



# SAFETY DATA SHEET

## 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Identification of the substance/preparation	Argo-braze™ and Silver-flo™ Brazing filler metals
Use of the substance/preparation	Brazing.
Version No.	01
Revision date	02-March-2010
Synonym(s)	Argo-braze™ 60 & 60V * Argo-braze™ 61 & 61V * Argo-braze™ 63 & 63V * Argo-braze™ 7 * Argo-braze™ 72 * Argo-braze™ 72V * Silver-flo™ 1 * Silver-flo™ 2 * Silver-flo™ 4 * Silver-flo™ 5 * Silver-flo™ 12 * Silver-flo™ 16 * Silver-flo™ 18 * Silver-flo™ 20 * Silver-flo™ 24 * Silver-flo™ 25 * Silver-flo™ 252 * Silver-flo™ 30 * Silver-flo™ 302 * Silver-flo™ 33 * Silver-flo™ 34 * Silver-flo™ 35 * Silver-flo™ 38 * Silver-flo™ 38AWS * Silver-flo™ 40 * Silver-flo™ 43 * Silver-flo™ 44 * Silver-flo™ 45 * Silver-flo™ 45AWS * Silver-flo™ 452 * Silver-flo™ 453 * Silver-flo™ 453S * Silver-flo™ 55 * Silver-flo™ 56 * Silver-flo™ 56S * Silver-flo™ 60 * Silver-flo™ 602 * Silver-flo™ 67E * Silver-flo™ 67H * Silver-flo™ 67X * Silver-flo™ 70 * Silver-flo™ 74M * Silver-flo™ 78 * Silver-flo™ 81E
Manufacturer/Supplier Address:	Johnson Matthey Metal Joining York Way, Royston Herts SG8 5HJ United Kingdom
e-mail:	E-mail: mj@matthey.com
Contact person:	Mr. J. A. Willingham, Mr. A.W. Musgrove, Mr. P. J. Webb
Telephone number:	+44 (0) 1763 253 200
Emergency phone (Access code):	+1-760-476-3961 (333128)

## 2. HAZARDS IDENTIFICATION

This preparation is not classified as dangerous according to Directive 1999/45/EC and its amendments.

Physical hazards	Not classified as a physical hazard.
Health hazards	Prolonged exposure may cause chronic effects.
Environmental hazards	Not classified as an environmental hazard.
Specific hazards	In its manufactured and shipped state, this product is considered to present low hazard. Elevated temperatures or mechanical action may form dust and fumes which may be irritating to the eye, mucous membranes and respiratory tract. Heating above the melting point releases metallic oxides which may cause metal fume fever by inhalation. The symptoms are shivering, fever, malaise and muscular pain. Under normal conditions of use the level of metallic oxide fumes released are unlikely to exceed the specified workplace exposure limits (WELs). However, bad brazing practice / overheating could result in the emission of fumes in harmful concentrations above the specified workplace exposure limits (WELs). Ingestion of silver may cause a permanently benign bluish grey discoloration to the skin (argyria). Hot or molten material may produce thermal burns.
Main symptoms	Irritation of nose and throat. Irritation of eyes and mucous membranes.

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	Classification	CAS-No.	%	EC-No. / REACH Registration No.	Notes
Silver	-	7440-22-4	1-95	231-131-3	#
Copper	-	7440-50-8	5-60	231-159-6	#
Zinc	-	7440-66-6	0-40	231-175-3	
Indium	-	7440-74-6	10-15	231-180-0	#
Tin	-	7440-31-5	0-10	231-141-8	

**Composition comments** All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume. For more detailed chemical composition, refer to the certificate of analysis.

## 4. FIRST-AID MEASURES

**Inhalation** Move to fresh air. Get medical attention if discomfort persists.

**Skin contact** In case of contact with hot or molten product, cool rapidly with water and seek immediate medical attention. Do not attempt to remove molten product from skin because skin will tear easily.

