

SAFETY DATA SHEET

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II (including amendments) - United Kingdom (UK)

SILVER-FLO™ 55 Massive Solid

Version : 1.02
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SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1 Product identifier**

Product identifier : SILVER-FLO™ 55 Massive Solid
Product type : Massive metal.

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

Specific uses : Brazing. Filler.

1.3 Details of the supplier of the safety data sheet

Supplier : Johnson Matthey Plc,
Gate 11, Orchard Road,
Royston,
Herts SG8 5HE
United Kingdom
+44 (0) 1763 253000

e-mail address of person responsible for this SDS : mj@matthey.com

1.4 Emergency telephone number

Telephone number : +44 (0)1763 253000
Hours of operation : 24 hours

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition : Mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

The product is not classified as hazardous according to Regulation (EC) 1272/2008 as amended. See Section 11 for more detailed information on health effects and symptoms.

2.2 Label elements

Signal word : No signal word.

Hazard statements : No known significant effects or critical hazards.

Precautionary statements

Prevention : Not applicable.

Response : Not applicable.

Storage : Not applicable.

Disposal : Not applicable.

Supplemental label elements : Safety data sheet available on request.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles : Not applicable.

Special packaging requirements

Containers to be fitted with child-resistant fastenings : Not applicable.

Tactile warning of danger : Not applicable.

2.3 Other hazards

Product meets the criteria for PBT or vPvB according to Regulation (EC) No. 1907/2006, Annex XIII : This mixture does not contain any substances that are assessed to be a PBT or a vPvB.

Other hazards which do not result in classification : Absorption over a long period may cause "Argyria", a blue/grey discolouration of various tissues. Industrial argyria may be local, involving the formation of blue/grey particles in the skin and the conjunctivae, or generalised, which appears early on the face, spreading to the hands. This is only normally manifest after many years of gross over-exposure.

SECTION 3: Composition/information on ingredients**3.2 Mixtures** : Mixture

Product/ingredient name	Identifiers	%	Regulation (EC) No. 1272/2008 [CLP]	Type
silver	REACH #: 01-2119555669-21 EC: 231-131-3 CAS: 7440-22-4	≥50 - ≤75	Not classified.	[2]
copper	REACH #: 01-2119480154-42 EC: 231-159-6 CAS: 7440-50-8	≥10 - ≤25	Not classified.	[2]

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment, are PBTs, vPvBs or Substances of equivalent concern, or have been assigned a workplace exposure limit and hence require reporting in this section.

Type

- [1] Substance classified with a health or environmental hazard
- [2] Substance with a workplace exposure limit
- [3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII
- [4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII
- [5] Substance of equivalent concern
- [6] Additional disclosure due to company policy

Occupational exposure limits, if available, are listed in Section 8.

SECTION 4: First aid measures**4.1 Description of first aid measures**

- Eye contact** : Get medical attention if any damage to the eye is caused by the metal.
- Inhalation** : Move exposed person to fresh air. Get medical attention if symptoms occur.
- Skin contact** : Flush contaminated skin with plenty of water. Cuts should be treated promptly and covered. In case of burns, immediately cool affected skin with cold water and continue for as long as possible or apply wet cloths to the area until medical attention can be obtained.
- Ingestion** : Not applicable.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training.

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

- Eye contact** : Not applicable.
- Inhalation** : May generate metal fumes when heated.

SECTION 4: First aid measures

Skin contact : No known significant effects or critical hazards. Contact with hot material causes thermal skin burns.

Ingestion : Not applicable.

Over-exposure signs/symptoms

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician : Absorption over a long period may cause "Argyria", a blue/grey discolouration of various tissues. Industrial argyria may be local, involving the formation of blue/grey particles in the skin and the conjunctivae, or generalised, which appears early on the face, spreading to the hands. This is only normally manifest after many years of gross over-exposure.

Initial signs of occupational argyria are most likely to be detected in the eye, as changes to the cornea, conjunctivae or Descemet's Membrane.

Specific treatments : No specific treatment.

