

**Safety data sheet**  
**According to Regulation n. 1907/2006 and Regulation 878/2020**  
**AG OXIDE 931 %**



Revision XV – 20.06.2024

Replaces revision. XIV – 31.07.2023

**1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING**

**1.1 Product identifier**

Chemical name	AG OXIDE
Registration number	Exempt under Article 6(1)
C.A.S.	20667-12-3
CE Number	243-957-1
Molecular weight	231,74 g/mol

Brute formula	Ag <sub>2</sub> O
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Product code	61
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**1.2 Relevant identified uses of the substance or mixture and uses advised against**

Intended uses	Industrial use. Additive for electroplating.
Advised against uses	None in particular

**1.3 Details of the supplier of the safety data sheet**

Name	FAGGI ENRICO S.P.A.
Address	Via Majorana, 101/103 50019 Sesto Fiorentino FI
Telephone number	055311861
Fax number	055311791
Competent person responsible for the safety data sheet	lorenzo.magaldi@faggi.it

**1.4 Emergency telephone number** 111 - Medical helpline operating in England, in Scotland (NHS 24) and in Wales (NHS Direct Wales)

**2. HAZARDS IDENTIFICATION**

**2.1 Classification of the substance or mixture according to Regulation (EC) n. 1272/2008**

Hazard classes	Category codes	Hazard statements
Oxidizing solid	1	H271
Eye Damage	1	H318
Reproductive toxicity	1B	H360D
Aquatic Acute	1	H400
Aquatic Chronic	1	H410

**2.2 Label elements**

**Pictograms**



**Signal words**

**DANGER**

**Hazard statements**

H271	May cause fire or explosion; strong oxidiser.
H318	Causes serious eye damage.
H360D	May damage the unborn child
H410	Very toxic to aquatic life with long lasting effects.

**Precautionary statements**

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P273	Avoid release to the environment

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<b>2.3 Other hazards</b>	P305+P351+P338  P308+P313  P371+P380+P375  P391	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.  IF exposed or concerned: Get medical advice/attention.  In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.  Collect spillage.
	It does NOT contain PBT / vPvB substances according to Regulation (EC) 1907/2006, annex XIII. It does NOT contain substances that interfere with the endocrine system in accordance with Regulation (EC) 1907/2006 art.59 paragraph 1 and in accordance with the criteria established in Regulation (EU) 2017/2100 and Regulation (EU) 2018/605.	

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

**3.1 Substance SILVER OXIDE**

CAS Number	20667-12-3
CE Number	243-957-1
INDEX number	Not available
ATE	Not applicable
M factor acute toxicity	100
M factor chronic toxicity	10

**4. FIRST AID MEASURES**

**4.1 Description of first aid measures**

Inhalation	Take off all contaminated clothing. Inhalation: Move to fresh air. Treat symptomatically. If breathing is difficult, give oxygen. If no breathing, give artificial respiration. Get medical attention if symptoms occur.
Ingestion	Do NOT induce vomiting. Give victim a glass of water. Get medical attention immediately. Never give anything by mouth to an unconscious person.
Skin contact	Immediately flush with plenty of water for at least 15 minutes and wash using soap. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash contaminated clothing before reuse. Destroy contaminated shoes
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Continue rinsing process with eye rinsing solution. Get medical aid immediately (caustic burn of the eyes). Do NOT allow victim to rub eyes or keep eyes closed. Initiate further treatment with ophthalmic personnel.

**Recommendation:**

- **Need to see a doctor immediately** **YES**
- **Possibility of delayed effects following exposure** **YES**

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- **Move the exposed individual from the place of exposure to the open air** YES
- **Remove the clothing and shoes of the exposed individual** YES
- **How to handle contaminated clothing** With gloves
- **For those providing first aid, wear PPE** YES

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

Destruction of the skin tissue, i.e. a visible necrosis of the epidermis and part of the dermis (reactions after exposure between three minutes and an hour and observations up to 14 days).

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

Consult a doctor immediately.

**5. FIREFIGHTING MEASURES**

**5.1 Extinguishing media**

Suitable extinguishing media CO<sub>2</sub>, powder or water spray extinguishers.

Non suitable extinguishing media None

**5.2 Special hazards arising from the substance or mixture**

Although the substance or mixture is not combustible, it can - generally by releasing oxygen - cause or favor the combustion of other materials.

**5.3 Advice for firefighters**

Normal fire-fighting clothing, such as self-contained open-circuit compressed air breathing apparatus (EN137), flame retardant suit (EN469), flame retardant gloves (EN659) and firefighter boots (HOA29 or A30)

Protective measures to be taken:

Remove the containers from the fire area, if this is possible without risk, or cool them, since if the substance is exposed to thermal radiation or if it is directly involved it can give rise to toxic fumes and explosions.

