



# MATERIAL SAFETY DATA SHEET

## 1. Product and Company Identification

**Material name** AI-Braze EC; AI-Braze 1070 (kits)  
**Version #** 01  
**Issue date** 13-September-2013  
**Revision date** -  
**Supersedes date** -  
**CAS #** Mixture  
**MSDS Number** 0133  
**Product use** Metal-working operations.  
**Synonym(s)** Aluminum brazing and welding flux  
**Manufacturer information**  
**Manufacturer/Supplier** Harris Products Group  
4501 Quality Place  
Mason, Ohio 45040 US  
salesinfo@jwharris.com  
**Telephone number** 513-754-2000  
**Emergency Telephone Numbers** 1-866-519-4752 (US, Canada, Mexico only)  
  
(+) 1-760-476-3962  
Please quote 333895

## 2. Hazards Identification

**Physical state** Solid.  
**Appearance** White/gray - light yellow powder.  
**Emergency overview** WARNING  
  
May be harmful if swallowed. Causes severe eye irritation. Causes skin and respiratory tract irritation.  
**OSHA regulatory status** This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).  
**Potential health effects**  
**Routes of exposure** Inhalation. Ingestion. Skin contact. Eye contact.  
**Eyes** Causes severe eye irritation.  
**Skin** Causes skin irritation. Hydrogen fluoride, a possible decomposition product, is extremely corrosive and a poison by all routes of entry. Hydrogen fluoride can penetrate the skin and produce burns, which may not be immediately painful or visible; the burns impact the lower layers of skin and bone tissue. Hydrogen fluoride exposures involving 20 percent of the body or more can be fatal through systemic fluoride poisoning.  
**Inhalation** Causes respiratory tract irritation. Prolonged inhalation may be harmful.  
**Ingestion** May be harmful if swallowed. Ingestion may cause irritation and malaise.  
**Target organs** Skin. Eyes. Respiratory system.  
**Chronic effects** Prolonged overexposure to fluorides may increase fluoride content of bones and teeth, and may result in fluorosis, and brittleness of bones. Prolonged or repeated contact may dry skin and cause dermatitis. Refer to Section 11 Toxicological Information for more details.  
**Signs and symptoms** Contact may cause irritation and redness. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.  
**Potential environmental effects** The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms.

## 3. Composition / Information on Ingredients

Components	CAS #	Percent
Lithium chloride	7447-41-8	< 25

Components	CAS #	Percent
Zinc fluoride	7783-49-5	< 5
Potassium fluoroaluminate	14484-69-6	< 4
Zinc chloride	7646-85-7	< 0.01

**Composition comments** All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

#### 4. First Aid Measures

##### First aid procedures

- Eye contact** Immediately rinse eyes with water. Remove any contact lenses, and continue flushing eyes with running water for at least 15 minutes. Hold eyelids apart to ensure rinsing of the entire surface of the eye and lids with water. Get immediate medical attention.
- Skin contact** Remove contaminated clothes and rinse skin thoroughly with water for at least 15 minutes. Get medical attention if irritation develops and persists.
- Inhalation** Remove person from contaminated area to fresh air. Apply artificial respiration if needed. Get medical attention if discomfort develops or persists.
- Ingestion** Do NOT induce vomiting. Immediately rinse mouth and drink a cupful of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

**General advice** Show this safety data sheet to the doctor in attendance.

#### 5. Fire Fighting Measures

**Flammable properties** The product is not flammable.

##### Extinguishing media

**Suitable extinguishing media** Use fire-extinguishing media appropriate for surrounding materials. Water spray, foam, dry powder or carbon dioxide.

##### Protection of firefighters

**Protective equipment and precautions for firefighters** Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

**Fire fighting equipment/instructions** Move containers from fire area if you can do so without risk.

**Specific methods** Use standard firefighting procedures and consider the hazards of other involved materials.

#### 6. Accidental Release Measures

**Personal precautions** Keep unnecessary personnel away. Avoid inhalation of dust from the spilled material. Wear protective clothing as described in Section 8 of this MSDS. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

**Environmental precautions** Prevent further leakage or spillage if safe to do so. Do not contaminate water.

**Methods for containment** Stop leak if you can do so without risk. Prevent entry into waterways, sewer, basements or confined areas. Local authorities should be advised if significant spillages cannot be contained.

