

“Mock” Ag Safety Data Sheet

Product: Nano-[Ag]-cide

Version 2.0 / EN of 6 June 2016

Replaces all previous versions

Print date: 6 June 2016

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

1.1 Product identifier

Silver-silica bactericide

EINECS:

CAS: None available

[The material is a hybrid particle with no CAS #. The SDS reflects the silver and silica as separate constituents, as if part of a physical mixture.]

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

Silver-silica bactericide used for site remediation.

See label instructions for allowable application methods

PROC	Identified Uses - Use Description	Site remediation as bactericide
3	Use in closed batch process	X

1.3. Details of the supplier of the safety data sheet

Company name: N/A

Full address: N/A

Telephone number: N/A

E-mail address of competent person responsible for the SDS: N/A

1.4. Emergency telephone number

Emergency telephone number: N/A

Hours of operation: N/A

Information provided will be limited to: N/A

Service is provided in the following language: English

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

2.1.1 According to Regulation (EC) No 1272/2008

2.1.2 According to Council Directive 67/548/EEC

2.2. Label elements

Risk statements

R20: Harmful by inhalation

R21: Harmful in contact with skin

R22: Harmful if swallowed

R36: Irritation to eyes

Safety Statements

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S15: Keep away from heat
S24: Avoid contact with skin
S25: Avoid contact with eyes
S36: Wear suitable clothing
S37: Wear suitable gloves.

2.3. Other hazards

Material does not meet the criteria for PBT or vPvB in accordance with Annex XIII of REACH (Regulation (EC) No 1907/2006).

SECTION 3: Composition/information on ingredients

3.1. Substances

Product is a silver-precipitated silica particle dispersed in water. Assuming it behaves as a mixture, the constituents are:

<i>Composition information – main constituents</i>					
IUPAC name	EC number	CAS number	Mol. Formula	Typical conc. (%w/w)	Conc. Range (%w/w)
Silver		7440-22-4	Cu(OH)2	3	
Silica		7631-86-9	SiO2	27	
Water				70	

SECTION 4: First aid measures

4.1. Description of first aid measures

General notes

Chronic exposure: Absorption of silver compounds by ingestion, inhalation or through broken skin can cause argyria, a permanent bluish-gray discoloration of the skin, conjunctiva, and mucous membranes.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

For medical emergencies involving this product, call toll free 1-800-555-1212. See Label for Additional Precautions and Directions for Use.

Following contact with eyes

Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Avoid flushing particles into uninjured eye. If possible, use isotonic water (0.9% NaCl). Contact a specialist of occupational medicine or an eye specialist.

Following skin contact

May cause skin irritation or ulceration. Take off all contaminated clothing immediately. Wash with soap and large quantities of water. Obtain medical attention if irritation develops.

Following inhalation

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Inhaled mist may cause coughing. Move the person to fresh air. Dust in throat and nasal passages should clear spontaneously. If person is not breathing, call an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a poison control center or doctor for treatment advice.

Following ingestion

Call a poison control center or doctor for treatment advice. Have person sip a glass of water if able to swallow. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person.

4.2. Most important symptoms and effects, both acute and delayed

Eyes: May cause irritation.

Skin: No adverse effects expected. Prolonged contact may cause: Irritation, There are no reports of human skin sensitization

Inhalation: May cause irritation of respiratory tract. Cough.

Environment: Under normal use not hazardous to the environment.

4.3. Indication of any immediate medical attention and special treatment needed

When contacting a physician, take this SDS with you.

SECTION 5: Fire-fighting measures

5.1. Extinguishing media

Moderately flammable and explosive if dried and in form of dust, and exposed to fire. Suitable extinguishing media are water spray, dry chemical, foam, carbon dioxide.

5.2. Special hazards arising from the substance or mixture

Expect the production of silver fumes in fire conditions. Use self-contained breathing apparatus.

5.3. Advice for fire-fighters

Wear self-contained breathing apparatus; wear full protective equipment.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1 For non-emergency personnel

Wear protective equipment as described under Section 8 and follow the advice for safe handling and use given under Section 7.

6.1.2 For emergency responders

Review fire fighting measures and handling (personnel) sections before proceeding with clean-up. Use appropriate personal protective equipment.

6.2. Environmental precautions

Do not wash material down sewage and drainage systems or into bodies of water (e.g. streams). Follow applicable Federal, State and Local laws/regulations.

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6.3. Methods and material for containment and cleaning up

Contain the spilled material. Do not wash the material down drains. Use adsorbents such as cat-litter to collect the suspension.

6.4. Reference to other sections

See sections 8 and 13 for more details.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

7.1.1 Protective measures

Follow the recommendations as given under Section 8.

Measures to prevent fire

Keep away from heat and sources of ignition.

Measures to prevent aerosol and dust generation

Do not sweep. Use dry cleanup methods such as vacuum clean-up or vacuum extraction, which do not cause airborne dispersion.

Measure to protect the environment

No particular measures.

