MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI and Canadian WHMIS Standards .This Material Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard (29 CFR 1910.1200). Other government regulations must be reviewed for applicability to these products.

WARNING: PRODUCT COMPONENTS PRESENT HEALTH AND SAFETY HAZARDS. READ AND UNDERSTAND THIS MATERIAL SAFETY DATA SHEET (M.S.DS.). ALSO, FOLLOW YOUR EMPLOYER'S SAFETY PRACTICES. This product may contain Chromium and/or Nickel which are listed by OSHA, NTP, or IARC as being a carcinogen or potential carcinogen. Use of this product may expose you or others to fumes and gases at levels exceeding those established by the American Conference of Governmental Industrial Hygienists (ACGIH) or the Occupational Safety and Health Administration (OSHA) The information contained herein relates only to the specific product. If the product is combined with other materials, all component properties must be considered. **BE SURE TO CONSULT THE LATEST VERSION OF THE MSDS. MATERIAL SAFETY DATA SHEETS ARE AVAILABLE FROM HARRIS Products Group.** salesinfo@jwharris.com 513-754-2000 www.harrisproductsgroup.com

STATEMENT OF LIABILITY-DISCLAIMER

To the best of the Harris Products Group knowledge, the information and recommendations contained in this publication are reliable and accurate as of the date prepared. However, accuracy, suitability, or completeness are not guaranteed, and no warranty, guarantee, or representation, expressed or implied, is made by Harris Products Group as to the absolute correctness or sufficiency of any representation contained in this and other publications; Harris Products Group assumes no responsibility in connection therewith; nor can it be assumed that all acceptable safety measures are contained in this and other publications, or that other or additional measures may not be required under particular or exceptional conditions or circumstances . Data may be changed from time to time.

PART I *What is the material and what do I need to know in an emergency?*

1. PRODUCT IDENTIFICATION

TRADE NAME (AS LABELED):	**HARRIS 10, AL-BRAZE 1070, AL-BRAZE EC FLUX**
CHEMICAL NAME/CLASS:	Alkali Metal Halide Powder
SYNONYMS:	ALUMINUM Brazing and Welding Flux
PRODUCT USE:	Metal-Working Operations
DOCUMENT NUMBER:	0133
SUPPLIER/MANUFACTURER'S NAME:	**HARRIS PRODUCTS GROUP**
ADDRESS:	4501 Quality Place, Mason, Ohio 45040
EMERGENCY PHONE:	CHEMTREC: 1-800-424-9300
BUSINESS PHONE:	1-513-754-2000
DATE OF PREPARATION:	September 27, 2010

2. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	% w/w	EXPOSURE LIMITS IN AIR					
			ACGIH-TLV		OSHA-PEL			
			TWA mg/m^3	STEL mg/m^3	TWA mg/m^3	STEL mg/m^3	IDLH mg/m^3	OTHER mg/m^3
Alkali Metal Chlorides: Lithium Chloride Potassium Chloride Sodium Chloride	 7447-41-8 7447-40-7 7647-14-5	75–90	NE	NE	NE	NE	NE	NE
Lithium Fluoride	7789-24-4	4-15	2.5, A4 (Not Classifiable as a Human Carcinogen)	NE	2.5	NE	250	NIOSH REL: 2.5 DFG MAK: 2.5 (Total respirable dust fraction)
Zinc Chloride (exposure limits are for Zinc Chloride fume)	7646-85-7	8-20	1	2	1	2 (vacated 1989 PEL)	50	NIOSH REL: TWA = 1 STEL = 2 Carcinogen: EPA-D

NE = Not Established. NIC = Notice of Intended Change mppcf = Millions of Particles per Cubic Foot See Section 16 for Definitions of Terms Used.
NOTE (1): The ACGIH has an established exposure limit for Welding Fumes, Not Otherwise Classified. The Threshold Limit Value is 5 mg/m^3. NIOSH classifies welding fumes as carcinogens. Single values shown are maximum, unless otherwise noted.
NOTE (2): ALL WHMIS required information is included in appropriate sections based on the ANSI Z400.1-1998 format. 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.