Damaged containers should only be handled by authorized skilled personnel.

Proceed to extinguish the fire at a safe distance from the containers using hoses or automatic fire extinguishing systems with nozzles positioned above the containers

**6. ACCIDENTAL RELEASE MEASURES**

**6.1 Personal precautions, protective equipment, and emergency procedures**

**6.1.1. For non-emergency personnel**

Evacuate the contaminated area.

**6.1.2. For emergency responders**

Wear protective equipment (anti-acid protective gloves and clothing and eye protection).

Provide adequate ventilation of the premises.

Whenever possible, operate above wind.

Avoid coming into contact with the substance or handling the containers without adequate protection.

Isolate the area until the substance is completely dispersed.

**6.2 Environmental precautions**

Evacuate the dangerous area and minimize the affected area by containing the leak. Collect the material and store it in a suitable container pending disposal. Do not allow the spill to reach sewers or natural water courses and if it was not possible to immediately notify the competent authorities.

**6.3 Methods and material for containment and cleaning up**

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**6.3.1. Advice to contain a spill**

Limit the spreading with sand, bentonite or similar. Do not use sawdust or other flammable materials.

**6.3.2. Advice to clean-up a spill**

Wash the area with plenty of water.

**6.3.3 Any other information**

None

**6.4 Reference to other sections**

None

**7. HANDLING AND STORAGE**

**7.1. Precautions for safe handling**

**7.1.1. *Raccomentations to manipulate the substance or the mixture in a safe manner, such as containment measures and prevention of fire and aereosol and powders formation***

Use substance only with adequate ventilation and aspiration and with emergency eye wash nearby.

**7.1.2. *General recommendation on work hygiene***

Do not eat, drink, or smoke in work areas; wash hands thoroughly after use and remove contaminated clothing and protective equipment before entering areas where you eat.

**7.2. Conditions for safe storage, including any incompatibilities**

**7.2.1. *Risk management associated with explosive atmospheres, corrosive conditions, flammability hazards, incompatible substances or mixtures, evaporative conditions, potential ignition sources***

Keep in sealed and labeled containers, separately or only with other oxidizing substances and away from sources of heat and ignition.

**7.2.2. *Control of weather conditions, ambient pressure, temperature, sunlight, humidity, and vibration***

Store at temperatures below 15 ° C and away from sunlight.

**7.2.3. *Conditions for keeping substances / mixtures intact***

Keep in a cool and dry place

**7.2.4. *Advice regarding the ventilation, specific design for storage rooms or vessels, quantity limits under storage conditions, packaging compatibilities***

Storage rooms must be ventilated and closed.

**7.3. Specific end use(s)**

Industrial use

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**8.1. Control parameters**

ECLTV TWA 0,01 mg/m<sup>3</sup>

OEL (IT) TWA 0,01 mg/m<sup>3</sup>

**DNEL**

The DNELs are expressed in equivalent of silver [Ag]

**Workers**

Systemic effects for long-term exposure – inhalation: 0.6 mg/m<sup>3</sup>

Systemic effects for short-term exposure – inhalation: no hazard identified

Local effects for long-term exposure – inhalation: no hazard identified

Local effects for short-term exposure – inhalation: no hazard identified

Systemic effects for long-term exposure – dermal: 0.22 mg/kg body weight per day

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Systemic effects for short-term exposure – dermal: no hazard identified

Local effects for long-term exposure – dermal: no hazard identified

Local effects for short-term exposure – dermal: no hazard identified

Eye hazards: no hazard identified

**General population**

Systemic effects for long-term exposure – inhalation: 0.15 mg/m<sup>3</sup>

Systemic effects for short-term exposure – inhalation: no hazard identified

Local effects for long-term exposure – inhalation: no hazard identified

Local effects for short-term exposure – inhalation: no hazard identified

Systemic effects for long-term exposure – dermal: 0.11 mg/kg body weight per day

Systemic effects for short-term exposure – dermal: no hazard identified

Local effects for long-term exposure – dermal: no hazard identified

Local effects for short-term exposure – dermal: no hazard identified

Systemic effects for long-term exposure – oral: 0.11 mg/kg body weight per day

Systemic effects for short-term exposure – oral: no hazard identified

Eye hazards: no hazard identified

**PNEC**

Freshwater: 0.046 µg/L

Marine water: 0.86 µg/L

Sewer treatment plant: 0.025 mg/L

Sediment (freshwater): 438.13 mg/kg sediment dry weight

Sediment (marine water): 438.13 mg/kg sediment dry weight

Soil: 1.05 mg/kg soil dry weight

**8.2. Exposure controls**

**8.2.1. *Appropriate engineering controls***

Periodically carry out personal environmental sampling and clinical examinations.

