

# CROWN ALLOYS

## COMPANY

### MATERIAL SAFETY DATA SHEET

#### Section 1 - COMPANY AND MATERIAL IDENTIFICATION

**PRODUCT TYPE:** Aluminum brazing flux.

**TRADE NAME:** #100 FLUX

**SPECIFICATION:** N/A

**CLASSIFICATION:** N/A

**VENDOR:** Crown Alloys Company

**ADDRESS:** 30105 Stephenson Hwy.  
Madison Heights, MI. 48071

**TELEPHONE:** (248) 588-3790                      Emergency 24 hour telephone #  
CHEMTREC (800) 424-9300

**WEBSITE:** www.crownalloys.com

**DATE:** June 1, 2007

#### Section 2 - HAZARDOUS INGREDIENTS

*IMPORTANT!* This section covers the material from which these products are manufactured. The fumes and gases produced when welding with normal use of these products are covered in Section 5 & 6.

Ingredient	CAS No.	OSHA – TWA PEL,mg/m <sup>3</sup>	(ACGIH – TWA) <sup>1</sup> TLV,mg/m <sup>3</sup>	Wt.%
Sodium Aluminum Fluoride	15096-52-3	1.5 ppm	N/E	5.0 – 15.0
Zinc Chloride	7646-85-7	1.0 ppm	N/E	3.0 – 6.0

N/E = Not Established

Single values shown are maximum.

NIOSH classifies welding fumes as carcinogens.

<sup>1</sup>The ACGIH has an established exposure limit for Welding Fumes, Not Otherwise Classified. That Threshold Limit Value is 5 mg/m<sup>3</sup>.

### HMIS RATING (Hazardous Materials Information System)

<b>Health (blue) - 2</b>	<b>Flammability (red) - 0</b>	<b>Reactivity (yellow) - 1</b>	<b>Protective Equipment - H</b> (See Section 7)
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**Health Hazard:** 0 (minimal acute or chronic exposure hazard); 1 (slight acute or chronic exposure hazard); 2 (moderate acute or significant chronic exposure hazard); 3 (severe acute exposure hazard; one time overexposure can result in permanent injury and may be fatal); 4 (extreme acute exposure hazard; onetime overexposure can be fatal).

**Flammability Hazard:** 0 (minimal hazard); 1 (materials that require substantial pre-heating before burning); 2 (combustible liquid or solids; liquids with a flash point of 38-93°C [100-200°F]); 3 (Class IB and IC flammable liquids with flash points below 38°C [100°F]); 4 (Class IA flammable liquids with flash points below 23°C [73°F] and boiling points below 38°C [100°F]).

**Reactivity Hazard:** 0 (normally stable); 1 (material that can become unstable at elevated temperatures or which can react slightly with water); 2 (materials that are unstable but do not detonate or which can react violently with water); 3 (materials that can detonate when initiated or which can react explosively with water); 4 (materials that can detonate at normal temperatures or pressures).

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## **Section 3 - PHYSICAL and CHEMICAL CHARACTERISTICS**

### **APPEARANCE AND COLOR:**

- White powder with no characteristic odor.

**SPECIFIC GRAVITY @ 20°C (water = 1):** N/A

**SOLUBILITY IN WATER:** Unlimited

**VAPOR PRESSURE: (mm Hg):** N/A

**MELTING POINT:** 630°C / 1166°F

**PERCENT VOLATILE BY VOLUME:** 0%

**EVAPORATION RATE (Butyl Acetate = 1):** N/A

**BOILING POINT @ 760 mm Hg:** N/A

**VAPOR DENSITY (AIR = 1):** N/A

**REACTIVITY IN WATER:** Exothermic

## **Section 4 - FIRE and EXPLOSION HAZARD DATA**

**FLAMMABLE LIMITS (in air by volume, %):** Lower (LEL): N/A

Upper (UEL): N/A

**AUTO IGNITION TEMPERATURE:** None

**FLASH POINT:** N/A

**FIRE EXTINGUISHING MATERIALS:** CO<sub>2</sub> foam or dry chemical.

Brazing flame, welding arc and sparks can ignite combustibles and flammables. Refer to American National Standard Z49.1 "Safety in Welding and Cutting" and "Safe Practices" Code: SP, published by the American Welding Society for fire prevention during the use of welding, brazing and allied procedures.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** When involved in a fire, this product will generate irritating fumes. Dense smoke will be generated. Fluoride compounds will be generated.

**SPECIAL FIRE-FIGHTING PROCEDURES:** May release zinc oxide and HCl fumes. Toxic metal halide fumes produced. Structural firefighters must wear NIOSH/MSHA approved Self-Contained Breathing Apparatus and full protective equipment. Chemical resistant clothing may be necessary. If possible, prevent run-off water from entering storm drains, bodies of water or other environmentally sensitive areas.