SECTION 5: Firefighting measures**5.1 Extinguishing media**

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture : No specific fire or explosion hazard.

Hazardous combustion products : Decomposition products may include the following materials: metal oxide/oxides

5.3 Advice for firefighters

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

Additional information : None identified.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Put on appropriate personal protective equipment.
- For emergency responders** : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

6.2 Environmental precautions

- Environmental precautions** : No specific hazard.

6.3 Methods and material for containment and cleaning up

- Small spill** : Restack safely. Take care with items that are sharp or heavy.
- Large spill** : Restack safely. Take care with items that are sharp or heavy.

6.4 Reference to other sections

- See Section 1 for emergency contact information.
See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Take care with items that are sharp or heavy. Do not breathe fumes or vapours released when the product is heated.
- Advice on general occupational hygiene** : Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

7.2 Conditions for safe storage, including any incompatibilities

- Store in accordance with local regulations. See Section 10 for incompatible materials before handling or use.

7.3 Specific end use(s)

- Recommendations** : Not available.
- Industrial sector specific solutions** : Not available.

SECTION 8: Exposure controls/personal protection

The information in this section contains generic advice and guidance. Information is provided based on typical anticipated uses of the product. Additional measures might be required for bulk handling or other uses that could significantly increase worker exposure or environmental releases.

8.1 Control parameters**Occupational exposure limits**

Product/ingredient name	Exposure limit values
silver	EH40/2005 WELs (United Kingdom (UK), 1/2020). TWA: 0.1 mg/m ³ 8 hours.
copper	EH40/2005 WELs (United Kingdom (UK), 1/2020). TWA: 1 mg/m ³ , (as Cu) 8 hours. Form: Dusts and Mists STEL: 2 mg/m ³ , (as Cu) 15 minutes. Form: Dusts and Mists TWA: 0.2 mg/m ³ , (as Cu) 8 hours. Form: Fume

Recommended monitoring procedures

: If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

DNELs/DMELs

Product/ingredient name	Type	Exposure	Value	Population	Effects
silver	DNEL	Long term Inhalation	0.1 mg/m ³	Workers	Systemic
	DNEL	Long term Inhalation	0.04 mg/m ³	General population	Systemic
	DNEL	Long term Oral	1.2 mg/kg bw/day	General population	Systemic

PNECs

Product/ingredient name	Compartment Detail	Value	Method Detail
silver	Fresh water	0.00004 mg/l	Sensitivity Distribution
	Fresh water sediment	483.13 mg/kg dwt	Assessment Factors
	Sewage Treatment Plant	0.025 mg/l	Assessment Factors
	Soil	1.41 mg/kg dwt	Sensitivity Distribution

SECTION 8: Exposure controls/personal protection**8.2 Exposure controls**

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. Fume extraction should take place as close as possible to the source of emission.

Individual protection measures

Hygiene measures : Wash thoroughly after handling.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields. Use eye protection according to EN 166. Wear eye protection with filtered lenses compliant with EN 169 when carrying out brazing work.

Skin protection

Hand protection : Use strong, cut-resistant gloves suitable for handling metals. Wear suitable gloves tested to EN374.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : In case of inadequate ventilation wear respiratory protection. Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. Recommended: particulate filter (EN 143 or EN 149, Type P3 or FFP3).

Thermal hazards : When handling hot material, wear heat-resistant protective gloves that are able to withstand the temperature of molten product (EN 407). Wear flame resistant clothing (EN ISO 11611).

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties**9.1 Information on basic physical and chemical properties****Appearance**

Physical state	: Solid.
Colour	: Grey. Metallic.
Odour	: Odourless.
Odour threshold	: Not available.
pH	: Not applicable.
Melting point/freezing point	: Not available.
Initial boiling point and boiling range	: Not available.
Flash point	: [Product does not sustain combustion.]
Evaporation rate	: Not applicable.
Flammability (solid, gas)	: Non-combustible.
Upper/lower flammability or explosive limits	: Not available.
Vapour pressure	: Not applicable.
Vapour density	: Not available.
Relative density	: Not available.
Solubility(ies)	: Insoluble in the following materials: cold water, hot water, methanol, diethyl ether, n-octanol and acetone.
Partition coefficient: n-octanol/water	: Not applicable.
Auto-ignition temperature	: Not available.
Decomposition temperature	: Not available.
Viscosity	: Not applicable.
Explosive properties	: None identified.
Oxidising properties	: Not available.

