of young people at work.

15.2 Chemical safety assessment

For this product a chemical safety assessment was not carried out

SECTION 16: Other information

Abbreviation and Acronyms

CAS - Chemical Abstracts Service
TSCA - United States Toxic Substances Control Act Section 8(b)Inventory
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
DSL/NDSL - Canadian Domestic Substances List/Non- Domestic Substances List
PICCS - Philippines Inventory of Chemicals and Chemical Substances
ENCS - Japanese Existing and New Chemical Substances
IECSC - Chinese Inventory of Existing Chemical Substances
AICS - Australian Inventory of Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
NZIoC - New Zealand Inventory of Chemicals
WEL - Workplace Exposure Limit
TWA - Time Weighted Average
ACGIH - American Conference of Governmental Industrial Hygienists
IARC - International Agency for Research on Cancer
DNEL - Derived No Effect Level
PNEC - Predicted No Effect Concentration
RPE - Respiratory Protective Equipment
LD50 - Lethal Dose 50%
LC50 - Lethal Concentration 50%
EC50 - Effective Concentration 50%
NOEC - No Observed Effect Concentration
POW- Partition coefficient Octanol: Water
PBT - Persistent, Bioaccumulative, Toxic
vPvB - very Persistent, very Bioaccumulative
ADR - European Agreement Concerning the International Carriage of Dangerous Goods by Road
ICAO/IATA - International Civil Aviation Organization/International Air Transport Association
IMO/IMDG - International Maritime Organization/International Maritime Dangerous Goods Code
MARPOL - International Convention for the Prevention of Pollution from Ships
OECD - Organization for Economic Co-operation and Development
ATE - Acute Toxicity Estimate
BCF - Bioconcentration factor
VOC - (Volatile Organic Compound)

Disclaimer: 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, use, processing, storage, transportation, disposal and release 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
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End of safety data sheet