**Eye contact** In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

**Ingestion** Not likely, due to the form of the product.

**Most important symptoms and effects** Irritation of nose and throat. Irritation of eyes and mucous membranes.

**General advice** Get medical attention if any discomfort develops. Seek medical attention for all burns, regardless how minor they may seem. Show this safety data sheet to the doctor in attendance.

**Notes to physician** Treat symptomatically. Symptoms may be delayed.

## 5. FIRE-FIGHTING MEASURES

**Suitable extinguishing media** Extinguish with foam, carbon dioxide or dry powder.

**Extinguishing media which must not be used for safety reasons** Do not use water or halogenated extinguishing media.

**Unusual fire & explosion hazards** Solid metal is not flammable; however, finely divided metallic dust or powder may form an explosive mixture with air. Do not use water on molten metal: Explosion hazard could result.

**Specific hazards** Fire or high temperatures create: Metal oxides.

**Hazardous combustion products** Metal oxides.

**Special protective equipment for fire-fighters** Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

**Fire fighting equipment/instructions** Move containers from fire area if you can do it without risk.

## 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions** Wear appropriate personal protective equipment.

**Environmental precautions** Avoid release to the environment.

**Containment procedures** Collect spillage.

**Methods for cleaning up** Material can be collected for re-use or scrapped as considered appropriate. Scrapped material should be sent for refining to recover precious metal content.

## 7. HANDLING AND STORAGE

**Handling** Use with adequate ventilation. Do not breathe fumes or dust from this material. Brazing should only be carried out under conditions of adequate ventilation or local exhaust extraction to ensure compliance with all relevant occupational exposure limits for the materials involved. Where local exhaust extraction is being used its effectiveness should be tested on a regular basis. Observe all necessary health and safety precautions relevant to the brazing process e.g. Flame brazing, HF Induction brazing etc. being employed. Wear appropriate personal protective equipment. Avoid contact with hot or molten material. Do not use water on molten metal. Observe good industrial hygiene practices.

**Storage** Store in a cool, dry place. Store away from incompatible materials.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Exposure limit values

#### United Kingdom

Components	Type	Value	Form
Copper (7440-50-8)	STEL	2 mg/m <sup>3</sup>	Inhalable dusts and mists.
	TWA	0.2 mg/m <sup>3</sup>	Fume.
		1 mg/m <sup>3</sup>	Inhalable dusts and mists.
Indium (7440-74-6)	STEL	0.3 mg/m <sup>3</sup>	
	TWA	0.1 mg/m <sup>3</sup>	
Silver (7440-22-4)	TWA	0.1 mg/m <sup>3</sup>	
Tin oxide (1332-29-2)	STEL	4 mg/m <sup>3</sup>	
	TWA	2 mg/m <sup>3</sup>	

**Exposure controls** Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

## Occupational exposure controls

<b>Respiratory protection</b>	In case of inadequate ventilation or risk of inhalation of fumes, use suitable respiratory equipment. Seek advice from local supervisor.
<b>Hand protection</b>	Not normally needed. If filler metal rods etc become heated during use or radiant heat and or flame splash from the work piece are likely, wear gloves to protect against thermal burns. Suitable gloves can be recommended by the glove supplier.
<b>Eye protection</b>	Use approved safety glasses, goggles or face shields with tinted lenses if necessary. Seek advice on suitable eye protection products from supplier.
<b>Skin and body protection</b>	Wear suitable protective clothing.
<b>General</b>	Use personal protective equipment as required. Personal protective equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.