3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: These products consist of odorless white or pink powers (Al-braze 1070 & EC is white) (HARRIS 10 is pink). This product is neither flammable nor reactive under normal circumstances. If involved in a fire, the components of this product can decompose to release corrosive hydrogen fluoride. This product and its decomposition products can severely irritate the skin, eyes, and any other contaminated tissue. Emergency responders must wear the proper personal protective equipment suitable for the situation to which they are responding.

SYMPTOMS OF OVER-EXPOSURE BY ROUTE OF EXPOSURE: The most significant routes of over-exposure for this product are by contact with skin, eye contact, or inhalation of this product.

INHALATION: If this product is inhaled, it may irritate and burn the nose, throat, and respiratory system. Symptoms of inhalation over-exposure may include coughing, sneezing, and difficulty breathing. Inhalation over-exposure to Zinc Chloride fumes can cause metal fume fever. Severe inhalation over-exposure to Zinc Chloride (a component of this product) can cause life-threatening lung injury, such as pulmonary edema and pneumonitis.

CONTACT WITH SKIN or EYES: Depending on the duration and concentration of over-exposure, skin contact with this product can severely irritate the skin. Repeated or prolonged skin over-exposure to this product may result in dermatitis (red, dry, itchy skin). Depending on the duration and concentration of over-exposure, eye contact with this product may irritate or burn the eyes. Eye over-exposure can cause tearing and redness.

SKIN ABSORPTION: 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.

HAZARDOUS MATERIAL INFORMATION SYSTEM

HEALTH	(BLUE)	2
FLAMMABILITY	(RED)	0
REACTIVITY	(YELLOW)	0
PROTECTIVE EQUIPMENT		X

EYES	RESPIRATORY	HANDS	BODY
	See Section 8		See Section 8

For routine industrial applications

INGESTION: Ingestion is not anticipated to be a likely route of occupational exposure for this product. If this product is swallowed (especially in large amounts), it may irritate the mouth, throat, and other tissues of the digestive system. Initial symptoms may include nausea, vomiting, burning sensation in the esophagus and stomach, blurred vision, ringing in the ears, weakness, staggering, and tremor. Later symptoms may include abdominal pain, bloody diarrhea, convulsions, high blood pressure, and coma. Ingestion of only a few grams of Zinc Chloride (a component of this product) may be fatal. Chronic ingestion over-exposure may cause mottling of tooth enamel, gastrointestinal discomfort, weakness, drowsiness, tremors, loss of appetite, slurred speech, vomiting, diarrhea, and hardening or abnormal denseness of the bones. Kidney function can be impaired by lithium salts. Severe ingestion over-exposure may be fatal.

INJECTION: Though not anticipated to be a likely route of occupational exposure for this product, injection of this product (via punctures or lacerations by a contaminated object) may cause local reddening, tissue swelling, and discomfort in addition to the wound.

HEALTH EFFECTS OR RISKS FROM OVER-EXPOSURE: An Explanation in Lay Terms. Symptoms associated with over-exposure to this product are as follows:

ACUTE: Symptoms of inhalation over-exposure may include coughing, sneezing, and difficulty breathing. Severe inhalation over-exposure to Zinc Chloride (a component of this product) can cause life-threatening lung injury, such as pulmonary edema and pneumonitis. Depending on the duration and concentration of over-exposure, skin contact with this product can severely irritate the skin. Depending on the duration and concentration of over-exposure, eye contact with this product can irritate or burn the eyes. Initial symptoms after ingesting large amounts of this product may include nausea, vomiting, burning sensation in the esophagus and stomach, blurred vision, ringing in the ears, weakness, staggering, and tremor. Severe ingestion over-exposure may be fatal.