7.1.2 Information on general occupational hygiene

Do not handle or store near food and beverages or smoking materials.
In dusty environment, wear dust mask and protective goggles.
Use protective gloves to avoid skin contact.

7.2. Conditions for safe storage, including any incompatibilities

Do not contaminate water, other pesticides, fertilizer, food or feed in storage. Store in a cool, dry place. Keep out of the reach of children.

7.3. Specific end use(s)

No additional information for the specific end uses (see section 1.2).

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Silver: 0.01 mg/m³ for 8 hr. TWA

Silica: 0.3 mg/m³ TWA respirable

8.2. Exposure controls

8.2.1 Appropriate engineering controls

No special engineering controls are required for normal handling of the slurry product. Provide adequate ventilation

8.2.2 Individual protection measures such as personal protection equipment

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General: Do not eat, drink or smoke when working to avoid contact with skin or mouth. Remove contaminated clothing, footwear, watches, etc. and clean thoroughly before re-using them.

Eye /face protection



Wear approved glasses or safety goggles according to EN 166 when handling dry or wet material to prevent contact with eyes.

Skin protection



Cotton or leather gloves. Full protective coating should be worn during activities with a high exposure potential.

Respiratory protection



NIOSH/MSHA approved full face air purifying respirator with P-100 filters for mist or dust exposures up to 0.5 mg/l as silver.

Thermal hazards

Not applicable.

Protective Measures

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

8.2.3 Environmental exposure controls

Environmental exposure control for the emission of product particles into air has to be in accordance with the available technology and regulations for the emission of general dust particles.

The aquatic effect and risk assessment cover the effect on organisms/ecosystems due to possible pH changes related to hydroxide discharges and the dissolution of silver. The pH of effluent and surface water should not exceed 9. Otherwise it could have an impact on municipal sewage treatment plants (STPs) and industrial waste water treatment plants (WWTPs). For that assessment of the exposure, a stepwise approach is recommended:

Tier 1: Retrieve information on effluent pH on the resulting pH. Should the pH be above 9 and be predominantly attributable to product, then further actions are required to demonstrate safe use.

Tier 2: Retrieve information on receiving water pH after the discharge point. The pH of the receiving water shall not exceed the value of 9.

Tier 3: Measure the pH in the receiving water after the discharge point. If pH is found to be above 9, risk management measures have to be implemented: the effluent has to undergo neutralisation.

This product is toxic to fish. This product is toxic to: Aquatic invertebrates

No special emission control measures are necessary for the exposure to the terrestrial environment.

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SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

- (a) Appearance: Milky-grayish
- (b) Odour: Odourless
- (c) Odour threshold: no odour threshold, odourless
- (d) pH: (T = 20°C in water, water-solid ratio 1:2): 7.5-9.5
- (e) Melting point: > 1 250 °C
- (f) Initial boiling point and boiling range: Not applicable as under normal atmospheric conditions, melting point >1 250°C
- (g) Flash point: Not applicable; aqueous liquid
- (h) Evaporation rate: Same as water
- (i) Flammability (solid, gas): Not applicable; aqueous liquid
- (j) Upper/lower flammability or explosive limits: Not applicable as is not a flammable gas
- (k) Vapour pressure: Not applicable
- (l) Vapour density: Not applicable
- (m) Relative density:
- (n) Solubility(ies) in water (T = 20 °C): dispersible
- (o) Partition coefficient: n-octanol/water: Not applicable as material is an inorganic substance
- (p) Auto-ignition temperature: Not applicable (no pyrophoricity – no organo-metallic, organo-metalloid or organo-phosphine bindings or of their derivatives, and no other pyrophoric constituent in the composition)
- (q) Decomposition temperature: Not applicable as no organic peroxide present; forms silver fume
- (r) Viscosity:
- (s) Explosive properties: Not applicable. Not explosive or pyrotechnic. Not in itself capable of producing gas by chemical reaction at temperature and pressure and at a speed as to cause damage to the surroundings. Not capable of a self-sustaining exothermic chemical reaction.
- (t) Oxidising properties: Not applicable as does not cause or contribute to the combustion of other materials.

9.2. Other information

Not applicable.

SECTION 10: Stability and reactivity

10.1. Reactivity

Stable

10.2. Chemical stability

Material is stable as long as it is properly stored (see Section 7).

10.3. Possibility of hazardous reactions

See incompatibilities and decomposition products.

10.4. Conditions to avoid

Avoid creating dusts.

10.5. Incompatible materials

Acetylene, ammonia strong acids, oxidizing agents and alkyl amines.

