Product Safety Summary Sheet

DuPont™ Silver

Preamble

The product Silver referred to in this safety summary is a white, lustrous metal. It is mined in either its naturally occurring pure form, as an alloy with gold or other metals, or in minerals such as argentite. The majority of silver metal is produced as a byproduct of copper, gold, lead, and zinc refining. However, silver metal can also be synthesized as a powder by chemical reaction.
The main end use of silver metal is jewelry, although it is used as a starting material in the synthesis of a variety of different inorganic silver compounds, which have a multitude of end uses. The scope of this safety summary is limited to the health and environmental effects of silver metal.

Chemical Identification, Product Identification or Common Name:

CAS number: 7440-22-4
CAS name: Silver
EC Number: 231-131-3
IUPAC name: silver (1+)

Product Uses and Applications:

This chemical or product is generally used in the following manner:

- As a catalyst
- As a conductor to fabricate electronic circuitry
- In the production of batteries
- In photographic films
- As a precious metal (e.g. coins, bullion)
- In jewelry and eating utensils
- As a component in manufacture of basic metals, including alloys.
- In optical devices and mirrors
- As a component in dental amalgams
- As an anti-microbial agent

Physical Properties of the Chemical or Product:

Silver can be either bulk/massive or powder form, grey in color and odorless (prior to coating). For purposes of classification, the powder form is defined as a particle size < 1mm dia. Extreme heat is needed to melt silver – it has a melting point of 961.93 °C. Boiling silver is unlikely as its boiling point is 2187 °C.

Exposure Potential:

Workplace exposure:
Generally, silver production is done in closed processes, making the likelihood of exposure of workers insignificant. There is a potential for silver powder dust to become airborne and expose workers during open stages of powder production.

Workers should follow the recommended safety measures contained within the (Material) Safety Data Sheet ((M)SDS) and on any product packaging. Employees should be trained in the appropriate work processes and safety equipment to limit exposure to chemical substances. Occupational use of this substance is considered to be safe provided the recommended safety measures given in the (M)SDS are followed.

Consumer exposure:
Silver is present in a variety of products, creating opportunities for exposure to consumers. Silver can exist in jewelry, eating utensils (silverware), currency coins, mirrors, optic devices and dental applications and in some nasal and throat sprays.

Environmental exposure:
Source material for the production of silver includes different ores as well as recycled material. Minimizing the waste of silver is accomplished by efficient processing and recycling wastes. As a precious metal, an industry exists for the recovery of metals leading to a reduction in environmental exposure, and to creation of silver feedstock.

Health Information

Note: The information contained in this section may be useful to someone handling the pure undiluted substance such as a manufacturer or transporter. Consumers are not likely to come in contact with the pure substance. For more information on health hazards and recommended protective equipment, please refer to the (M)SDS.

Exposures may affect human health as follows:

Effect Assessment	**Result**
Acute Toxicity	Oral: Not classified as per GHS
Irritation	Skin: Repeated exposure (Powder) may cause slight irritation Eye: not an irritant
Sensitization	Not a Sensitizer.
Mutagenicity	Not Mutagenic.
Carcinogenicity	Not Carcinogenic
Toxicity after repeated exposure	Skin: repeated or prolonged exposure may cause allergic reactions with susceptible persons, and blue-gray discoloration of skin. Other adverse effects: blue-gray discoloration of mucous membranes and conjunctiva, cornea or lens (Argyria) and repeated oral exposure may cause altered blood chemistry.
Toxicity for reproduction	Not a developmental toxin.

Environmental Information

Note: The information in this chapter is intended to provide brief and general information of this substance's environmental impact. The results in the table below refer to testing performed with the non-formulated, undiluted substance. The data does not replace the data given in the (M)SDS. For more information and recommended protective measures, please refer to the (M)SDS.

Effect Assessment	**Result**
Aquatic Toxicity	(Bulk/massive) Aquatic toxicity is unlikely due to low solubility. (Powder) Acute & Chronic toxicity to aquatic organisms.
Biodegradability Persistence	Inorganic metals will not biodegrade. Silver is in a form which is not bioavailable. Ions introduced into aquatic environments are subject to removal/immobilization processes.
Bioaccumulation potential	Bioaccumulation potential is low (Bioconcentration factor) BCF = 70

Risk Management

Workplace Management:
Risk management measures for industrial site use include containment through engineering controls and the use of personal protective equipment (PPE) as appropriate. Always refer to the (Material) Safety Data Sheet ((M)SDS) for guidance on the appropriate personal protective equipment to be used and on the safe handling of this material.

Consumer Risk Management:
Consumers may have difficulty reducing the opportunities for exposure to silver as its presence covers many areas of daily life.

Regulatory Information:
Always refer to the (Material) Safety Data Sheet ((M)SDS) for guidance on regulatory restrictions that may govern the manufacture, sale, transportation, use and/or disposal of this chemical or product. Regulations may vary by region, country, state, county, city, or local government.

First Aid Information:
For all First Aid or Emergency information, consult the (Material) Safety Data Sheet ((M)SDS).

Information Sources:
Data is compiled from a variety of sources, including publicly available documents, internal data and other sources such as, but not limited to, Chemical Safety Reports and (Material) Safety Data Sheets ((M)SDS) and the REACH registration dossier.

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