CHRONIC: Repeated or prolonged skin over-exposure to this product may result in dermatitis (red, dry, itchy skin). Chronic ingestion over-exposure may cause mottling of tooth enamel, gastrointestinal discomfort, weakness, drowsiness, tremors, loss of appetite, slurred speech, vomiting, diarrhea, and hardening or abnormal denseness of the bones. Chronic

over-exposure to hydrogen fluoride (a possible decomposition product) can cause fluorosis (weakening and degeneration of bone structure and possible heart, nerve, and intestinal problems). Refer to Section 11 (Toxicological Information) for additional information regarding this product and its components.

PART II *What should I do if a hazardous situation occurs?*

4. FIRST-AID MEASURES

SKIN EXPOSURE: If this product or its decomposition products irritate the skin, begin decontamination with running water. Minimum flushing is for 15 minutes. Do not interrupt flushing. If necessary, apply calcium gluconate gel (2.5% concentration) after flushing is complete. See Section 11 (Toxicological Information, Recommendations to Physicians) for more information on the use of calcium gluconate gel. Remove exposed or contaminated clothing, taking care not to contaminate eyes. Victim must seek medical attention if any adverse reaction occurs.

EYE EXPOSURE: If this product enters the eyes, open victim's eyes while under gently running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15 minutes. Do not interrupt flushing. Victim must seek immediate medical attention.

INHALATION: If this product is inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Victim must seek medical attention if any adverse reaction occurs.

INGESTION: If this product is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. Do not induce vomiting, unless directed by medical personnel. Have victim rinse mouth with water, if conscious. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or who cannot swallow. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration.

Victims of chemical exposure must be taken for medical attention. Rescuers should be taken for medical attention if necessary. Take copy of label and MSDS to health professional with victim.

5. FIRE-FIGHTING MEASURES

FLASH POINT: Not flammable.
AUTOIGNITION TEMPERATURE: Not applicable.
FLAMMABLE LIMITS (in air by volume, %): Lower (LEL): Not applicable.
Upper (UEL): Not applicable

FIRE EXTINGUISHING MATERIALS: This material is not flammable. Use extinguishing media appropriate for surrounding fire.

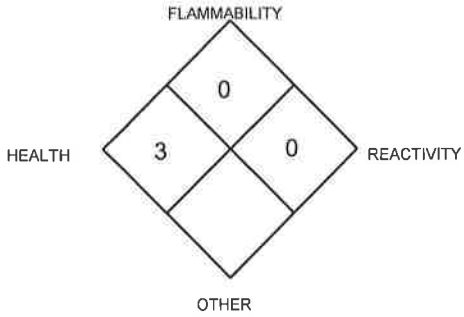
Water Spray: YES (for cooling)
Halon: YES
Dry Chemical: YES
Carbon Dioxide: YES
Foam: YES
Other: Any "ABC" Class.

UNUSUAL FIRE AND EXPLOSION HAZARDS: During a fire, irritating and toxic gases (e.g., hydrogen fluoride, alkali metal oxides, fluorine, and chlorine) may be generated.

Explosion Sensitivity to Mechanical Impact: Not sensitive.
Explosion Sensitivity to Static Discharge: Not sensitive.

SPECIAL FIRE-FIGHTING PROCEDURES: N/A

NFPA RATING



6. ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. In case of a spill, clear the affected area and protect people.

In the event of an incidental release of this product, personnel should wear gloves, safety glasses (or goggles), and face shield during clean up. In the event of a non-incidental release, minimum Personal Protective Equipment should be **Level B: triple-gloves (rubber gloves and nitrile gloves over latex gloves), chemical resistant suit and boots, hard-hat, and Self-Contained Breathing Apparatus.** Sweep up spilled powder carefully, avoiding the generation of airborne dust. Decontaminate the area thoroughly. Place all spill residues in a suitable container and seal. Dispose of in accordance with Federal, State, and local hazardous waste disposal regulations (see Section 13, Disposal Considerations).

