

MATERIAL SAFETY DATA SHEET

MSDS #001-CF

Date: March 1, 2007
Revision Level: Rev. 1
Revision Date: July 1, 2007
Printed Date: March 1, 2007

Section 1: Chemical Product And Company Information

Common Name: ChannelFlux ZA-1
Chemical Name: Chemical Mixture
Formula: Chemical Mixture
Product CAS No.: N/A
Product Use: Brazing Of Aluminum

Supplier: Bellman-Melcor, LLC
Address: 7575 W. 183rd St.
Tinley Park, Il 60477-0188
Phone: 708-532-5000

FOR CHEMICAL EMERGENCIES, CALL CHEMTREC (24 HOURS)
1-800-424-9300 (US, Canada, Puerto Rico, Virgin Islands)
1-703-527-3887 (Outside Above Areas)

Section 2: Composition / Information On Ingredients

Ingredient	CAS No.	% Weight
Zinc	7440-66-6	70 – 85
Aluminum	7429-90-5	10 – 25
Cesium Tetrafluoro Aluminate	138577-01-2	10 - 25
Aliphatic Polycarbonate	-----	< 3

Section 3: Hazards Identification

Emergency Overview

Appearance: Rectangular shaped wire with flux imbedded in channel.
Odor: None
Flash Point: Metal – Not Applicable
Flux - > 200° F

Primary Route Of Entry: Inhalation

Eye Hazard

Eye contact may cause irritation and may cause burns.

Skin Hazard

Skin contact may cause irritation.

Ingestion Hazard

Ingestion of this product, in solid form, is not a plausible form of exposure.

Inhalation Hazard

Inhalation of the components of these products is not known to present a significant risk to health when used according to instructions and with appropriate protective measures (see Section 8). Inhalation of component elements has been reported to cause one or more of the following symptoms and effects upon excessively high or prolonged exposure:

Zinc: Acute exposure to zinc oxide may cause respiratory tract irritation and “metal fume fever”, which is characterized by a metallic taste, cough, dry throat, chills, fever, tightness of chest, headache, nausea, shortness of breath, vomiting, and fatigue.

Aluminum: Aluminum oxide, a potential oxidation byproduct, has been associated with Respiratory disorders among individuals also exposed to crystalline silica.

Cesium Tetrafluoro Aluminate Acute inhalation of inorganic fluorides may irritate the nose, throat, and respiratory tract; and may cause cough, nose bleeds, nausea, vomiting, chest tightness, chills, fever, tearing, pneumonitis, and pulmonary edema. Chronic Inhalation exposure may cause liver and kidney damage, impaired pulmonary function, and flurosis (a disease characterized by mottled teeth, osteosclerosis, and pain and loss of mobility in joints).

Aliphatic Poly-Carbontate: Immediately remove victim to fresh air. If breathing becomes difficult, call a physician.

Section 4: First Aid Measures

Inhalation

If signs and symptoms of toxicity are observed, remove the subject from area, administer oxygen, and seek medical attention. Keep the subject warm and at rest. If breathing stops, perform artificial respiration.

Note to physicians: The component cesium aluminum fluoride in the flux may be harmful if ingested. However, ingestion is unlikely due to the physical form of the product. No components are absorbed through the skin.

Section 5: Fire-Fighting Measures

Flash Point: Not Applicable
Autoignition Point: Not Applicable
Flammability Class: Not Applicable
Lower Exposure Limit: Not Applicable
Upper Exposure Limit: Not Applicable

Fire And Explosion Hazard

These products are non-flammable and non-explosive. However, if present in a fire or explosion, they may emit fumes of the component metals or metal oxides and gaseous and particulate fluorides.

Extinguishing Media

Use dry chemical, foam, or carbon dioxide. Do not use water.

Fire Fighting Instructions

If fighting a fire in which these products are present, wear a self-contained breathing apparatus With full facepiece operated in pressure-demand or other positive pressure mode.

Section 6: Accidental Release Measures

Not Applicable

Section 7: Handling And Storage

Handling Precautions

Wash hands and face thoroughly after handling material. Avoid breathing and fumes that result from the use of these products. Use ONLY with adequate ventilation.

Storage Precautions

Do not store in proximity to incompatible materials (see Section 10).

