

Material Safety Data Sheet

PACWELD 72F - Cadmium Free Silver

Identity	Supplier's Name	Supplier's Address	Date	Telephone No.	Facsimile No.
Pacweld Welding Consumable	3D Safety Services Pty Ltd	27 Sir Joseph Banks Street Botany, NSW 2019	27-03-2009	1300 663 195	1300 663 495

This product is hazardous according to Worksafe Australia Criteria

Section 1 – Composition of Ingredients		
Name	CAS No.	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%)
Tin	7440-31-5	Low content < 10%
Potassium	7440-09-7	Medium content (10% - 60%)
Fluorine (as Fluoroborates)	16984-48-8	Medium content (10% - 60%)
Boron (as Borates & Fluoroborates)	7440-42-8	Low content < 10%
Exposure Limits		
Name	THRESHOLD LIMIT VALUES (TLV's)	
Silver	0.1 mg/m ³ as fume, TWA	
Copper	0.2 mg/m ³ as fume, TWA and LTEL	
Zinc Oxide fume	0.5mg/m ³ as fluoride (TLV)	
Tin Oxide	2.0mg/m ³ TWA	
Hydrogen Fluoride	2.5mg/m ³ as fluoride (TLV)	
Boron Trifluoride	3.0mg/m ³ ceiling limit (TLV)	

PEOPLE PLANT PROCESS

Section 2 - 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 and fume and small quantities of hydrogen fluoride and boron 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 fever are often delayed for 3-10 hours and usually disappear after 24 hours rest. Ulceration of the respiratory tract and perforation of the nasal septum's 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 discolouration of the skin or hair, and Zinc Oxide is moderately irritating to the skin.

EYES: Moderate local irritation due to Zinc Oxide component and Flux coating can occur.

SWALLOWED: There is no oral toxicological data available for Zinc Oxide ID₅₀ 240 mg/kg (intraperitoneal – Rat).

INHALATION: Harmful by inhalation. The fume evolved during brazing is an irritant to the nose and respiratory tract.

CHRONIC EXPOSURE: Chronic absorption of Silver can cause Argyria, a bluish-grey discolouration of various tissues, but this is unlikely to occur when handling Silver alloys.

Section 3 – Fire & Explosion Hazard

SUITABLE EXTINGUISHING MEDIA: Use media suitable for surrounding area. Subject to the presence of electrical shock risks, use of water fog is preferred.

HAZARDS FROM COMBUSTION PRODUCTS: Non combustible material.

PRECAUTIONS IN CONNECTION WITH FIRE: Fire fighters should wear full protective clothing and self contained breathing apparatus (SCBA) operated in positive pressure mode.

EMERGENCY PROCEDURE: Increase ventilation. Wear sufficient respiratory protection and full protective clothing to minimise skin and eye exposure. Sweep up material avoiding dust generation and then transfer to suitable container. Wash surfaces well, with soap and water. If large quantities of this material enter the waterways contact the Environment Protection Agency, or your local Waste Management Authority.

Section 4 – First Aid Treatment

Inhalation: If inhaled, removed from contaminated area. Supply artificial respiration if not breathing. If symptoms develop seek medical attention.

Indigestion: If swallowed, do NOT induce vomiting. Wash out mouth with water. If symptoms develop seek medical attention.

Eyes: If contact with the eye(s) occurs, wash with copious amounts of water holding eyelid(s) open. Take care not to rinse contaminated water into the non-affected eye. If symptoms persist seek medical attention.

Skin: Wash affected area thoroughly with soap and water. Remove contaminated clothing and wash before reuse or discard. If symptoms develop seek medical attention.

Advice to Doctor: Treat symptomatically.

Section 5 - Precautions For Use

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 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 the Australian Standard AS 1674.3 and the Welding Technology Institute of Australia (WTIA) Technical Note 7.

Personal Protection: Tests to determine whether or not TLV's are being exceeded can be performed using lapel samplers, with sample filters analysed for Copper. Appropriate ventilation should be used but additional operator protection can be achieved using 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 working area.

Section 6 – Safe Handling Information

Precautions for Safe Handling: Avoid generating dust. Use with adequate ventilation. Have emergency equipment (for fires, spills, leaks etc.) readily available. Wear appropriate protective equipment to prevent inhalation, skin and eye contact. Ensure a high level of personal hygiene is maintained when using this product. That is always wash hands before eating, drinking, smoking or using the toilet.

Storage & 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.

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

Fire & Explosion Hazard: The alloys are not pyrophoric. However, if involved in a fire generated by other means, resulting in temperatures in excess 600°C, toxic fumes of Zinc and especially Cadmium Oxide will 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.



PEOPLE PLANT PROCESS

Section 7 – Exposure Controls/Personal Protection

NATIONAL EXPOSURE STANDARDS:

NAME	STEL		TWA		Footnote
	mg/m ³	ppm	mg/m ³	ppm	
Silver			0.1		
Copper			0.2		
Zinc	10		5		Zinc oxide (fume)
Tin			2		

BIOLOGICAL LIMIT: Values no biological limit available.

OTHER EXPOSURE INFORMATION: During welding operations, fluorine may form hydrogen fluoride and boron may form boron trifluoride. Their exposure limits are Australian National Occupational Health and Safety Commission (NOHSC) Exposure Standard:

NAME	STEL		TWA	
	mg/m ³	ppm	mg/m ³	ppm
Hydrogen fluoride	2.5	(as fluoride)		
Boron trifluoride	3	ceiling limit		

ENGINEERING CONTROLS: For manual welding operations the nature of ventilation is determined by the location of the work.

1. For outdoor work, natural ventilation is generally sufficient.
2. For indoor work, conducted in open spaces, use mechanical ventilation.
3. For work conducted in limited or confined spaces, mechanical ventilation using local exhaust systems is required.

RESPIRATORY: Protection if engineering controls are not effective in controlling airborne exposure then a supplied air respirator should be used. Reference should be made to Australian Standards AS/NZS 1715: Selection, Use and Maintenance of Respiratory Protective Devices; and AS/NZS 1716: Respiratory Protective Devices, in order to make any necessary changes for individual circumstances.

EYE PROTECTION: Safety glasses with side shields, goggles or full-face shield as appropriate recommended. Final choice of appropriate eye/face protection will vary according to individual circumstances i.e. methods of handling or engineering controls and according to risk assessment undertaken. Eye protection should conform to AS/NZS 1337: Eye Protectors for Industrial Applications.

HAND PROTECTION: Wear gloves of impervious material. Final choice of appropriate gloves will vary according to individual circumstances i.e. .e. methods of handling or engineering controls and according to risk assessment undertaken. Reference should be made to AS/NZS 2161.1: Occupational Protective Gloves – Selection, Use and Maintenance.

BODY PROTECTION: Suitable work wear should be worn to protect personal clothing, e.g. cotton overalls buttoned at neck and wrist. When large quantities are handled the use of plastic aprons and rubber boots is recommended. Industrial clothing should conform to the specifications detailed in AS/NZS 2919: Industrial Clothing.

3D Safety Services Pty Ltd believes this information to be accurate and to reflect qualified expert opinion regarding current research. However, 3D Safety Services Pty Ltd cannot make any express or implied warranty as to this information.