## **Section 5 - STABILITY AND REACTIVITY DATA**

**STABILITY:** Stable

**HAZARDOUS POLYMERIZATION:** Will not occur.

**CONDITIONS TO AVOID:** Uncontrolled exposure to extreme temperatures and high pressures and metals.

**HAZARDOUS DECOMPOSITION PRODUCTS:** Hydrogen chloride fumes and fluorides when exposed to high temperatures.

**MATERIALS WITH WHICH THIS PRODUCT IS INCOMPATIBLE:** Alkaline, strong oxidizing or reducing materials, cyanides or sulfides.

### *Hazardous Decomposition Products*

Brazing/soldering fumes and gases can not be classified simply. The composition and quantity of both are dependent upon the type of flux, the metal being soldered/brazed and the rods used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include; Coatings on the metal being soldered/brazed (such as paint, plating, or galvanizing), the number of welders, the volume of the work area, the quality and the amount of ventilation, the position of the welder's head with respect to the gas plume, the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities), the process and procedures, as well as the soldering/brazing consumables.

When this flux is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 2. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in Section 2, plus those from the base metal, coatings, etc., as noted above. Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from an arc, in addition to the shielding gases like argon and helium, whenever they are employed.

One recommended way to determine the composition and quantity of fumes and gases to which workers are exposed is to take an air sample inside the welder's helmet if worn or in the worker's breathing zone. See ANSI/AWS F1.1 "Method for Sampling Airborne Particles Generated by Welding and Allied Processes" and "Characterization of Arc Welding Fume" available from the American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.

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### **Section 6 - HEALTH HAZARD DATA**

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- **EYES:** Contact with this flux will cause irritation to the eyes, tearing, burning of eye surfaces. This flux will have a corrosive effect. Chronic overexposure will lead to contact burns to the eyes. Thermal decomposition of this flux can generate **fluoride compounds**, which are toxic and can cause burns in extreme cases. Burns from **fluoride compounds** can be delayed.
- **SKIN:** Contact with this flux may lead to dermatitis and cause possible chemical burns. *Chronic overexposure* will lead to dermatitis and contact burns to the skin. Corrosive to the skin. Existing skin disorders will be aggravated. There are no known adverse absorption effects. Thermal decomposition of this compound can generate **fluoride compounds**, which are toxic and can cause burns in extreme cases. Burns from **fluoride compounds** can be delayed and can penetrate to muscles and even bone. This may have a long term crippling effect.
- **INGESTION:** Can cause damage to digestive system. Corrosive to mucous membranes.
- **INHALATION:** During brazing and soldering operations, the most significant route of overexposure is via inhalation of fumes. Some of the health effects are listed below:
  - **SHORT TERM (ACUTE):** Inhalation of large amounts of particulates generated by this product during metal processing operations (ie. soldering) may be physically irritating and cause severe burns to the respiratory system.
  - **LONG TERM (CHRONIC):** *Chronic overexposure* will lead to contact burns to the respiratory system. *Chronic overexposure* to this flux will irritate the respiratory system. It will also lead to coughing, chest pains, nausea and headaches. Existing lung disorders will be aggravated. *Chronic overexposure* will lead to pulmonary edema, abdominal pain and vomiting. *Chronic overexposure* to fluorides over years may produce mottling of tooth enamel, embrittlement and calcification of bones, and an increased calcification of ligaments and vertebrae resulting in spinal stiffness (fluorosis). Over inhalation may cause a life-threatening lung injury.

### **Section 7 - PRECAUTIONS FOR SAFE HANDLING & USE/APPLICABLE CONTROL MEASURES**

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**VENTILATION AND ENGINEERING CONTROLS:** Maintain exposures below the acceptable exposure levels (see Section 2). Use industrial hygiene air monitoring to ensure that your use of this product does not create exposures that exceed the recommended exposure limits. Always use exhaust ventilation in user operations such as high temperature cutting, grinding, welding, brazing and soldering. Train the welder to keep his head out of the fume plume. Maintain air flow away from the user to remove all fumes and dusts, so that the PEL is never exceeded. Adhere to Environmental regulations for exhausts. Confined spaces require adequate ventilation and/or air supplied respirators. Read and understand the manufacturer's instructions and the precautionary label on the product. See American National Standard Z49.1, *Safety in Welding, Cutting, and Allied Processes*, published by the American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126 and OSHA Publication 2206 (29CFR1910), US Government Printing Office, Washington, D.C. 20402 for more details on many of the following.

**RESPIRATORY PROTECTION:** Use respirable fume respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below PEL's (see Section 2). Use only NIOSH approved respirators in accordance with 29 CFR 1910.134 – Respiratory Protection. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (1910.134-1998).

