

MATERIAL SAFETY DATA SHEET



Asahi Cored Lead Free Solder Wire
Viromet 349 (Core Flux : CLF5023)
MSDS #: EHC 2 – 17/3
Date of Preparation: March 2006

SECTION 1: CHEMICAL PRODUCT & COMPANY IDENTIFICATION

1.1 Product Details:

Product Name : Asahi Cored Flux Lead-Free Solder Wire
Trade Name : Asahi Cored Flux Lead-Free Solder Wire Viromet 349 (Core Flux : CLF5023)
Use : Cored flux solder wire may be used for manual soldering or in repair and rework for electrical or electronic assemblies.

1.2 Company's Identification:

Manufacturer's Name and Address : Singapore Asahi Chemical & Solder Industries Pte Ltd
47 Pandan Road
Singapore 609288

Telephone : (65) 6262-1616
Facsimile : (65) 6261-6311

1.3 Contact Point:

Designation : Chemist
Emergency Telephone Number: (65) 6262-1616

SECTION 2: COMPOSITION/INFORMATION ON MATERIAL

| Chemical Name | CAS No. | % | OSHA PEL (mg/m ³) | ACGIH TLY (mg/m ³) | Other Limits Recommended |
|----------------------------|-----------|------------|-------------------------------|--------------------------------|--------------------------|
| Tin (Sn) | 7440-31-5 | REM | 2.0 | 2.0 | |
| Silver (Ag) | 7440-22-4 | 4.1±0.2 | 0.1 (powder/dust) | 0.1 (powder/dust) | |
| Copper (Cu) | 7440-50-8 | 0.5±0.1 | 1.0 | 1.0 | |
| Indium (In) | 7440-74-6 | 4.0±0.2 | 0.1 | 0.1 | |
| Other Ingredients | | | | | |
| Flux % in Core Wire | | 3 | | | |
| Flux Composition: | | | | | |
| Resin | | 85-95 | | | |
| Activators | | 5-10 | | | |
| Solvent | | Rem. | | | |
| Total | | 100 | | | |

SECTION 3: HAZARD IDENTIFICATION

Class of Hazards Chemicals :

Effect of Acute (severe short term) Exposure: Acute toxicity of the alloy is low.

- INHALATION** : Inhalation of soldering fumes may cause irritation to the respiratory tract and may lead to central nervous system effects (drowsiness, dizziness, headaches, nausea, vomiting, headache, joint and muscle pain. Long term inhalation of tin or insoluble tin compounds may cause tin dust lungs (stannosis). Acute copper poisoning can give kidney failure
- SKIN CONTACT** : Excessive absorption of silver is local or generalized impregnation of tissues, retained as silver sulfide resulting in argyria (bluish discoloration of skin and mucous membranes). Excessive absorption of copper may result to strong irritants to skin and mucous membrane as copper sulphate
- EYE CONTACT** : Soldering fumes may cause irritation to the eyes.
- INGESTION** : Intake of tin has caused vomiting, diarrhoea and depression of the central nervous system with symptoms like fatigue, headache and ataxia. Large doses of colloidal silver (administered to animals) produced pulmonary edema and congestion resulting in death.

SECTION 4: FIRST AID MEASURES

- Ingestion** : Seek medical attention.
- Eye Contact** : Flush eyes with plenty of water immediately for at 15 minutes. Seek medical attention.
- Skin Contact** : Wash thoroughly with soap and warm water.
- Inhalation** : Evacuate to a safe area with fresh air.

SECTION 5: FIRE-FIGHTING MEASURES

- Extinguishing Media** : NA
- Fire Fighting Instructions** : NA
- Special Hazards** : NA
- Unusual Fire and Explosion Hazards** : Flux may burn if soldering is done with a flame.

SECTION 6: ACCIDENTAL RELEASE MEASURES

- Leak/Spill** : Place into properly labeled waste container and may be sent for recovery following appropriate recovery routes or methods.

SECTION 7: HANDLING AND STORAGE

- Handling** : Wash hand thoroughly with soap and water prior to eating, drinking or smoking. Do not smoke while soldering. Avoid inhalation of vapors and contact with skin and eyes. Observe good industrial practices.
- Storage** : Store in a cool environment away from oxidizing agents.