9.2 Other information

No additional information.

SECTION 10: Stability and reactivity**10.1 Reactivity**

No specific test data related to reactivity available for this product or its ingredients.

10.2 Chemical stability

The product is stable.

10.3 Possibility of hazardous reactions

Under normal conditions of storage and use, hazardous reactions will not occur.

SECTION 10: Stability and reactivity**10.4 Conditions to avoid**

No specific data.

10.5 Incompatible materials

Strong oxidising materials. strong acids. strong alkalis.

10.6 Hazardous decomposition products

May generate metal fumes when heated. metal oxide/oxides

SECTION 11: Toxicological information**11.1 Information on toxicological effects****Acute toxicity**

Product/ingredient name	Result	Species	Dose	Exposure
silver	LC50 Inhalation Dusts and mists	Rat - Male, Female	>5.16 mg/l	4 hours
	LD50 Dermal	Rat - Male, Female	>2000 mg/kg	-
	LD50 Oral	Mouse - Male, Female	>5000 mg/kg	-

Conclusion/Summary : Not classified.

Acute toxicity estimates

N/A

Irritation/Corrosion**Conclusion/Summary**

Skin : Not classified.

Eyes : Not classified.

Respiratory : Not classified.

Sensitisation**Conclusion/Summary**

Skin : Not classified.

Respiratory : Not classified.

Mutagenicity

SECTION 11: Toxicological information

Product/ingredient name	Test	Experiment	Result
silver	OECD 487 In vitro Micronucleus Test	Experiment: In vitro Subject: Mammalian-Human	Negative
	OECD 476 In vitro Mammalian Cell Gene Mutation Test	Experiment: In vitro Subject: Mammalian-Animal	Equivocal

Conclusion/Summary : Not classified.

Carcinogenicity

Conclusion/Summary : Not classified.

Reproductive toxicity

Product/ingredient name	Maternal toxicity	Fertility	Developmental toxin	Species	Dose	Exposure
silver	Positive	-	Negative	Rat	Oral	-

Conclusion/Summary : Not classified.

Teratogenicity

Conclusion/Summary : Not classified.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Product/ingredient name	Result
Not available.	

Information on likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Potential acute health effects

Eye contact : Not applicable.

Inhalation : May generate metal fumes when heated.

Skin contact : No known significant effects or critical hazards. Contact with hot material causes thermal skin burns.

Ingestion : Not applicable.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No specific data.

Inhalation : No specific data.

SECTION 11: Toxicological information**Skin contact** : No specific data.**Ingestion** : No specific data.**Delayed and immediate effects as well as chronic effects from short and long-term exposure****Short term exposure****Potential immediate effects** : Not available.**Potential delayed effects** : Not available.**Long term exposure****Potential immediate effects** : Not available.**Potential delayed effects** : Not available.**Potential chronic health effects****Conclusion/Summary** : Not classified.**General** : No known significant effects or critical hazards.**Carcinogenicity** : No known significant effects or critical hazards.**Mutagenicity** : No known significant effects or critical hazards.**Teratogenicity** : No known significant effects or critical hazards.**Developmental effects** : No known significant effects or critical hazards.**Fertility effects** : No known significant effects or critical hazards.**Other information** : Not available.**Other adverse symptoms** : Absorption over a long period may cause "Argyria", a blue/grey discolouration of various tissues. Industrial argyria may be local, involving the formation of blue/grey particles in the skin and the conjunctivae, or generalised, which appears early on the face, spreading to the hands. This is only normally manifest after many years of gross over-exposure.**SECTION 12: Ecological information****12.1 Toxicity**

