

## MATERIAL SAFETY DATA SHEET

### SECTION I - PRODUCT IDENTIFICATION

**Product name:** MASTERS Tinning Flux

**Product use:** Flux for Soldering

**Supplier name and address:**

G.F. THOMPSON CO. LTD.

620 Steven Court

Newmarket, Ontario

L3Y 6Z2

**Manufacturer name and address:**

Refer to supplier.

**Emergency Tel. #:**

Mon – Fri, 7:30 am to 5:00 pm EST

905-898-2557

800-499-3673 (toll free)

**24 hr Emergency Tel:**

905-252-4793

**WHMIS CLASS: D1B, E**

**WHMIS Rating:**

\* - Chronic hazard 0 - Minimal 1 – Slight 2 - Moderate 3 - Serious 4 – Severe

Health: \*3      Flammability: 1      Reactivity: 1

### SECTION II - INGREDIENTS

Ingredients	CAS#	wt. %	LC <sub>50</sub> / 4 Hrs	LD <sub>50</sub> mg/kg	
			(Rat, ihl.)	(Rat, oral)	(Rabbit, dermal)
Petrolatum	8009-03-8	60 – 100	N/Av	N/Av	3600
Zinc chloride	7646-85-7	15 - 40	N/Av	350	N/Av
Tin	7440-31-5	5 – 10	N/Av	N/Av	N/Av
Ammonium chloride	12125-02-9	1 – 5	N/Av	1650	N/Av
Bismuth	7440-69-9	0.1 – 1	N/Av	N/Av	N/Av
Copper	7440-50-8	0.1 – 1	N/Av	N/Av	N/Av

### SECTION III - PHYSICAL DATA

**Physical state, odour and appearance:** Grey to Greenish paste, slight petroleum odour.

**Odour threshold:** N/Av

**Solubility in water:** Insoluble

**Specific gravity:** 0.87 @ 15.6 °C / 60 °F

**pH:** N/Av.

**Freezing / melting point:** 35 °C / 95 °F

**Boiling point:** N/Av

**Vapour pressure (mmHg):** N/Av

**Vapour density (Air = 1):** N/Av

**Evaporation rate (n-Butyl acetate = 1):** N/Av

**Volatile, %:** N/Av

**Coefficient of water/oil distribution:** N/Av

**Viscosity:** N/Av

**VOC:** 11.7g/l, <1%

### SECTION IV - FIRE AND EXPLOSION DATA

**Conditions of flammability:** Not considered flammable, however may be ignited by extreme heat and flame.

**Flash point (Method):** 182 - 221 °C / 360 - 430 °F (TCC)

**Auto-ignition temperature:** N/Av

**Upper flammable limit %:** N/Av

**Lower flammable limit %:** N/Av

**Means of extinction:** Dry chemical, alcohol foam, carbon dioxide. Do not use water jet, as this may spread burning material.

**Sensitivity to mechanical impact/static discharge:** Not expected to be sensitive.

**Special fire fighting procedures:** Firefighters should wear proper full protective equipment and self-contained breathing apparatus. Move containers from fire area if it can be done without risk. Water spray may be ineffective. Water spray may only be useful in cooling equipment and containers exposed to heat and flame.

**Unusual fire and explosion hazards:** Product will float and can be re-ignited at the water's surface. Closed containers may rupture if exposed to excess heat or flame due to a build-up of internal pressure.

**Hazardous combustion products:** Carbon oxides, ammonia, hydrogen chloride gas, zinc oxides, tin fumes, copper fumes, bismuth fumes and other irritating fumes and smoke.

## SECTION V - REACTIVITY DATA

**Stability:** Stable under the recommended storage and handling conditions prescribed. Hazardous polymerization will not occur. May be corrosive to metals such as copper and its alloys (e.g. brass, bronze), aluminum, ferrous metals (e.g. cast iron), carbon steel and some stainless steels (e.g. 303, 310, 321, 400 series). Contact with acids may evolve Hydrogen chloride gas. Contact with strong alkalies may evolve ammonia gas.