**8.2.2. *Individual protection measures, such as personal protective equipment***

**Eye/face protection** Protective equipment for the eyes compliant with Directive 89/686 / EEC and standard EN166: 2001

**Skin protection (hands)** Chemical gloves according to EN 420 EN 374  
Glove material:  
Natural latex

Material thickness: 0.5 mm  
Penetration time: ≥ 60 min DIN EN374 method

**Skin protection (body)** Protective and antacid clothing compliant with UNI EN 13034: 2006 type 6 standards

**Respiratory protection** Mask with B, P2 or ABEK P3 filters or self-contained breathing apparatus

**Thermal hazards** Protective clothing compliant with UNI EN ISO 11612: 2009 A1-B1-C1-E1

**8.2.3. *Environmental exposure controls***

Maintain suction in all environments where silver nitrate is used, using localized collection and ambient air exchange systems. Convey the aspirated volumes to an abatement system and then into the atmosphere. Do not use air recirculation suction systems. Avoid any spill into the environment.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

**9.1 Information on basic physical and chemical properties**

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Physical state	Solid powder
Colour	dark brown
Odour	Odorless
Melting point/freezing point	The substance does not melt but decomposes
Boiling point or initial boiling point and boiling range	Not applicable
Flammability	Not inflammable
Lower and upper explosion limit	Not explosive
Flash point	Not inflammable
Auto-ignition temperature	Not inflammable
Decomposition temperature	230 - 300 ° C
pH	Not applicable
Kinematic viscosity	Not applicable
Solubility	1.6 mg/l at 20 °C
Partition coefficient n-octanol/water (log value)	Insoluble in n-octanol
Vapour pressure	Not applicable
Density and/or relative density	7.2 g / cm <sup>3</sup>
Relative vapour density	Not applicable
Particle characteristics	Particle size D <sub>10</sub> : 2.2 µm Particle size D <sub>50</sub> : 3.9 µm Particle size D <sub>90</sub> : 6.8 µm

**9.2. Other information**

None.

**10. STABILITY AND REACTIVITY**

**10.1 Reactivity**

The product has oxidizing characteristics. It can decompose slowly when exposed to sunlight with the formation of metallic Ag.

**10.2 Chemical stability**

The product is stable

**10.3 Possibility of hazardous reactions**

Risk of explosion with aluminum in the form of dust, ammonia, ethyl alcohol, hydrazines, sodium, organic nitro compounds, carbon monoxide

Risk of ignition or formation of flammable gases or vapors with:

sulfur, hydrogen sulphide, selenium, sulphides, phosphorus, combustible substances.

Exothermic reaction with magnesium.

**10.4 Conditions to avoid**

Heating

**10.5 Incompatible materials**

See point 10.3

**10.6 Hazardous decomposition products**

Oxygen, silver fumes

**11. TOXICOLOGICAL INFORMATION**

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

**Acute toxicity**

LD50 (oral) 3804 mg/kg bw

**Skin corrosion/irritation**

Based on available data, the classification criteria are not met

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<b>Serious eye damage/irritation</b>	Corrosive to the eyes
<b>Respiratory or skin sensitization</b>	Based on available data, the classification criteria are not met
<b>Germ cell mutagenicity</b>	Based on available data, the classification criteria are not met
<b>Carcinogenicity</b>	Based on available data, the classification criteria are not met
<b>Reproductive toxicity</b>	Based on the developmental neurotoxicity effects observed, silver acetate and, by read-across other silver compounds are self-classified as Reproductive toxicant 1B (H360D)
<b>(STOT) single exposure</b>	Based on available data, the classification criteria are not met
<b>(STOT) repeated exposure</b>	Based on available data, the classification criteria are not met

**11.2 Information on other hazards**

The main ailment due to poisoning from silver and its salts is called argyria: it usually appears following the intake of silver for long periods (months) and appears as a skin alteration that permanently colors the skin blue, usually not has other associated disorders and is therefore a substantially aesthetic problem.

**12. ECOLOGICAL INFORMATION**

**12.1 Toxicity**

**PNEC**

Freshwater: 0.046 µg/L  
 Marine water: 0.86 µg/L  
 Sewer treatment plant: 0.025 mg/L  
 Sediment (freshwater): 438.13 mg/kg sediment dry weight  
 Sediment (marine water): 438.13 mg/kg sediment dry weight  
 Soil: 1.05 mg/kg soil dry weight

LC50 96 h (fish): 1.2 µg/L  
 217 day early-life stage EC10 (mortality) of AgNO<sub>3</sub> to Salmo trutta was determined to be 0.23 µg/L dissolved Ag.

