micromeritics®

SAFETY DATA SHEET

Ref. Material, Silver Oxide

Date of Preparation: 09/02/2020

SDS #: 004-16836-00MSDS

SECTION 1: IDENTIFICATION

Product Identification: Silver Oxide, Ag2O
CAS Number: 20667-12-3
Other Designations: None
Volumes: None
Recommended Use: For laboratory use only.
Restrictions: For laboratory use only.
Supplier Information:

Micromeritics Instrument Corp.	Contact:	Human Resources
4356 Communications Drive	Phone:	(770) 662-3636
Norcross, GA 30093-2901 USA	Fax:	(770) 662-3696

Manufacturer: Fisher Scientific, 1 Reagent Lane, Fairlawn, NJ 07410; Phone: (201) 796-7100

SECTION 2: HAZARDS IDENTIFICATION

GHS Classification: Category 1 Oxidizing solids, Category 1 Serious eye damage, Category 1 Acute aquatic toxicity, Category 1 Chronic aquatic toxicity
Signal word: Danger
Hazard Statements:
H271: May cause fire or explosion; strong oxidizer.
H318: Causes serious eye damage.
H410: Very toxic to aquatic life with long lasting effects.
Pictograms:

Precautionary Statements:
P210: Keep away from heat.
P220: Keep/Store away from clothing/ combustible materials.
P221: Take any precaution to avoid mixing with combustibles.
P273: Avoid release to the environment.
P280: Wear protective gloves/ protective clothing/ eye protection/ face protection.
P283: Wear fire/ flame resistant/ retardant clothing.

P305 + P351 + P338 + P310: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
P306 + P360: IF ON CLOTHING: rinse immediately contaminated clothing and skin with plenty of water before removing clothes.
P370 + P378: In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
P371 + P380 + P375: In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.
P391: Collect spillage.
P501: Dispose of contents/ container to an approved waste disposal plant.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient Name	CAS Number	% wt or % vol.
Silver Oxide EINECS # 243-957-1	20667-12-3	100.0

Trace Impurities:

SECTION 4: FIRST-AID MEASURES

Inhalation: Get medical aid immediately. Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. ***Note to Physician:*** *Treat symptomatically and supportively*.
Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids and consult a physician immediately. DO NOT allow victim to rub or keep eyes closed.
Skin Contact: Get medical aid immediately. Immediately flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes.
Ingestion: Wash out mouth with water provided victim is conscious. Never give anything by mouth to an unconscious person. Contact a physician immediately.
Note to Physicians: Not Applicable
Special Precautions/Procedures: Not Applicable

SECTION 5: FIRE-FIGHTING MEASURES

Flammability Classification: Not Applicable
Extinguishing Media: For small fires, use dry chemical, carbon dioxide, water spray, or alcohol-resistant foam
Unusual Fire or Explosion Hazards: Strong oxidizer. Contact with combustible materials may cause a fire.
Hazardous Combustion Products: Silver/silver oxides
Fire-Fighting Instructions: Not Applicable

Fire-Fighting Equipment: Wear appropriate protective clothing to prevent contact with skin and eyes. Wear a self-contained breathing apparatus (SCBA) to prevent contact with thermal decomposition products.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up: Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wetbrushing and place in container for disposal according to local regulations (see section 13). Keep in suitable, closed containers for disposal.

Reference to other sections: For disposal see section 13.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling: Do not breathe vapor. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. Keep away from sources of ignition – No smoking.
For precautions see section 2.

Conditions for safe storage, including any incompatibilities: Keep in a tightly sealed container away from combustible materials, heat, spark, and open flames.

Work/Hygienic Practices: Use good personal hygiene. Wash thoroughly with soap and water after handling. Light Sensitive.

Other Precautions: 0.01 ppm high efficiency particular respirator/supplied air respirator/self-contained breathing apparatus; 0.2 ppm same as above with full face piece; 1 ppm powdered air purifying respirator with high efficiency filter/type C supplied air respirator operated in pressure demand mode. Store in a sealed container, plastic or plastic liner, in a cool, well ventilated, dry area away from oxidizers.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

	OSHA PEL		ACGIH TLV		NIOSH REL		NIOSH
Ingredient	**TWA**	**STEL**	**TWA**	**STEL**	**TWA**	**STEL**	**IDLH**
Silver Oxide	0.01 mg/m^3 (listed under "no name")	none estab.	none estab.	none estab.	as Ag: 0.01 mg/m3 (listed under "no name")	none estab.	none estab.