**Incompatible materials:** Strong oxidizers (e.g. Chlorine, Peroxides, etc.), strong acids, strong alkalies, potassium, turpentine, cyanide, sulfides, powdered zinc, halogenated compounds, lead and silver salts.

**Conditions of reactivity:** Stable under ambient pressure and temperature. Avoid extreme heat and direct flame.

**Hazardous decomposition products:** Ammonia. Refer to also Section IV for 'Hazardous combustion products'.

## SECTION VI - TOXICOLOGICAL PROPERTIES

### \*\*\*Routes of exposure and acute effects\*\*\*

**Exposure limit:** ACGIH-TLV: Zinc chloride – 1 mg/m<sup>3</sup> (fume) (TWA); 2 mg/m<sup>3</sup> (fume) (STEL)

Ammonium chloride – 10 mg/m<sup>3</sup> (fume) (TWA)

OSHA-PEL: Zinc chloride – 1 mg/m<sup>3</sup> (fume)

Ammonium chloride - 10 mg/m<sup>3</sup> (fume) (TWA) (final rule / vacated value)

**Routes of exposure:** Skin contact, eye contact, inhalation and ingestion.

**Irritancy of product:** Severe to corrosive.

**Inhalation:** Breathing dusts or fumes may be harmful or fatal. Inhalation of fumes may result in metal fume fever, a flu-like illness. Symptoms of metal fume fever may include headache, chills, fever, sweating and pain in the legs and chest. Inhalation of dusts may cause severe irritation and possibly lung injury (pneumonitis, pulmonary edema).

**Skin:** May cause redness, severe irritation and corrosive burns.

**Eyes:** May cause immediate pain and corrosive damage.

**Ingestion:** Harmful or fatal if swallowed. May cause severe irritation to mouth, throat and stomach. Symptoms may include headaches, nausea, vomiting, a burning sensation, pain, convulsions, coma and possibly death. Could cause hypokalemia (potassium deficiency), hyperglycemia (high blood sugar) and glycosuria (excretion of glucose by the kidneys resulting in diuresis or increased urine production).

**Chronic effects:** Prolonged or repeated skin contact may cause severe drying and cracking of the skin (dermatitis).

**Carcinogenicity:** None of the ingredients are classified as carcinogenic by IARC or ACGIH.

**Reproductive effects, Teratogenicity, Mutagenicity:** None known.

**Sensitization to material:** None known.

**Synergistic materials:** N/Av.

**Conditions aggravated by exposure:** Pre-existing skin and respiratory disorders.

**Additional information:** Pre-employment medical evaluations are recommended for large users of this product. Attention should be directed to skin, eyes, respiratory tract and pulmonary function. Periodic medical examinations should be repeated on an annual basis for those employees exposed to potentially hazardous levels of this product.

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## SECTION VII - FIRST AID

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**Inhalation:** Immediately remove victim to fresh air. Obtain medical attention immediately.

**Skin:** Immediately remove contaminated clothing and shoes. Flush skin with gently flowing water, for at least 20 minutes. Obtain medical attention immediately. Launder clothing before re-use.

**Eyes:** Immediately flush eyes thoroughly with water for at least 20 minutes. Obtain medical attention immediately.

**Ingestion:** Do not induce vomiting. Have victim rinse mouth with water. Obtain medical attention immediately. Never give anything by mouth to an unconscious person.

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## SECTION VIII - PREVENTIVE MEASURES

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**Spill, leak or release:** Clean-up personnel should wear appropriate chemically protective equipment and respiratory protection. Eliminate all sources of heat and flame. Ventilate area of release. If material is in paste form, scrape up into suitable containers. If material is in dust form, clean up using dustless methods (for example, HEPA vacuum). Do not use compressed air. Place any recovered material in closed, labelled containers for recycling or disposal (see below). Keep out of waterways. Notify the appropriate authorities as required.

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## SECTION VIII - PREVENTIVE MEASURES Continued

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*Other procedures:* For large product users or spills involving large quantities, it is recommended that the purchaser establish a spill prevention, control and countermeasure plan. This plan should include procedures for proper storage, as well as clean-up of spills or leaks. The procedure should conform to safe practices and provide for proper recovery and/or disposal

**Waste disposal:** Handle according to recommendations listed below. Review federal, provincial and local government requirements prior to disposal. May have value on a recycled basis. Dispose in accordance with all applicable government regulations.