PART III *How can I prevent hazardous situations from occurring*

7. HANDLING and STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash thoroughly after handling this product. Do not eat or drink while handling this material. Avoid generating airborne dust of this product. Remove contaminated clothing immediately.

STORAGE AND HANDLING PRACTICES: All employees who handle this material should be trained to handle it safely. Empty containers may contain residual powder; therefore, empty containers should be handled with care.

Store this product in a cool, dry location, away from direct sunlight, sources of intense heat. Store away from incompatible chemicals (see Section 10, Stability and Reactivity). Material should be stored in secondary containers or in a diked area, as appropriate. Storage and use areas should be covered with impervious materials. Keep container tightly closed when not in use. Inspect all incoming containers before storage to ensure they are properly labeled and not damaged.

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT: Follow practices indicated in Section 6 (Accidental Release Measures). Make certain that application equipment is locked and tagged-out safely. Decontaminate equipment using soapy water before maintenance begins. Collect all rinsates and dispose of according to applicable Federal, State, or local procedures.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation to ensure exposure levels are maintained below the limits provided in Section 2 (Composition and Information on Ingredients). Exhaust directly to the outside, taking necessary precautions for environmental protection. Prudent practice is to ensure eyewash/safety shower stations are available near areas where this product is used.

RESPIRATORY PROTECTION: Maintain airborne contaminant concentrations below guidelines listed in Section 2 (Composition and Information on Ingredients) if applicable. If respiratory protection is needed, use only protection authorized in 29 CFR 1910.134 or applicable State regulations. Use supplied air respiration protection if oxygen levels are below 19.5% or are unknown.

EYE PROTECTION: Safety glasses or goggles.

HAND PROTECTION: Wear natural rubber, neoprene, or nitrile rubber gloves for routine industrial use.

BODY PROTECTION: None needed for normal circumstances of use. Use body protection appropriate for task (i.e., apron, coveralls, and chemical resistant boots).

9. PHYSICAL and CHEMICAL PROPERTIES

RELATIVE VAPOR DENSITY (air = 1): Not applicable.
SPECIFIC GRAVITY (water = 1) : Not applicable.
SOLUBILITY IN WATER: Moderately soluble.
VAPOR PRESSURE, mm Hg @ 24°C: Not established.
ODOR THRESHOLD: Not applicable.
EVAPORATION RATE (nBuAc = 1): Not applicable.
FREEZING/MELTING POINT: Not established.
BOILING POINT: Not established.
pH: Not applicable.

COEFFICIENT OF OIL/WATER DISTRIBUTION (PARTITION COEFFICIENT): Not established.

APPEARANCE AND COLOR: HARRIS 10 is an odorless, pink powder. Al-braze EC and Al-Braze 1070 is an odorless, whit powder .

HOW TO DETECT THIS SUBSTANCE (warning properties): The appearance may act as a distinguishing characteristic of this product.

10. STABILITY and REACTIVITY

STABILITY: Stable.

DECOMPOSITION PRODUCTS: Hydrogen fluoride, alkali metal oxides, fluorine, and chlorine.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Strong oxidizers, strong acids, reactive interhalogens.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Extreme temperatures, moisture, incompatible materials.

PART IV *Is there any other useful information about this material?*

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA: Human toxicological data are available for the components of this product listed in Section 2 (Composition and Information on Ingredients). Other data for animals are available but are not presented in this Material Safety Data Sheet.