**Environmental exposure controls** Contain spills and prevent releases and observe national regulations on emissions.

**Hygiene measures** Handle in accordance with good industrial hygiene and safety practices. Observe any medical surveillance requirements.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance</b>	Massive, solid metal.
<b>Physical state</b>	Solid.
<b>Form</b>	Solid.
<b>Colour</b>	Silver/Copper/Brass coloured metal depending on composition.
<b>Odour</b>	Odourless.
<b>Odour threshold</b>	Not applicable.
<b>pH</b>	Not applicable.
<b>Boiling point</b>	Not available.
<b>Flash point</b>	Not available.
<b>Flammability</b>	Not available.
<b>Flammability limits in air, upper, % by volume</b>	Not available.
<b>Flammability limits in air, lower, % by volume</b>	Not available.
<b>Vapour pressure</b>	Not applicable.
<b>Relative density</b>	Not available.
<b>Solubility (water)</b>	Not available.
<b>Partition coefficient (n-octanol/water)</b>	Not applicable.
<b>Viscosity</b>	Not applicable.
<b>Vapour density</b>	Not applicable.
<b>Evaporation rate</b>	Not applicable.
<b>Melting point</b>	Not available.
<b>Freezing point</b>	Not available.
<b>Auto-ignition temperature</b>	Not available.
<b>VOC</b>	0 %
<b>Bulk density</b>	Not applicable.
<b>Percent volatile</b>	0 %

## 10. STABILITY AND REACTIVITY

<b>Stability</b>	Stable at normal conditions.
<b>Conditions to avoid</b>	Contact with incompatible materials.
<b>Materials to avoid</b>	Strong acids. Strong oxidising agents.
<b>Hazardous decomposition products</b>	Fire or high temperatures create: Metal oxides.
<b>Hazardous polymerisation</b>	Hazardous polymerisation does not occur.

## 11. TOXICOLOGICAL INFORMATION

### Toxicological data

#### Components

#### Test results

Silver (7440-22-4)

Acute Dermal LD50 Rat: > 2000 mg/kg

<b>Acute toxicity</b>	High concentrations of freshly formed fumes/dusts of metal oxides can produce symptoms of metal fume fever. When heated, the vapours/fumes given off may cause respiratory tract irritation.
<b>Routes of exposure</b>	Inhalation.
<b>Chronic toxicity</b>	Prolonged inhalation may be harmful. Frequent inhalation of fume/dust over a long period of time increases the risk of developing lung diseases. Ingestion of silver may cause a permanently benign bluish grey discoloration to the skin (argyria).
<b>Sensitisation</b>	Not a skin sensitiser.
<b>Carcinogenicity</b>	IARC not listed.
<b>Mutagenicity</b>	No test data available for the product.
<b>Reproductivity</b>	No test data available for the product.
<b>Epidemiology</b>	Based on epidemiological studies, pre-existing pulmonary disorders may be aggravated by prolonged exposure to high concentrations of metal dust or fumes.
<b>Local effects</b>	Elevated temperatures or mechanical action may form dust and fumes which may be irritating to the eye, mucous membranes and respiratory tract.
<b>Further information</b>	No other specific acute or chronic health impact noted.

## 12. ECOLOGICAL INFORMATION

<b>Ecotoxicity</b>	Alloys in massive forms present a limited hazard for the environment.
<b>Mobility</b>	Alloys in massive forms are not mobile in the environment.
<b>Persistence and degradability</b>	The product is not biodegradable.
<b>Bioaccumulation</b>	The product is not bioaccumulating.
<b>Environmental effects</b>	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
<b>Aquatic toxicity</b>	Not expected to be harmful to aquatic organisms.

## 13. DISPOSAL CONSIDERATIONS

<b>Disposal instructions</b>	Dispose in accordance with all applicable regulations.
<b>Waste from residues / unused products</b>	Dispose of in accordance with local regulations. Scrapped material should be sent for refining to recover precious metal content. Solid metal and alloys in the form of particles may be reactive. Its hazardous characteristics, including fire and explosion, should be determined prior to disposal.
<b>EU wastecodes</b>	12 01 04

## 14. TRANSPORT INFORMATION

### ADR

Not regulated as dangerous goods.

### IATA

Not regulated as dangerous goods.

### IMDG

Not regulated as dangerous goods.

## 15. REGULATORY INFORMATION

<b>Other regulations</b>	The product does not need to be labelled in accordance with EC directives or respective national laws. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006.
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## 16. OTHER INFORMATION

### Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No

\*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

<b>Other information</b>	This SDS needs to be read in conjunction with SDS for the flux, where one is being used, to enable a full risk assessment to be made of the brazing operation.
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**Issue date**

02-March-2010