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### \*\*\*PROTECTIVE EQUIPMENT\*\*\*

**Respiratory protection:** For prolonged exposure or if the TLV is exceeded, wear NIOSH-approved respirators.

**Ventilation:** Use in well ventilated area. Use general ventilation (refer to "Industrial Ventilation, a Manual of Recommended Practice", by ACGIH) for prolonged exposures or if the TLV is not known.

**Protective gloves:** Gloves impervious to the material must be worn. Advice should be sought from glove suppliers.

**Eye protection:** Safety goggles, to prevent product from entering the eyes. Safety glasses or goggles AND a full face shield are recommended around molten metal.

**Other protective equipment:** An eyewash station and safety shower should be made available in the immediate working area. Other equipment, including chemically resistant apron, may be required according to workplace standards.

### \*\*\* STORAGE & HANDLING \*\*\*

#### **Storage and handling conditions:**

*Handling:* Wear appropriate chemically protective equipment. Use in a well ventilated area. Avoid inhalation and ingestion of product, and activities that generate dust or fume. Avoid contact with skin, eyes, and clothing. Keep melting temperatures as low as possible to minimize the generation of fumes. NOTE: Inadvertent contaminants to product, such as moisture, ice, snow, grease or oil can cause an explosion when charged to a molten metal bath or melting furnace. (Preheating metal will remove moisture from product). Keep away from oxidizing materials and incompatibles. Use caution when opening cap. Keep container closed when not in use. Wash thoroughly after handling. Keep out of reach of children.

*General hygiene considerations:* Avoid inhalation of vapours, fumes and dusts. Avoid contact with eyes, skin and clothing. Do not permit eating, drinking or the use of cosmetics or tobacco products while handling or processing material, or in product work areas. Practice good personal hygiene procedures. Wash hands and face thoroughly before eating, drinking, applying cosmetics or using tobacco products. Remove soiled clothing and wash it thoroughly before reuse.

*Storage:* Store in a cool, dry, well-ventilated area away from incompatibles (refer to Section V), heat and flame. Practice good housekeeping procedures to prevent accumulation of dust or refuse. Keep material dry.

**Special Shipping Information - Transportation of Dangerous Goods Regulations (TDGR):**

Proper Shipping Name: CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S. (Zinc chloride)

UN No.: UN3260

Primary Class(es): 8

Subsidiary Class(es): None

Packing Group: III

**Other Shipping Information:** Within Canada, the 'Limited Quantity Exemption' may apply for containers which hold 5 Kilograms or less of the product. Under the TDGR, refer to Section 1.17 for additional 'Limited Quantity Exemption' requirements, if shipping under this exemption.

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**SECTION IX - PREPARATION INFORMATION**

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**Prepared by:** G. F. THOMPSON CO. LTD.**Preparation date:** March 15, 2014

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**SECTION IX - PREPARATION INFORMATION Continued**

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**Additional notes or references:**

Legend: ACGIH: American Conference of Governmental Industrial Hygienists

CAS: Chemical Abstract Service

HMIS: Hazardous Materials Identification System

IARC: International Agency for Research on Cancer

Inh.: Inhalation

LC: Lethal concentration

LD: Lethal dose

NIOSH: National Institute of Occupational Safety and Health

N/Av: Not Available

N/Ap: Not Applicable

OSHA: Occupational Safety and Health Administration

PEL: Permissible Exposure Limit

RTECs: Registry of Toxic Effects of Chemical Substances

STEL: Short Term Exposure Limit

TCC: Tag Closed Cup

TLV: Threshold Limit Values

WHMIS: Workplace Hazardous Materials Information System

- References:
1. ACGIH, Threshold Limit Values and Biological Exposure Indices for 2007.
  2. International Agency for Research on Cancer Monographs, 2007.
  3. Canadian Centre for Occupational Health and Safety, CCInfoWeb databases, 2007 (Chempendium and RTECs).
  4. Material Safety Data Sheet from manufacturer.