MATERIAL SAFETY DATA SHEET

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Section 1: Chemical Product And Company Information

Common Name: ChannelFlux 4047
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
Aluminum	7429-90-5	65 –80
Silicon	7440-21-3	10 – 20
Aluminum Potassium Fluoride	60304-36-1	10 - 30
Cesium Fluoroaluminate	138577-01-2	1 - 5
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 - > 200º 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:

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

Silicon

Aluminum Potassium Fluoride	Irritation of mucous membranes, cough. In cases of repeated or prolonged exposure, risk of bronchial hyper reactivity, chronic bronchitis, risk of pulmonary fibrosis.

Cesium Fluoroaluminate	N/A

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.

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
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
Silicon	15 mg/m^3 TWA (total dust) 5 mg/m^3 TWA (resp. fraction)	10 mg/m^3 (as AL)
Aluminum Potassium Fluoride	2.5 mg/m^3 (as F)	SAEL – 0.4 mg/m^3
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
Meting Point: 1080° F (568° C)
Specific Gravity: ca. 2.8
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
Hydrogen fluorides 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

Ingredient	LD 50 (Rat)	LC 50 (Rat)
Aluminum CAS No. 7429-90-5	None Established	None Established
Silicon CAS No. 7440-21-3	None Established	None Established
Aluminum Potassium Fluoride CAS #60304-36-1	2,000 mg/kg	5 mg/l
Cesium Fluoroaluminate CAS #138577-01-2	2,000 mg/kg	
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

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Bellman-Melcor, LLC