**Methods for cleaning up** Should not be released into the environment. Prevent product from entering drains. Do not allow material to contaminate ground water system.

Large Spills: Sweep up and place into a proper container for disposal. Avoid the generation of dusts during clean-up.

Small Spills: Wipe up spilled material and place in a suitable container for disposal.

Never return spills in original containers for re-use. Following product recovery, flush area with water. Clean surface thoroughly to remove residual contamination. This material and its container must be disposed of as hazardous waste. For waste disposal, see Section 13 of the MSDS.

**Other information** Clean up in accordance with all applicable regulations.

## 7. Handling and Storage

### Handling

Keep formation of airborne dusts to a minimum. Provide appropriate exhaust ventilation at places where dust is formed. Avoid inhalation of dust and fumes. Avoid contact with skin and eyes. Wear appropriate personal protective equipment (See Section 8). Do not get this material on clothing. Do not eat, drink or smoke when using the product. Wash thoroughly after handling. Avoid release to the environment.

### Storage

Store in tightly closed original container in a dry, cool and well-ventilated place. Store in a closed container away from incompatible materials. Keep away from food, drink and animal feedings.

## 8. Exposure Controls / Personal Protection

### Occupational exposure limits

#### US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Zinc chloride (CAS 7646-85-7)	STEL	2 mg/m <sup>3</sup>	Fume.
Zinc fluoride (CAS 7783-49-5)	TWA TWA	1 mg/m <sup>3</sup> 2.5 mg/m <sup>3</sup>	Fume.

#### US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
Potassium fluoroaluminate (CAS 14484-69-6)	PEL	2.5 mg/m <sup>3</sup>	
Zinc chloride (CAS 7646-85-7)	PEL	1 mg/m <sup>3</sup>	Fume.
Zinc fluoride (CAS 7783-49-5)	PEL	2.5 mg/m <sup>3</sup>	

#### US. OSHA Table Z-2 (29 CFR 1910.1000)

Components	Type	Value	Form
Potassium fluoroaluminate (CAS 14484-69-6)	TWA	2.5 mg/m <sup>3</sup>	Dust.
Zinc fluoride (CAS 7783-49-5)	TWA	2.5 mg/m <sup>3</sup>	Dust.

#### Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value	Form
Zinc chloride (CAS 7646-85-7)	STEL	2 mg/m <sup>3</sup>	Fume.
	TWA	1 mg/m <sup>3</sup>	Fume.

#### Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Components	Type	Value	Form
Zinc chloride (CAS 7646-85-7)	STEL	2 mg/m <sup>3</sup>	Fume.
	TWA	1 mg/m <sup>3</sup>	Fume.
Zinc fluoride (CAS 7783-49-5)	TWA	2.5 mg/m <sup>3</sup>	

#### Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Components	Type	Value	Form
Zinc chloride (CAS 7646-85-7)	STEL	2 mg/m <sup>3</sup>	Fume.
	TWA	1 mg/m <sup>3</sup>	Fume.
Zinc fluoride (CAS 7783-49-5)	TWA	2.5 mg/m <sup>3</sup>	

**Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)**

Components	Type	Value	Form
Zinc chloride (CAS 7646-85-7)	TWA	1 mg/m <sup>3</sup>	Fume.
Zinc fluoride (CAS 7783-49-5)	TWA	2.5 mg/m <sup>3</sup>	

**Mexico. Occupational Exposure Limit Values**

Components	Type	Value	Form
Zinc chloride (CAS 7646-85-7)	STEL	2 mg/m <sup>3</sup>	Fume.
Zinc fluoride (CAS 7783-49-5)	TWA	1 mg/m <sup>3</sup>	Fume.
	TWA	2.5 mg/m <sup>3</sup>	