LITHIUM CHLORIDE:
DNA Inhibition (HeLa cell, human) = 70 mmol/L
LDLo (oral, human) = 200 mg/kg/ 3 days
TDLo (oral, human) = 243 mg/kg/ 13 days; central nervous system, gastrointestinal effects

POTASSIUM CHLORIDE:
LDLo (oral, infant) = 938 mg/kg/ 2 days

POTASSIUM CHLORIDE (continued):
TDLo (oral, woman) = 60 mg/kg/ days; gastrointestinal tract, blood effects
LDLo (oral, man) = 20 mg/kg; cardiovascular, gastrointestinal tract, blood effects

SODIUM CHLORIDE:
DNA Inhibition (fibroblast, human) = 125 mmol/L

SODIUM CHLORIDE (continued):
TDLo (intraplacental, woman) =27 mg/kg/ 15 weeks pregnant; reproductive effects

ZINC CHLORIDE:
DNA Inhibition System (human, lymphocyte) = 0.360 mmol/L
TCLo (inhalation, man) = 4800 mg/m^3/ 30 minutes; pulmonary effects
TCLo (inhalation, human) = 4800 mg/m^3/ 3 hours

SUSPECTED CANCER AGENT: The components of this product are not found on the following lists: FEDERAL OSHA Z LIST, NTP, IARC, and CAL/OSHA, and therefore are not considered to be, nor suspected to be, cancer-causing agents by these agencies.

IRRITANCY OF PRODUCT: This product may severely irritate or burn contaminated tissue.

SENSITIZATION TO THE PRODUCT: No component of this product is known to be a sensitizer with prolonged or repeated use.

REPRODUCTIVE TOXICITY INFORMATION: Listed below is information concerning the effects of this product on the human reproductive system.

Mutagenicity: This product is not reported to produce mutagenic effects in humans. Human mutation data are available for Lithium Chloride and Zinc Chloride (components of this product); these data were obtained during clinical studies on specific human tissues exposed to high doses of these compounds. Animal mutation data are available for Potassium Chloride Sodium Chloride (a component of this product); these data were obtained during clinical studies on specific animal tissues exposed to high doses of these compounds.

Embryotoxicity: This product is not reported to produce embryotoxic effects in humans.

Teratogenicity: This product is not reported to cause teratogenic effects in humans. Clinical studies on test animals exposed to relatively high doses of Lithium Chloride, Sodium Chloride, and Zinc Chloride (components of this product) indicate teratogenic effects.

Reproductive Toxicity: This product is not reported to cause adverse reproductive effects in humans. Clinical studies on test animals exposed to relatively high doses of Lithium Chloride, Sodium Chloride, and Zinc Chloride (components of this product) indicate adverse reproductive effects.

A mutagen is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generational lines. An embryotoxin is a chemical which causes damage to a developing embryo (i.e. within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A teratogen is a chemical which causes damage to a developing fetus, but the damage does not propagate across generational lines. A reproductive toxin is any substance which interferes in any way with the reproductive process.

BIOLOGICAL EXPOSURE INDICES: Currently, there are Biological Exposure Indices (BEIs) associated with Lithium Fluoride (a component of this product, as a fluoride).

BIOLOGICAL EXPOSURE INDICES (BEIs) for components of this product are as follows:		
CHEMICAL DETERMINANT	SAMPLING TIME	BEI
FLUORIDES Fluorides in urine	Prior to shift End of shift	3 mg/g creatinine 10 mg/g creatinine

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Dermatitis, other skin disorders, and respiratory conditions may be aggravated by over-exposure to this product.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and eliminate over-exposure. In the event of over-exposure to this product, all personnel providing treatment must be gloved. If there is a possibility of contamination by hydrogen fluoride (a decomposition product), treatment recommendations for contamination are as follows:

Skin Contact: After 15 minute water flush (if flush has not yet been done), apply calcium gluconate gel (2.5% concentration) until pain has subsided, but not longer than 30 minutes. If pain lasts longer than 15 minutes, proceed with calcium gluconate injections.
Eye Contact: After 15 minutes water flush (if flush has not been done), flush eyes with 1% calcium gluconate gel in normal, sterile saline.
Inhalation: Provide 100% oxygen, followed by inhalation of a mist containing 2.5% calcium gluconate in saline solution. Watch for pulmonary edema.
Ingestion: Gastric lavage with lime water or milk.