SECTION 8: EXPOSURE CONTROL AND PERSONAL PROTECTION

| | |
|----------------------|--|
| Engineering Measures | : Maintain general or local exhaust ventilation to meet exposure limit requirements. |
| Personal Protection | : Operator should be protected from soldering fumes |
| PROTECTIVE GLOVES | : Impervious rubber |
| EYE PROTECTION | : Safety glasses |

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

| | |
|------------------------------------|--|
| Appearance | : Metallic coil with flux in the center of the coil. |
| Odor | : No odor. |
| Solubility in water: | : Soluble (flux) |
| Boiling Point(°C) | : NA (solder); 124°C (flux) |
| Melting Point(°C) | : 205-210°C (solder) |
| Vapor Pressure(mm of Hg at 20°C) | : NA |
| Vapour Density (air=1) | : NA |
| Percentage Volatiles (by Volume) | : NA |
| Volatile Organic Compound (VOC) | : NA |
| Evaporation Rate (butyl acetate=1) | : NA |
| Specific Gravity (water=1 at 25°C) | : 7.40 (solder) |
| Flash Point (°C) | : NE |
| Auto-ignition Temperature(°C) | : NE |

SECTION 10: PHYSICAL HAZARDS (STABILITY AND REACTIVITY)

| | |
|--------------------------|-----------------------|
| Condition to avoid | : Unknown |
| Incompatibles | : Oxidizing materials |
| Decomposition products | : Unknown |
| Hazardous polymerization | : Will not occur |

SECTION 11: TOXICOLOGICAL INFORMATION

| | |
|---|---|
| Toxicity data | : Chronic copper poisoning is only known as Wilson's disease (accumulation of copper in liver cells.) |
| Carcinogenicity | : Not listed |
| Reproductive Effect | : Silver has a potential risk for developing foetus if the mother was exposed to silver compounds. |
| Effects of overexposure (Chronic Effect): | Breathing of vapors may produce respiratory irritation. Long term inhalation of tin and insoluble tin compounds may cause tin dust lungs (stannosis). Long term exposure to copper may give slight adverse effects in the liver and kidneys and it may pass the brain-blood barrier and possibly cause neurological symptoms. Exposure to silver has resulted in argyria (permanent bluish discoloration of tissues and organs in which silver is deposited.) |
| Target Organs | : Respiratory system |
| Medical Conditions Generally Aggravated by Exposure | : Soldering fumes may irritate the eyes. |

SECTION 12: ECOLOGICAL INFORMATION

Mobility & Bioaccumulation : Non volatile material
Biodegradability : Non biodegradable
Aquatic Toxicity : Organic and inorganic tin compounds are toxic to the aquatic ecosystems. Silver is toxic to aquatic organisms. Copper inhibits algae growth.

SECTION 13: DISPOSAL INFORMATION

Dispose according to federal, state and local regulations. This product is suitable for recovery following appropriate recovery routes or methods. If in doubt, contact Singapore Asahi.

SECTION 14: TRANSPORT INFORMATION

UN Number : NA
T.D.G. Classification : NA
Packing group : NA
Special shipping instruction : NA

SECTION 15: REGULATORY INFORMATION

- a. Proposed classification : Harmful
- b. Risk phrase
 - R20/21/22 Harmful by inhalation, in contact with skin and if swallowed.
 - R36/37/38 Irritating to the eyes, respiratory system and skin.
- c. Safety phrase
 - S23 Do not breath fume or vapor.
 - S24/25/26 Avoid contact with skin or eyes. In case of contact with skin, rinse immediately with plenty of water.
 - S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
 - S59 Refer to manufacturer/supplier for information on recovery/recycling.

SECTION 16: OTHER INFORMATION

THIS INFORMATION RELATES ONLY TO THE SPECIFIC MATERIAL DESIGNATED AND MAY NOT BE VALID FOR SUCH MATERIAL USED IN COMBINATION WITH ANY OTHER MATERIALS OR IN ANY PROCESS. SUCH INFORMATION IS TO THE BEST OF THE COMPANY'S KNOWLEDGE AND BELIEVED ACCURATE AND RELIABLE AS OF THE DATE INDICATED.

HOWEVER, NO REPRESENTATION, WARRANTY OR GUARANTEE IS MADE AS TO ITS ACCURACY, RELIABILITY OR COMPLETENESS. IT IS THE USER'S RESPONSIBILITY TO SATISFY HIMSELF AS TO THE SUITABILITY AND COMPLETENESS OF SUCH INFORMATION FOR HIS OWN PARTICULAR USE.

*optional

NE = Not Established

NA = Not Applicable

PEL = Permissible Exposure Level