<b>Exposure guidelines</b>	Follow standard monitoring procedures.
<b>Engineering controls</b>	Provide adequate ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of dust. Shower, hand and eye washing facilities near the workplace are recommended.
<b>Personal protective equipment</b>	
<b>Eye / face protection</b>	Wear safety glasses with side shields (or goggles).
<b>Skin protection</b>	Chemical resistant clothing is recommended.
<b>Respiratory protection</b>	Use a respirator when local exhaust or ventilation is not adequate to keep exposures below the TLV. In a confined space a supplied respirator may be required. Selection and use of respiratory protective equipment should be in accordance with OSHA General Industry Standard 29 CFR 1910.134; or in Canada with CSA Standard Z94.4.
<b>General hygiene considerations</b>	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

**9. Physical & Chemical Properties**

<b>Appearance</b>	White/gray - light yellow powder.
<b>Physical state</b>	Solid.
<b>Form</b>	Powder.
<b>Color</b>	White/gray - light yellow.
<b>Odor</b>	Neutral.
<b>Odor threshold</b>	Not available.
<b>pH</b>	3 - 5 Approx.
<b>Vapor pressure</b>	Not available.
<b>Vapor density</b>	Not available.
<b>Boiling point</b>	Not available.
<b>Melting point/Freezing point</b>	959 - 1166 °F (515 - 630 °C)
<b>Solubility (water)</b>	10 g/l
<b>Specific gravity</b>	Not available.
<b>Flash point</b>	Not flammable.
<b>Flammability limits in air, upper, % by volume</b>	Not available.
<b>Flammability limits in air, lower, % by volume</b>	Not available.
<b>Auto-ignition temperature</b>	Not available.
<b>Bulk density</b>	1200 kg/m <sup>3</sup> Approx.

**10. Chemical Stability & Reactivity Information**

<b>Chemical stability</b>	Material is stable under normal conditions. The product reacts with water and will generate heat.
<b>Conditions to avoid</b>	Contact with incompatible materials.
<b>Incompatible materials</b>	Strong oxidizing agents. Strong acids.

**Hazardous decomposition products** Hydrogen fluoride. Hydrogen chloride.

**Possibility of hazardous reactions** Hazardous polymerization does not occur.

## 11. Toxicological Information

### Toxicological data

Components	Species	Test Results
Lithium chloride (CAS 7447-41-8)		
<b>Acute</b>		
<i>Oral</i>		
LD50	Rat	757 mg/kg
Zinc chloride (CAS 7646-85-7)		
<b>Acute</b>		
<i>Inhalation</i>		
LC50	Rat	<= 1.975 mg/l, 10 Minutes
<i>Oral</i>		
LD50	Rat	350 mg/kg
<b>Sensitization</b>	Not classified.	
<b>Acute effects</b>	May be harmful if swallowed.	
<b>Local effects</b>	Causes severe eye irritation. Causes skin and respiratory tract irritation.	
<b>Chronic effects</b>	Repeated exposure to fluorides may cause excessive calcification of the bone and calcification of ligaments of the ribs, pelvis and spinal column. Exposure to extremely high levels of fluorides can cause abdominal pain, diarrhea, muscular weakness, and convulsions. In extreme cases it can cause loss of consciousness and death.	
<b>Carcinogenicity</b>		
<b>ACGIH Carcinogens</b>		
Zinc fluoride (CAS 7783-49-5)	A4 Not classifiable as a human carcinogen.	
<b>IARC Monographs. Overall Evaluation of Carcinogenicity</b>		
Zinc fluoride (CAS 7783-49-5)	3 Not classifiable as to carcinogenicity to humans.	
<b>Epidemiology</b>	No epidemiological data is available for this product.	
<b>Mutagenicity</b>	No data available.	
<b>Reproductive effects</b>	No data available.	
<b>Symptoms and target organs</b>	Symptoms include itching, burning, redness, and tearing of eyes. Itching, redness, burning of skin. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.	