12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

ENVIRONMENTAL STABILITY: The components of this product will decompose under normal environmental conditions. Additional environmental data are available as follows:

LITHIUM CHLORIDE: Log Kow = -2.66; Water solubility = 1 g/ 1.3 mL (cold water), 1 g/ 0.8 mL (boiling water).

LITHIUM FLUORIDE: Water solubility = 0.13 g/ 100 mL (25°C).

POTASSIUM CHLORIDE: Water solubility = 34.2g/ 100 mL (20°C), 1 g/ 2.8 mL, 1 g/1.8 mL (boiling).

SODIUM CHLORIDE: Water solubility = 37 g/ 100 mL (0°C); Log Kow = -3.0.

ZINC CHLORIDE: Water solubility: 432 g/ 100 mL (25°C), 614 g/ 100 mL (100°C). Zinc can persist indefinitely as a cation. Radioactive zinc (^{65}Zn) has been found to concentrate in plants and milk. Acute Hazard Level Threshold: For vegetables and other crops - 750 ppm (Zn).

EFFECT OF MATERIAL ON PLANTS or ANIMALS: This product can be harmful to plant and animal life. Specific data on test animals are available, but are not presented in this Material Safety Data Sheet.

EFFECT OF CHEMICAL ON AQUATIC LIFE: Large releases of this product may be harmful or fatal to exposed aquatic life.

ZINC CHLORIDE:
Acute Hazard Level Threshold: For fish - 0.1 ppm (Zn)
Odorless zinc poisoning causes inflamed gills in fish.
Laboratory studies of Atlantic salmon, rainbow trout, carp, and goldfish have shown avoidance reactions by these fish to zinc in water.
Radioactive zinc (^{65}Zn) has been found to concentrate in aquatic life.

13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate Federal, State, and local regulations. This product, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local hazardous waste regulatory authority.

EPA WASTE NUMBER: Not applicable.

14. TRANSPORTATION INFORMATION

THIS MATERIAL IS HAZARDOUS (Per 49 CFR 172.101) BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME: Corrosive Solid, n.o.s.
(Zinc chloride, Lithium chloride - anhydrous mixture)
HAZARD CLASS NUMBER and DESCRIPTION: 8 (Corrosive)
UN IDENTIFICATION NUMBER: UN 1759
PACKING GROUP: II
DOT LABEL(S) REQUIRED: CORROSIVE

NOTE: Exception for Class 8 for net capacity of 2.2 pounds or less on inner packaging. Refer to 49 CFR 173.154 for additional information.

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (1996): 154

MARINE POLLUTANT: The components of this product are not designated by the Department of Transportation to be Marine Pollutants (49 CFR 172.101, Appendix B).

TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: THIS MATERIAL IS CONSIDERED AS DANGEROUS GOODS. Refer to above information for Canadian shipments.

15. REGULATORY INFORMATION

SARA REPORTING REQUIREMENTS: The components of this product are subject to the reporting requirements of Sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act.

COMPONENT	SARA 302	SARA 304	SARA 313
Zinc Chloride	No	Yes	Yes (as Zinc Compound)

SARA THRESHOLD PLANNING QUANTITY: Not applicable.

TSCA INVENTORY STATUS: The components of this product are listed on the TSCA Inventory.

CERCLA REPORTABLE QUANTITY (RQ): Zinc Chloride = 1000 lbs.

OTHER FEDERAL REGULATIONS: Not applicable.

