CROWN ALLOYS
COMPANY

MATERIAL SAFETY DATA SHEET

Section 1 - COMPANY AND MATERIAL IDENTIFICATION

PRODUCT TYPE: Premium high activity, acid type, liquid soldering flux.

TRADE NAME: **#95 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: January 28, 2005

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^3	(ACGIH – TWA)[1] TLV,mg/m^3	Wt.%
Ammonium Bifluoride	1341-49-7	2.5 ppm	N/E	3.0 – 6.0
Ammonium Chloride	12125-02-9	N/E	N/E	4.0 – 15.0
Hydrochloric Acid	7647-01-0	5.0 ppm	N/E	3.0 – 15.0
Zinc Chloride	7646-85-7	1.0 ppm	N/E	30.0 – 45.0

Unlisted percentages are non-hazardous stabilizers, activators and water. None of the materials in this product are listed in NTP, IARC or OSHA as carcinogens.
N/E = Not Established Single values shown are maximum. **NIOSH classifies welding fumes as carcinogens.**

[1]The ACGIH has an established exposure limit for Welding Fumes, Not Otherwise Classified. That Threshhold Limit Value is 5 mg/m^3.

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Section 3 - PHYSICAL and CHEMICAL CHARACTERISTICS

APPEARANCE AND COLOR:
- Pink-red odorless liquid.

SPECIFIC GRAVITY @ 20^{O}C (water = 1): 1.50
SOLUBILITY IN WATER: Unlimited
VAPOR DENSITY (AIR = 1): NA
REACTIVITY IN WATER: None
VAPOR PRESSURE (mm Hg): NA
EVAPORATION RATE (Butyl Acetate = 1): 0.6
BOILING POINT: 104^{O}C (220^{O}F)
MELTING POINT: 0^{O}C (32^{O}F)
PERCENT VOLATILE BY VOLUME: 55%

Section 4 - FIRE and EXPLOSION HAZARD DATA

FLAMMABLE LIMITS (in air by volume, %): Lower (LEL): N/A Upper (UEL): N/A
FLASH POINT: NA
AUTO IGNITION TEMPERATURE: None
EXTINGUISHER MEDIA: Dry Chemical, CO_2 Foam

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: At high temperatures, overpressurization of containers can result. Will release small amounts of HCl upon decomposition.
SPECIAL FIRE-FIGHTING PROCEDURES: Wear self-contained respiratory apparatus for protection. Storage containers exposed to fire and/or heat should be kept cool with water. Otherwise use normal precautions when dealing with chemicals.

Section 5 - STABILITY AND REACTIVITY DATA

STABILITY: Stable **HAZARDOUS POLYMERIZATION:** Will not occur.
CONDITIONS TO AVOID: Metals and open flames, sparks and/or high temperatures. Excessive cold.
HAZARDOUS DECOMPOSITION PRODUCTS: HCl, zinc chloride, zinc oxide, ammonium.
MATERIALS WITH WHICH THIS PRODUCT IS INCOMPATIBLE: Alkaline, strong oxidizing or reducing materials, cyanides or combustible materials.

Hazardous Decomposition Products

Welding/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/welded 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/welded (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/welding 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

- **EYES:** Contact with this flux may cause damage to the eyes.
- **SKIN:** Contact with this flux may cause slight irritation or burns to the skin.
- **INGESTION:** Ingesting this flux may cause abdominal pain and vomiting.
- **INHALATION:** During welding/brazing/soldering operations the fumes generated may cause headaches, dizziness, nausea and pulmonary edema.
- **MEDICAL CONDITIONS GENERALLY AGGRAVATED BY OVEREXPOSURE:** None presently known.
- **OSHA PERMISSIBLE EXPOSURE LIMIT (PEL):** 1.0 ppm
- **ACGIH THRESHOLD LIMIT VALUE (TLV):** 1.0 ppm

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

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 Respira-
tory Protection Standard (1910.134-1998).
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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 welding/brazing/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.

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 this product in plastic containers in cool area away from heat. Keep under extremely dry and controlled conditions. Wash thoroughly after handling to remove all residue. KEEP OUT OF REACH OF CHILDREN! Professionally wash contaminated clothing before re-use. Use safe precautionary practices to avoid spills and exposure to skin and fumes.

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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.
- **SKIN EXPOSURE:** Wash thoroughly with soap and water. If irritation should occur, contact a physician.
- **INHALATION EXPOSURE:** Remove to fresh air. Resuscitate if necessary. Call a physician; advise of chemical composition (Section 2) and potential health hazards (Section 6).
- **INGESTION EXPOSURE:** Drink large volumes of water or milk. Call a physician. 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

HMIS Rating:

Health Hazard	3
Flammability	0
Reactivity	0

HAZARD RATING
4 – Severe Hazard
3 – Serious Hazard
2 – Moderate Hazard
1 – Slight Hazard
0 – Minimal Hazard

Section 10 – OPTIONAL INFORMATION

DEPARTMENT OF TRANSPORTATION: (Domestic Ground)

D.O.T. Proper Shipping Name:	Corrosive liquid, acidic, inorganic, N.O.S (Contains zinc chloride, hydrochloric acid)
Identification Number:	UN3264
Hazard Class:	8
Packing Group:	III
Type D.O.T. Label Required Information:	Corrosive

STATE RIGHT-TO-KNOW PROGRAMS:

Pennsylvania:	All materials of Section 2 are listed in PA code Title 34.
California:	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
TDo, LDLo, and **LDo,** or **TC, TCo, LCLo,** and **LCo** – the lowest dose (or concentration) to cause lethal or toxic effects.
SARA – Superfund Amendments and Reauthorization Act **ACGIH** – American Conference of Governmental Industrial Hygienists

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