MATERIAL SAFETY DATA SHEET

Silver Coat 45 Silver Brazing Alloy

Material Safety Data Sheet 6021
Rev 1 03/11/2005

COMPANY DETAILS

Company:	BOC Limited ABN 95 000 029 729
Address:	Riverside Corporate Park, 10 Julius Avenue, NORTH RYDE NSW 2113
Telephone Number:	131 262 (Business Hours), (02) 8874 4400
Emergency Telephone Number:	1800 653 572

IDENTIFICATION

Product Name:	Silver Coat 45
UN Number:	None allocated
Dangerous Goods:	None allocated
HAZCHEM Code:	2R
Poisons schedule:	None allocated
Manufacturer's Code:	25072 (1.5) 25502 (2.5) 25510 (3.0)
Use:	Silver Brazing Alloy – Flux Coated

Part No.	Description	Pack	Dimensions
LTAF4530	Silver Coat 45 Standard Pack	250kg	1.5x500
LTAF4531	Silver Coat 45 Standard Pack	500kg	1.5x500
LTAF4550	Silver Coat 45 Handi Pak	2 rods	1.5x500
LTAF4589	Silver Coat 45 Dispenser Pack	20 rods	1.5x500

Physical Description

Appearance:	Rod
Melting Point:	Solidus 605°C, Liquidus 620°C
Flammability Limits:	Not applicable
Solubility in Water:	Insoluble
Other Properties:	Not applicable

Composition

Entity	CAS Number	Proportion
Silver	7440-22-4	Medium content (10-60%)
Copper	7440-50-8	Medium content (10-60%)
Zinc	7440-66-6	Medium content (10-60%)
Cadmium	7440-43-9	Medium content (10-60%)
Potassium	7440-09-7	Medium content (10-60%)
Fluorine (as Fluoroborates)	16984-48-8	Medium content (10-60%)
Boron As Fluoroborates)	7440-42-8	Low content (0-10%)

HEALTH HAZARD INFORMATION

Health Effects: Brazing alloys in general and cadmium alloys specifically are not dangerous in the form in which they are supplied to the market. However, they are dangerous preparations in that health hazards do occur during use, especially if the alloy is subjected to overheating, resulting in evolution of metal, oxide fume and small quantities of hydrogen fluoride and baron trifluoride. The absence of effective ventilation magnifies the exposure risk.

Inhalation: Exposure to zinc and copper oxide fumes results in shortness of breath, cough and general respiratory complaints, in addition to nausea and vomiting and aching muscles. General symptoms of metal fume fear are often delayed for 3-10 hours and usually disappear after 24 hours rest. Ulceration of the respiratory tract and perforation of the nasal septums can occur. Short exposures to high level of cadmium oxide fume can lead to pulmonary oedema and may be fatal. Deaths have occurred due to cadmium poisoning.

Skin: Prolonged exposure to copper may cause skin irritation or discoloration of the skin or hair. Zinc oxide is moderately irritating to the skin.

Eyes: Moderate local irritation due to the zinc oxide component and Silver Coat can occur.

Swallowed: There is no oral toxicological data available for zinc oxide. LD_{50} 240mg/kg (intraperitoneal - rat).

Chronic Exposure: Chronic absorption of silver can cause argyria, a bluish-grey discoloration of various tissues, but this is unlikely to occur when handling silver alloys. Chronic exposure to flux fume over many years may result in fluorosis. Continuous exposure to small quantities of cadmium oxide fume above the Threshold Limit Values (TLV) produces a loss of sense of smell, loss of weight, golden yellow staining of the teeth, chronic distension of the lungs (emphysema), pulmonary fibrosis and possible kidney damage. It has been suggested that there is an association between exposure to cadmium and cancer of the prostate gland. Cadmium and certain cadmium salts have been listed by the EPA as carcinogens.

First Aid

Inhalation:

- Remove casualty from exposure and give fresh air.
- Sit in half upright position and allow to rest.
- Seek medical attention.

Eyes:

- Irrigate thoroughly with water for at least 20 minutes.
- Seek medical attention.

Skin: Wash off contamination with soap and water.

Advice to Doctor: Contact a Poisons Information Centre.

PRECAUTIONS FOR USE

Exposure Limits: Threshold Limit Values (TLV):

Silver	0.1mg/m^3 as fume, Time Weighted Average (TWA)
Copper	0.2mg/m^3 as fume, TWA and Long Term Exposure Limit (LTEL)
Zinc Oxide Fume	5.0mg/m^3 as zinc oxide
Cadmium Oxide Pure	0.05mg/m^3
Hydrogen Fluoride	2.5mg/m^3 as fluoride (TWA)
	5mg/m^3 as fluoride (TLV)
Boron Trifluoride	3mg/m^3 ceiling limit (TLV)

The TLV for cadmium is a ceiling limit. The American Conference of Governmental Industrial Hygienists (ACGIH) handbook for 1989-90 proposes a TLV of 0.01mg/m^3 for cadmium with a classification as an A2 carcinogen. This definition by the International Agency for Research on Cancer is for materials where there is limited exposure by all routes should be carefully controlled.

Ventilation: Adequate air flows and respiratory protection are required to ensure fume concentrations do not exceed TLV values. In outdoor or open work space conditions, this could consist of mechanical dilution ventilation. However, under high work loads or in limited work spaces, ventilation by a local exhaust system will be required. The latter should be supplemented by personal respiratory protection when working in confined spaces.

Refer to Australian Welding Research Association and the Australian Welding Institute Technical Note 7 for further details.

PERSONAL PROTECTION

Tests to determine whether or not TLV's are being exceeded can be performed using lapel samplers, with sample filters analysed for cadmium and zinc. Appropriate ventilation should be used but additional operator protection can be achieved using an approved half-face cartridge respirator suitable for metal oxide fume.

Wear protective clothing when brazing, including heat resistant gloves and chemical goggles. Do not eat, drink or smoke in the work area.

SAFE HANDLING GUIDELINES

Storage and Transport: Copper and some copper alloys can form explosive acetylides when exposed to acetylene. as with many metals and alloys, contact with mineral acids liberates hydrogen, a flammable and explosive gas.

Store away from acids and acetylene and in a cool, dry, well ventilated.

Spills and Disposal: Disposal should comply with local and national waste disposal procedures.

Fire/Explosion Hazard: The alloy is not pyrophoric. However, if involved in a fire generated by other means, resulting in temperatures in excess of 600^{o}C, toxic fumes of copper, hydrogen fluoride and boron trifluoride zinc oxides may be evolved. Fire extinguisher selection should be governed by the source of the fire and other materials involved. Subject to the presence of electrical shock risks, use of water fog is preferred.

CONTACT POINT

Technical Support: (02) 131 262 (B/Hrs)
(02) 132 437 (Fax)

Further information may be obtained from any BOC Gas & Gear centre throughout Australia and New Zealand.