Product/ingredient name	Result	Species	Exposure
silver	Acute EC10 0.00016 mg/l Fresh water	Algae - Nostoc muscorum	15 days
	Acute EC10 0.0001 mg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute LC50 0.00022 mg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 0.0012 mg/l Fresh water	Fish - Pimephales promelas	96 hours
	Chronic EC10 0.00017 mg/l Fresh water	Fish - Oncorhynchus mykiss	196 days

SECTION 12: Ecological information

	Chronic EC10 0.00019 mg/l Fresh water	Fish - Salmo trutta	217 days
	Chronic NOEC 0.001 mg/l Fresh water	Crustaceans - Ceriodaphnia reticulata	7 days
	Chronic NOEC 0.025 mg/l Fresh water	Micro-organism	13.3 minutes

Conclusion/Summary : Not classified.

12.2 Persistence and degradability

Conclusion/Summary : The methods for determining the biological degradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
silver	-	70	low

12.4 Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Mobility : Not available.

12.5 Results of PBT and vPvB assessment

This mixture does not contain any substances that are assessed to be a PBT or a vPvB.

12.6 Other adverse effects

No known significant effects or critical hazards.

SECTION 13: Disposal considerations**13.1 Waste treatment methods****Product**

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction.

Hazardous waste : Within the present knowledge of the supplier, this product is not regarded as hazardous waste, as defined by EU Directive 2008/98/EC.

Packaging

SECTION 13: Disposal considerations

- Methods of disposal** : The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.
- Special precautions** : This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues.

SECTION 14: Transport information

	ADR/RID	ADN	IMDG	IATA
14.1 UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.
14.2 UN proper shipping name	-	-	-	-
14.3 Transport hazard class (es)	-	-	-	-
14.4 Packing group	-	-	-	-
14.5 Environmental hazards	No.	No.	No.	No.
Additional information	-	-	-	-

- 14.6 Special precautions for user** : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

- 14.7 Transport in bulk according to Annex II of Marpol and the IBC Code** : Not available.

SECTION 15: Regulatory information**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****EU Regulation (EC) No. 1907/2006 (REACH)****Annex XIV - List of substances subject to authorisation****Annex XIV**

None of the components are listed.

Substances of very high concern

None of the components are listed.

SECTION 15: Regulatory information

Annex XVII - : Not applicable.

Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

Other EU regulations

Industrial emissions (integrated pollution prevention and control) - Air : Listed

Industrial emissions (integrated pollution prevention and control) - Water : Listed

Ozone depleting substances (1005/2009/EU)

Not listed.

Prior Informed Consent (PIC) (649/2012/EU)

Not listed.

Seveso Directive

This product is not controlled under the Seveso Directive.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol (Annexes A, B, C, E)

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

International lists

National inventory

Australia : All components are listed or exempted.

Canada : All components are listed or exempted.

China : All components are listed or exempted.

Europe : All components are listed or exempted.

Japan : **Japan inventory (ENCS)**: All components are listed or exempted.

Japan inventory (ISHL): All components are listed or exempted.

SECTION 15: Regulatory information

New Zealand	: All components are listed or exempted.
Philippines	: All components are listed or exempted.
Republic of Korea	: All components are listed or exempted.
Taiwan	: All components are listed or exempted.
Thailand	: All components are listed or exempted.
Turkey	: All components are listed or exempted.
United States	: All components are listed or exempted.
Viet Nam	: All components are listed or exempted.

15.2 Chemical safety assessment

Not applicable.

SECTION 16: Other information

✔ Indicates information that has changed from previously issued version.

Abbreviations and acronyms	: ATE = Acute Toxicity Estimate CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008] DMEL = Derived Minimal Effect Level DNEL = Derived No Effect Level EUH statement = CLP-specific Hazard statement PBT = Persistent, Bioaccumulative and Toxic PNEC = Predicted No Effect Concentration RRN = REACH Registration Number vPvB = Very Persistent and Very Bioaccumulative
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Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Classification	Justification
Not classified.	

Full text of abbreviated H statements

Not applicable.

Full text of classifications [CLP/GHS]

Not applicable.

Notice to reader

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