15. REGULATORY INFORMATION (Continued)

STATE REGULATORY INFORMATION: The components of this product are covered under specific State regulations, as denoted below:

Alaska - Designated Toxic and Hazardous Substances: Zinc Chloride Fume.
California - Permissible Exposure Limits for Chemical Contaminants: Zinc Chloride Fume.
Florida - Substance List: Zinc Chloride Fume.
Illinois - Toxic Substance List: Zinc Chloride Fume.
Kansas - Section 302/313 List: None.
Massachusetts - Substance List: Zinc Chloride Fume.
Michigan-Critical Materials Register: Zinc Compounds.
Minnesota - List of Hazardous Substances: Zinc Chloride Fume.
Missouri - Employer Information/Toxic Substance List: Zinc Chloride.
New Jersey - Right to Know Hazardous Substance List: Zinc Chloride.
North Dakota - List of Hazardous Chemicals, Reportable Quantities: Zinc Chloride.
Pennsylvania - Hazardous Substance List: Zinc Chloride.
Rhode Island - Hazardous Substance List: Zinc Chloride Fume.
Texas - Hazardous Substance List: Zinc Chloride Fume.
West Virginia - Hazardous Substance List: Zinc Chloride Fume.
Wisconsin - Toxic and Hazardous Substances: Zinc Chloride Fume.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): The components of this product are not on the California Proposition 65 lists. **WARNING: This product when used may produce fumes or gases containing chemicals, known to the State of California to cause cancer, and/or birth defects (or other reproductive harm)**

LABELING (Precautionary Statements): **WARNING!** MAY BE FATAL IF SWALLOWED. IRRITATING IF INHALED. CAUSES SKIN AND EYE IRRITATION. Do not taste or swallow. Do not get on skin or in eyes. Avoid breathing airborne dust. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Wear gloves and goggles, as appropriate. FIRST-AID: In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. If inhaled, remove to fresh air. If ingested, do not induce vomiting. Get medical attention. IN CASE OF FIRE: Use water fog, dry chemical, CO_2, or "alcohol" foam. IN CASE OF SPILL: Sweep up spilled powder carefully, avoiding the generation of airborne dust. Place residue in suitable container and seal. Consult Material Safety Data Sheet for additional information.

- 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, Florida 33126. OSHA Safety and Health Standards, *29 CFR 1910*, available from the U.S. Government Printing Office, Superintendent Office, P.O. Box 371954, Pittsburgh, PA 15250-7954.

TARGET ORGANS: Skin, eyes, respiratory system.

WHMIS SYMBOLS: **D2B:** Materials Causing Other Toxic Effects/Toxic Material.
E: Corrosive Material

16. OTHER INFORMATION

DATE OF PRINTING: September 27, 2010

This Material Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard (29 CFR 1910.1200). Other government regulations must be reviewed for applicability to this product. The information contained herein relates only to the specific product. If the product is combined with other materials, all component properties must be considered. To the best of the Harris Products Group knowledge, the information and recommendations contained in this publication are reliable and accurate as of the date of issue. However, accuracy, suitability, or completeness are not guaranteed, and no warranty, guarantee, or representation, expressed or implied, is made by Harris Products Group. as to the absolute correctness or sufficiency of any representation contained in this and other publications; Harris Products Group. assumes no responsibility in connection therewith; nor can it be assumed that all acceptable safety measures may not be required under particular or exceptional conditions or circumstances. Data may be changed from time to time. Be sure to consult the latest edition.

DEFINITIONS OF TERMS

A large number of abbreviations and acronyms appear on a MSDS. Some of these, which are commonly used, include the following:

CAS #: This is the Chemical Abstract Service Number, which uniquely identifies each constituent.

EXPOSURE LIMITS IN AIR:

ACGIH - American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits.

IARC-International Agency for Research on Cancer **TLV** - Threshold Limit Value - an airborne concentration of a substance, which represents conditions under which it is generally believed that nearly all workers, may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour Time Weighted Average **(TWA)**, the 15-minute Short Term Exposure Limit, and the instantaneous Ceiling Level **(C)**. Skin absorption effects must also be considered.

OSHA - U.S. Occupational Safety and Health Administration.