Exposure controls

Appropriate engineering controls: Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Ventilation:

Local Exhaust: Required in handling area

Mechanical: Desirable to insure concentration of material below TLV/TWA levels

Other: Closed Ventilation system (Laboratory Fume Hood)

Personal protective equipment

Eye/face protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min

Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Splash contact

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Flash Point: Not Applicable
Flash Point Method: Not Applicable
Burning Rate: Not Applicable
Autoignition Temperature: Not Applicable
LEL: Not Applicable
UEL: Not Applicable

Physical State: Solid
Appearance: Brownish, black heavy, powder
Odor: None
Odor Threshold: Not Applicable
Vapor Pressure: Not Applicable
Vapor Density (Air=1): Not Applicable
Formula Weight: Not Applicable

Water Solubility: 0.0016 g/l at 20 °C (68 °F) - slightly soluble
Other Solubilities: Not Applicable
Boiling Point: Not Applicable
Freezing/Melting Point: 3922 °F
Viscosity: Not Applicable
Refractive Index: Not Applicable
Surface Tension: Not Applicable

Density: Not Applicable

Specific Gravity (H2O=1, at 4 °C): 7.14

pH: Not Applicable

% Volatile: Not Applicable

Evaporation Rate: NA -This product will decompose at 230 degree C.

Molecular Weight/Formula: 231.7358; Ag2O

SECTION 10: STABILITY AND REACTIVITY

Stability: Stable; absorbs carbon dioxide from the air

Polymerization: Not Applicable

Chemical Incompatibilities: Reacts dangerously with ammonia. Grinding silver oxide with metal sulfides, selenium, sulfur, or phosphorous can cause ignition. Hydrogen sulfide may ignite when in contact with silver oxide. Incompatible with hydrazines, amines, sulfur, metal sulfides, and carbon monoxide.

Conditions to Avoid: Incompatible materials, combustible materials, organic materials, reducing agents, elevated temperature, and exposure to light.

Hazardous Decomposition Products: Oxygen, silver fumes

Hazardous Symbols: X I F

SECTION 11: TOXICOLOGICAL INFORMATION

Acute toxicity

LD50 Oral - rat - male and female - 3,804 mg/kg
(OECD Test Guideline 401)
Inhalation: no data available
Dermal: no data available

Skin corrosion/irritation

Skin - rabbit
Result: No skin irritation - 4 h
(OECD Test Guideline 404)

Serious eye damage/eye irritation

Eyes - rabbit
Result: Risk of serious damage to eyes.
(OECD Test Guideline 405)

Respiratory or skin sensitization: no data available

Germ cell mutagenicity: no data available

Carcinogenicity:

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity: no data available

Specific target organ toxicity - single exposure: no data available
Specific target organ toxicity - repeated exposure: no data available
Aspiration hazard: no data available
Additional Information: RTECS: VW4900000

May cause argyria (a slate-gray or bluish discoloration of the skin and deep tissues due to the deposit of insoluble albuminate of silver), To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity: no data available
Persistence and degradability: no data available
Bio-accumulative potential: no data available
Mobility in soil: no data available
Results of PBT and vPvB assessment: PBT/vPvB assessment not available as chemical safety assessment not required/not conducted
Other adverse effects: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Very toxic to aquatic life with long lasting effects.

SECTION 13: DISPOSAL CONSIDERATIONS

Product: Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.
Contaminated packaging: Dispose of as unused product.

SECTION 14: TRANSPORT INFORMATION

DOT Transportation Data (49 CFR 172.101):

Shipping Name: Not regulated
Shipping Symbols: Not Applicable
Hazard Class: 5.1
ID No.: 1479
Packing Group: Not Applicable
Label: Oxidizer
Special Provisions (172.102):
Not Applicable

Packaging Authorizations
a) Exceptions: Not Applicable
b) Non-bulk Packaging: Not Applicable
c) Bulk Packaging: Not Applicable

Quantity Limitations
a) Passenger, Aircraft, or Railcar: Not Applicable
b) Cargo Aircraft Only: Not Applicable

Vessel Stowage Requirements
a) Vessel Stowage: Not Applicable
b) Other: Not Applicable

SECTION 15: REGULATORY INFORMATION

SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:

Disilver oxide CAS-No. 20667-12-3 Revision Date: 2007-07-01

SARA 311/312 Hazards
Reactivity Hazard, Acute Health Hazard

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components
Disilver oxide CAS-No.20667-12-3 Revision Date:2007-07-01

New Jersey Right To Know Components
Disilver oxide CAS-No.20667-12-3 Revision Date: 2007-07-01

California Prop. 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

SECTION 16: OTHER INFORMATION

Prepared By: Zuniga, A.
Revision Notes:
Rev. A – Revision (04/30/03)
Rev. B – Revision (08/02/04)
Rev. C – Update to new standard (10/29/14)
Rev. D – Update to EU REACH requirements (09/02/20)
Abbreviations Key:

CAS: Chemical Abstracts Service
GHS: Globally Harmonized System
OSHA: Occupational Safety and Health Act PEL: Permissible Exposure Limit
ACGIH: American Conference of Government Industrial Hygienists
TLV: Threshold Limit Values
NIOSH: National Institute for Occupational Safety and Health
REL: Recommended Exposure Limit TWA: Time Weighted Average STEL: Short-Term Exposure Limit
IDLH: Immediately Dangerous to Life or Health

Literature References:

D.F. Goldsmith Silver Oxide MSDS
SIGMA-ALDRICH Silver Oxide MSDS

Additional Hazard Rating Systems: Not Applicable