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10.6. Hazardous decomposition products

Hazardous thermal decomposition products: silver fumes.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Hazard class	Cat	Effect	Reference
Acute toxicity - dermal	-	Limit test, rabbit, 24 hours contact, 2,000 mg/kg body weight – no lethality. Based on available data, the classification criteria are not met.	
Acute toxicity-inhalation	-	No acute toxicity by inhalation observed. Based on available data, the classification criteria are not met	
Acute toxicity - oral	-	Oral rat LD50 is > 5000 mg/kg	
Skin corrosion/irritation		No skin irritation Absorption of silver compounds by ingestion, inhalation or through broken skin can cause argyria, a permanent bluish-gray discoloration of the skin, conjunctiva, and mucous membranes.	
Serious eye damage/irritation		May cause eye irritation. Absorption of silver compounds by ingestion, inhalation or through broken skin can cause argyria, a permanent bluish-gray discoloration of the skin, conjunctiva, and mucous membranes.	
Skin sensitisation		None known	
Repeated dose		Absorption of silver compounds by ingestion, inhalation or through broken skin can cause argyria, a permanent bluish-gray discoloration of the skin, conjunctiva, and mucous membranes.	
Carcinogenicity		Not classifiable as a human carcinogen.	
Mutagenicity		None known	
Reproductive toxicity		None known	
Teratogenicity		None known	

SECTION 12: Ecological information

12.1. Toxicity

The product may be hazardous to the environment; special attention should be give to aquatic organisms.

Silver constituent:

Freshwater algae, 1-hr EC50 0.4 mg/l

Freshwater algae, 2-hr EC50 0.1 mg/l

Freshwater flea (*D. Magna*), 96-hr LC50 0.1 mg/l

Freshwater Fish Larval (*Pimephales promelas*), 96-hr LC50 0.13 mg/l

Freshwater Fish Embryo (*Pimephales promelas*), 96-hr LC50 11 mg/l

12.2. Persistence and degradability

Not relevant as product is an inorganic material.

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12.3. Bioaccumulative potential

Not relevant as product is an inorganic material.

12.4. Mobility in soil

Not relevant as material is an inorganic material. Product purpose is as proppant.

12.5. Results of PBT and vPvB assessment

Not relevant as material is an inorganic material.

12.6. Other adverse effects

Not relevant.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

RCRA characteristic waste, code D011.
Do not dispose of into sewage systems or surface waters.
CERCLA Reportable quantity: 5,000 pounds as silver

SECTION 14: Transport information

No special precautions are needed apart from those mentioned under Section 8. Not regulated by DOT, ADR, IMDG and ICAO/ATA as Hazardous Material.

14.1. UN number

14.2. UN proper shipping name

14.3. Transport hazard class(es)

14.4. Packing group

14.5. Environmental hazards

See label

14.6. Special precautions for user

See label

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not relevant.

SECTION 15: Regulatory information

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

SARA 311/312 : Acute: Yes, Chronic: Yes, Fire: No, Pressure: No, Reactivity: No

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EPA Reg. No. :

In the United States this product is regulated by the US Environmental Protection Agency (EPA) under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Read and follow all label directions. This product is excluded from listing requirements under EPA/TSCA.

15.2. Chemical Safety Assessment

No chemical safety assessment has been carried out.

SECTION 16: Other information

16.1 Indication of changes

N/A

16.2 Abbreviations and acronyms

CAS	Chemical Abstracts Service
CLP	Classification, labelling and packaging (Regulation (EC) No 1272/2008)
DNEL	Derived no-effect level
EC50	Half maximal effective concentration
ECHA	European Chemicals Agency
EINECS	European INventory of Existing Commercial chemical Substances
FF P	Filtering facepiece against particles (disposable)
FM P	Filtering mask against particles with filter cartridge
H&S	Health and Safety
IATA	International Air Transport Association
LC50	Median lethal dose
OEL	Occupational exposure limit
OELV	Occupational exposure limit value
PBT	Persistent, bio-accumulative and toxic
PNEC	Predicted no-effect concentration
PROC	Process category
REACH	Registration, Evaluation and Authorisation of Chemicals
SDS	Safety Data Sheet
STOT	Specific target organ toxicity
TLV-TWA	Threshold Limit Value-Time-Weighted Average
UVCB	Substances of Unknown or Variable composition, Complex reaction products or Biological materials
VLE-MP	Exposure limit value-weighted average in mg by cubic meter of air
vPvB	Very persistent, very bio-accumulative
w/w	Weight by weight

16.3 Key literature references and sources of data

See nanoEHS website tool.

16.4 Training advice

In addition to health, safety and environmental training programs for their workers, companies must ensure that workers read, understand and apply the requirements of this SDS.

16.5 Disclaimer

The information on this data sheet reflects the currently available knowledge and is reliable provided that the product is used under the prescribed conditions and in accordance with the application specified on the packaging and/or in the technical guidance literature. Any other use of the product,

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including the use of the product in combination with any other product or any other process, is the responsibility of the user.

It is implicit that the user is responsible for determining appropriate safety measures and for applying the legislation covering his/her own activities.

Additional Disclaimer

Nano-[Ag]-cide is a fictitious product. This mock-SDS was prepared for the purposes of a scrimmage held in Arlington, VA on 6-7 June 2016.