PEL - Permissible Exposure Limit - This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (Federal Register: 58: 35338-35351 and 58: 40191). Both the current PELs and the vacated PELs are indicated. The phrase, "Vacated 1989 PEL," is placed next to the PEL, which was vacated by Court Order. **IDLH** - Immediately Dangerous to Life and Health - This level represents a concentration from which one can escape within 30-minutes without suffering escape-preventing or permanent injury. **The DFG - MAK** is the Republic of Germany's Maximum Exposure Level, similar to the U.S. PEL. **NIOSH** is the National Institute of Occupational Safety and Health, which is the research arm of the U.S. Occupational Safety and Health Administration (**OSHA**). NIOSH issues exposure guidelines called Recommended Exposure Levels (**RELs**). When no exposure guidelines are established, an entry of **NE** is made for reference. **NTP**- National Toxicology Program

HAZARD RATINGS:

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM: 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; onetime 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).

NATIONAL FIRE PROTECTION ASSOCIATION: Health Hazard: **0** (material that on exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials); **1** (materials that on exposure under fire conditions could cause irritation or minor residual injury); **2** (materials that on intense or continued exposure under fire conditions could cause temporary incapacitation or possible residual injury); **3** (materials that can on short exposure could cause serious temporary or residual injury); **4** (materials that under very short exposure causes death or major residual injury). Flammability Hazard and Reactivity Hazard: Refer to definitions for "Hazardous Materials Identification System".

FLAMMABILITY LIMITS IN AIR:

Much of the information related to fire and explosion is derived from the National Fire Protection Association (**NFPA**). Flash Point - Minimum temperature at which a liquid gives off sufficient vapors to form an ignitable mixture with air. Autoignition Temperature: The minimum temperature required to initiate combustion in air with no other source of ignition. LEL - the lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source. UEL - the highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source.

TOXICOLOGICAL INFORMATION:

Human and Animal Toxicology: Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. Definitions of some terms used in this section are: **LD_{50}** - Lethal Dose (solids & liquids) which kills 50% of the exposed animals; **LC_{50}** - Lethal Concentration (gases) which kills 50% of the exposed animals; **ppm** concentration expressed in parts of material per million parts of air or water; **mg/m^3** concentration expressed in weight of substance per volume of air; **mg/kg** quantity of material, by weight, administered to a test subject, based on their body weight in kg. Other measures of toxicity include **TDLo**, the lowest dose to cause a symptom and **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. **Cancer Information:** The sources are: **IARC** - the International Agency for Research on Cancer; **NTP** - the National Toxicology Program, **RTECS** - the Registry of Toxic Effects of Chemical Substances, **OSHA** and **CAL/OSHA**. IARC and NTP rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used. **Other Information: BEI** - ACGIH Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV. **Ecological Information:** EC is the effect concentration in water. **BCF =** Bioconcentration Factor, which is used to determine if a substance will concentrate in lifeforms which consume contaminated plant or animal matter. Coefficient of Oil/Water Distribution is represented by **log K_{ow}** or **log K_{oc}** and is used to assess a substance's behavior in the environment.

REGULATORY INFORMATION:

This section explains the impact of various laws and regulations on the material. **U.S.: EPA** is the U.S. Environmental Protection Agency. **DOT** is the U.S. Department of Transportation. **SARA** is the Superfund Amendments and Reauthorization Act. **TSCA** is the U.S. Toxic Substance Control Act. **CERCLA (or Superfund)** refers to the Comprehensive Environmental Response, Compensation, and Liability Act. Labeling is per the American National Standards Institute (**ANSI Z129.1**). **CANADA: CEPA** is the Canadian Environmental Protection Act. **WHMIS** is the Canadian Workplace Hazardous Materials Information System. **TC** is Transport Canada. **DSL/NDSL** are the Canadian Domestic/Non-Domestic Substances Lists. **The CPR is the Canadian Product Regulations.** This section also includes information on the precautionary warnings, which appear, on the materials package label.