## 12. Ecological Information

### Ecotoxicological data

Components	Species	Test Results
Zinc chloride (CAS 7646-85-7)		
<b>Aquatic</b>		
Crustacea	EC50	American or virginia oyster (Crassostrea virginica) 0.1511 - 0.2782 mg/l, 48 hours
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss) 0.101 - 0.197 mg/l, 96 hours
<b>Ecotoxicity</b>	The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms.	
<b>Environmental effects</b>	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.	
<b>Aquatic toxicity</b>	Not classified.	
<b>Persistence and degradability</b>	No data is available on the degradability of this product.	
<b>Bioaccumulation / Accumulation</b>	Not available.	

### 13. Disposal Considerations

<b>Disposal instructions</b>	Do not allow this material to drain into sewers/water supplies. Dispose in accordance with all applicable regulations.
<b>Waste from residues / unused products</b>	Dispose of in accordance with local regulations.
<b>Contaminated packaging</b>	Empty containers should be taken to an approved waste handling site for recycling or disposal.

### 14. Transport Information

#### DOT

Not regulated as a hazardous material by DOT.

#### IATA

Not regulated as dangerous goods.

#### IMDG

Not regulated as dangerous goods.

#### TDG

Not regulated as dangerous goods.

### 15. Regulatory Information

<b>US federal regulations</b>	This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. All components are on the U.S. EPA TSCA Inventory List.
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CERCLA/SARA Hazardous Substances - Not applicable.

#### TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

#### Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

#### US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De minimis concentration

Zinc chloride (CAS 7646-85-7) 1.0 % N982

Zinc fluoride (CAS 7783-49-5) 1.0 % N982

#### US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance

Zinc chloride (CAS 7646-85-7) N982 Listed.

Zinc fluoride (CAS 7783-49-5) N982 Listed.

#### CERCLA (Superfund) reportable quantity (lbs) (40 CFR 302.4)

Zinc fluoride: 1000

Zinc chloride: 1000

#### Superfund Amendments and Reauthorization Act of 1986 (SARA)

<b>Hazard categories</b>	Immediate Hazard - Yes Delayed Hazard - Yes Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No
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**Section 302 extremely hazardous substance (40 CFR 355, Appendix A)** No

**SARA 311/312 Hazardous chemical** Yes

**Drug Enforcement Administration (DEA) (21 CFR 1308.11-15)** Not controlled

**Canadian regulations** This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

**WHMIS status** Controlled

**WHMIS classification** D2B - Other Toxic Effects-TOXIC

**Inventory status**

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

\*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

**State regulations** This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

**US - California Hazardous Substances (Director's): Listed substance**

Zinc chloride (CAS 7646-85-7) Listed.

**US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance**

Not listed.

**US - New Jersey RTK - Substances: Listed substance**

Potassium fluoroaluminate (CAS 14484-69-6) Listed.

Zinc chloride (CAS 7646-85-7) Listed.

Zinc fluoride (CAS 7783-49-5) Listed.

**US. Massachusetts RTK - Substance List**

Zinc chloride (CAS 7646-85-7) Listed.

Zinc fluoride (CAS 7783-49-5) Listed.

**US. New Jersey Worker and Community Right-to-Know Act**

Zinc chloride (CAS 7646-85-7) 500 lbs

Zinc fluoride (CAS 7783-49-5) 500 lbs

**US. Pennsylvania RTK - Hazardous Substances**

Zinc chloride (CAS 7646-85-7) Listed.

Zinc fluoride (CAS 7783-49-5) Listed.

**Mexico regulations** This safety data sheet was prepared in accordance with the Official Mexican Standard (NOM-018-STPS-2000).

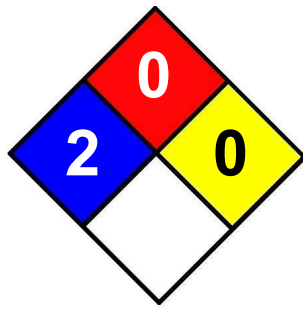
**16. Other Information****Further information**

HMIS® is a registered trade and service mark of the NPCA.

**HMIS® ratings**

Health: 2  
Flammability: 0  
Physical hazard: 0

**NFPA Ratings**



**Disclaimer**

The information in the sheet was written based on the best knowledge and experience currently available.