**FOR MAXIMUM SAFETY, BE CERTIFIED FOR AND WEAR A RESPIRATOR AT ALL TIMES WHEN WELDING OR BRAZING OR SOLDERING!**

**EYE PROTECTION:** Ensure eyewash/safety shower stations are available near areas where these products are used. Wear safety glasses, goggles or face-shield with filter lens of appropriate shade number (per ANSI Z49.1-1988, "Safety in Welding and Cutting"). Goggles must be chemically tight safety goggles. Do NOT wear contact lenses.

**PROTECTIVE CLOTHING:** Protective gloves are recommended that are chemical and acid impervious. Since soldering involves high temperatures, be sure the gloves are designed for high temperature applications to prevent burns.

**WORK PRACTICES AND HYGIENE PRACTICES:** As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash hands after handling this product. Do not eat or drink while handling this product. Do not smoke or apply cosmetics in areas where exposures exist.

**STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:** First neutralize with soda ash or sodium bicarbonate, dilute with water and dispose of in accordance with EPA regulations. If molten, allow spilled material to solidify. Contain the spill and then absorb, sweep-up and dispose of material. Flush the area to a chemical sewer.

**WASTE DISPOSAL METHOD:** Prevent waste from contaminating surrounding environment. Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with federal, state and local regulations.

**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:** Store the flux at ambient conditions. Keep under extremely dry and controlled conditions. This flux will naturally absorb moisture and cake solid. Wash thoroughly after handling to remove all residue. DO NOT BREATHE FUMES! MAY BE FATAL! Professionally wash contaminated clothing before re-use. Material will naturally absorb moisture and cake solid. Existing lung disorders will have increased toxic susceptibility.

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## Section 8 - FIRST AID MEASURES

- **EYE EXPOSURE:** Flush eyes with plenty of water or saline for at least 15 minutes to remove all residue. Consult a physician. Blindness can result.
- **SKIN EXPOSURE:** Wash thoroughly with soap and water. If a rash or burn develops, consult a physician. Material is corrosive. HF may be present.
- **INHALATION EXPOSURE:** Remove to fresh air. Call a physician immediately; advise of chemical composition (Section 2) and potential health hazards (Section 6). Over inhalation may cause a life-threatening lung injury.
- **INGESTION EXPOSURE:** Give 3 – 4 glasses of water. Call a physical or poison control center at once. Corrosive to mucous membranes. Advise of chemical composition (Section 2) and potential health effects (Section 6).
- **RECOMMENDATIONS TO PHYSICIANS:** Treat symptoms and eliminate overexposure.

## Section 9 – REGULATORY INFORMATION

### TOXIC SUBSTANCE CONTROL ACT:

All components of this product are listed within the TSCA inventory

### SARA Title III Program (Section 313 Supplier Notification):

This product contains the following toxic chemicals subject to the reporting requirements of EPCRA of 1986 and 40 CFR 372.

<u>Chemical Name</u>	<u>Concentration</u>
<b>Zinc Chloride</b>	<b>3.0 – 6.0%</b>

*This information must be included in all MSDS's that are copied and distributed for this material!*

## Section 10 – OPTIONAL INFORMATION

### DEPARTMENT OF TRANSPORTATION: (Domestic Ground)

<b>D.O.T. Proper shipping name:</b>	Corrosive Solids, N.O.S. (contains zinc chloride, anhydrous)
<b>Hazard Class:</b>	8
<b>ID &amp; Packing Group Number:</b>	UN 1759, PG III
<b>Type D.O.T. Label Required Information:</b>	Corrosive

### STATE RIGHT-TO-KNOW PROGRAMS:

<b>Pennsylvania:</b>	All materials of Section 2 are listed in PA code Title 34.
<b>California:</b>	As currently manufactured, this material contains no compounds subject to the reporting and labeling requirements of Proposition 65.

## Section 11 – DEFINITIONS OF TERMS

**CAS No.** - Chemical Abstracts Service Number    **PEL** - Permissible Exposure Level    **TLV** - Threshold Limit Value  
**TWA** - Time Weighted Average    **STEL** - Short Term Exposure Limit    **IARC** – International Agency for Research on Cancer  
**NIOSH** – National Institute of Occupational Safety and Health    **OSHA** – U.S. Occupational Safety and Health Administration  
**TDLo** – the lowest dose to cause a symptom    **TCLo** – the lowest concentration to cause a symptom  
**TD<sub>o</sub>**, **LDLo**, and **LD<sub>o</sub>**, or **TC**, **TC<sub>o</sub>**, **LCLo**, and **LC<sub>o</sub>** – the lowest dose (or concentration) to cause lethal or toxic effects.  
**SARA** – Superfund Amendments and Reauthorization Act    **ACGIH** – American Conference of Governmental Industrial Hygienists  
**LD<sub>50</sub>** & **LC<sub>50</sub>** – These values are the amount of a substance given to the stated species that causes 50% of that species to die.

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