Section 8: Exposure Controls / Personal Protection

Exposure Limits

Ingredient	PEL-OSHA	TLV-ACGIH
Zinc CAS No. 7440-66-6	5 mg/m ³ TWA (as fume)	5 mg/m ³ TWA (as fume) 10 mg/m ³ STEL (as fume)
Aluminum CAS No. 7429-90-5	15 mg/m ³ TWA (total dust) 5 mg/m ³ TWA (resp. fraction)	10 mg/m ³ TWA
Cesium Tetrafluoro Aluminate CAS No. 138577-01-2	2.5 mg/m ³ (as fluorides)	2.5 mg/m ³ (as fluorides) 2 mg/m ³ as Al (soluble salts)
Aliphatic Polycarbonate CAS No. - - - - -	None Established	None Established

Engineering Controls

Use adequate ventilation (i.e. dilution, local exhaust) to maintain concentrations of all components to within their applicable limits.

Eye/Face Protection

Wear safety glasses with side shields. If the product is used with a flame, use protective lenses (a #3 or #4 filter is recommended).

Skin Protection

Wear appropriate protective gloves and clothing to prevent skin exposure and injury if the product is used with a flame. Refer to ANSI/ASC Z49.1-94 (Safety in Welding, Cutting and Allied Processes), published by the American Welding Society, for further information on the selection of personal protective equipment.

Section 9: Physical And Chemical Properties

Appearance: Odorless grey rectangular wire with white, flux system embedded in channel.
Chemical Type: Chemical Mixture
Physical State: Solid
Melting Point: 865° F (448° C)
Specific Gravity: ca. 3.2
Vapor Pressure: Not Applicable
Vapor Density: Not Applicable
Solubility: partial (flux component)

Section 10: Stability And Reactivity

Stability

Generally considered stable.

Incompatibility (Materials To Avoid)

Strong acids, chlorates, bromates, and iodates of alkali and alkali earth metals, halogens, chlorofluorocarbons, ammonium nitrate, chlorinated and brominated hydrocarbons, oxides of nitrogen, sulfur dioxide, organic and inorganic peroxides, carbon disulfide, hydrazine mononitrate, hydroxylamine, selenium, tellurium, lead azide, acetic anhydride, alkali and alkali earth metals, zirconium, platinum, bromine trifluoride.

Hazardous Decomposition Or By-Products

Toxic metal oxides are emitted when heated above the melting point. The amount of fume increases as the temperature rises.

Polymerization

Hazardous polymerization is not expected to occur.

Section 11: Toxicological Information

<u>Ingredient</u>	<u>LD 50</u>	<u>LC 50</u>
Zinc CAS No. 7440-66-6	7,950 mg/kg Mouse, oral	2,500 mg/kg Mouse
Aluminum CAS No. 7429-90-5	None Established	None Established
Cesium Tetrafluoro Aluminate CAS No. 138577-01-2	$\geq 2,000$ mg/kg Rat, oral	$\geq 2,000$ mg/kg Rat, dermal
Aliphatic Polycarbonate CAS No. - - - - -	None Established	None Established

Chronic/Carcinogenicity

The products contain no chemicals classified as potential or demonstrated carcinogens by IARC, NTP or OSHA.

Mutagenicity (Genetic Effects)

Inorganic fluoride compounds have been demonstrated to induce mutagenic changes in mammalian cells in culture. The significance of these findings to human health risks is unknown.

Conditions Aggravated By Overexposure

Pre-existing pulmonary diseases (e.g. bronchitis, asthma) may be aggravated by inhalation overexposure. Long-term overexposure may aggravate diseases of the liver, kidneys and skeletal and gastrointestinal systems.

Section 12. Ecological Information

In their intended manner of use, these products should not be released into the environment, and adverse effects on ecosystems are not anticipated under recommended conditions of use, storage and disposal.

Section 13: Disposal Information

Dispose of unused or unusable product in accordance with applicable Federal, State/Provincial and local regulations.

Section 14: Transportation Information

These products are not Hazardous Substances or Dangerous Goods per US DOT, TDG, IATA, IMO regulations.

SARA Hazard Classes

Acute Health Hazard; Chronic Health Hazard

Ingredient

Aluminum SARA Title III – Section 313; Form “R”/TRI Reportable Chemical

Canadian Regulatory Information

WHMIS Classes And Divisions: D2B

Compound/Ingredient Disclosure List:

- 1) Aluminum, elemental (CASRN 7429-90-5)
- 2) Fluoride Compounds, Inorganic, n.o.s.

Section 16: Other Information

Revision Level: Original Release

Disclaimer

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained therein, and assume no responsibility regarding the suitability of this information for the users intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purposes.

Bellman-Melcor, LLC