**12.2 Persistence and degradability**

Not degradable

**12.3 Bioaccumulative potential**

log K<sub>d</sub> soil 3.60

BCF = 70

**12.4 Mobility in soil**

Studies scientifically unjustified

**12.5 Results of PBT and vPvB assessment**

Not applicable

**12.6 Endocrine disrupting properties**

No known effects

**12.7 Other adverse effects**

No know effects

**13. DISPOSAL CONSIDERATIONS**

**13.1. Waste treatment methods**

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Either the mixture or packages must be sent to approved facilities for the disposal of industrial wastes.

**14. TRANSPORT INFORMATION**

<b>14.1</b>	<b>UN number or ID number</b>	UN 1479
<b>14.2</b>	<b>UN proper shipping name</b>	Oxidising solid, n.o.s. (silver oxide),I,(E)
<b>14.3</b>	<b>Transport hazard class(es)</b>	
	ADR/RID/IMDG/ICAO-IATA	5.1
	ADR/RID/IMDG/ICAO-IATA	5.1
	ADR: Tunnel restriction code	E
	IMDG - EmS :	F-A S-Q
<b>14.4</b>	<b>Packing group</b>	I
<b>14.5</b>	<b>Environmental hazards</b>	
	<b>ADR/RID/ICAO-IATA:</b>	yes
	<b>IMDG: Marine pollutant:</b>	Yes
<b>14.6</b>	<b>Special precautions for user</b>	Transport must be carried out by vehicles authorized for the transport of dangerous goods according to the provisions of the current edition of the A.D.R. Agreement. and the applicable national provisions. Transport must be carried out in the original packaging and, in any case, in packaging which is made of materials which cannot be attacked by the contents, and which are not likely to generate dangerous reactions. Those responsible for loading and unloading dangerous goods must have received appropriate training on the risks presented by the preparation and on any procedures to be adopted in the event of emergency situations.
<b>14.7</b>	<b>Maritime transport in bulk according to IMO instruments</b>	No bulk transport is foreseen

**15. REGULATORY INFORMATION**

<b>15.1</b>	<b>Safety, health and environmental regulations/legislation specific for the substance or mixture</b>	<b>Applicability</b>
	<i>Reg. (CE) 1907/2006/CE Reach</i>	YES
	<i>Reg. (CE) 1272/2008 CLP and subsequent amendements</i>	YES
	<i>Reg. (CE) 2037/2000 "Substances that deplete the ozone layer"</i>	NO
	<i>Reg. (CE) 850/2004 "Persistent organic pollutants"</i>	NO
	<i>Reg. (CE) 689/2008 "Export and import of hazardous chemicals"</i>	NO
	<i>Substance listed in Annex I of Dir. 2012/18/EU cd Seveso</i>	YES
	<i>Directive 81/2008 Consolidated Act on protection of health and work safety</i>	YES
	<i>Directive 2014/103/UE "Adr"</i>	YES



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<b>Reg. (CE) 1907/2006/CE Reach art. 59 – Candidate List of Substances of Very High Concern (SVHC)</b>	NO
<b>Reg. (CE) 1907/2006/CE Reach - Annex XIV – Authorisation List</b>	NO
<b>Reg. (CE) 1907/2006/CE Reach - Annex XVII – Restriction List</b>	Limited use
<a href="https://echa.europa.eu/it/substances-restricted-under-reach">https://echa.europa.eu/it/substances-restricted-under-reach</a>	Item 30 - 75 (check link)

**15.2 Chemical safety assessment**

A chemical safety assessment was not carried out.

**16. OTHER INFORMATION**

**Changes compared to the previous edition**

Amendment to section 1-4-8-9-10-11-12-16

**Acronim and abbreviation legend**

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

GHS: Globally Harmonized System of Classification and Labeling of Substances

EINECS: European Inventory of Chemical Substances

CAS: Chemical Abstract Service

STA: Acute Toxicity Estimate

PBT: Persistent, Bioaccumulative and Toxic.

vPvB: (very persistent and very bioaccumulative). Very persistent and very bioaccumulative

LD: lethal dose

PNEC: predicted no effect concentration

DNEL: derived no effect level

TLV (ceiling value): threshold limit value

STEL: short-term exposure limit

EU-OEL: European occupational exposure limit

TWA: time-weighted average

EC: effective concentration

NOAEL: no observed adverse effect level

LC: lethal concentration

NOEC: no observed effect concentration

LOEC: lowest observed effect concentration

Bw: body weight

Koc: organic carbon-water partition coefficient

Kd: equilibrium partition coefficients

**Main references and data sources**

ECHA's data bank on registered substances and soon to be registered substances:

<http://echa.europa.eu/web/guest/information-on-chemicals/registered-substances>

**Adequate training for workers to guarantee the protection of human health and the environment**

Training on the chemical risk ex Directive 81/08 Title IX dangerous substances

Training on PPE