MATERIAL SAFETY DATA SHEET

LOVEJOY TOOL COMPANY, INC.
133 MAIN STREET
PO BOX 949
SPRINGFIELD, VT 05156

Trade Name and Synonyms: 6XXX Series Alloys (Aluminum Coil, Flat Sheet or Plate).

This product may be anyone of the following alloys: 6010, 6061, 6082, K062, k412, K423

Product Use: Fabrication of Items

Section 2 Composition, Upper Limits of Ingredients (percentage by weight)

Alloy	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Al Min.
6010	1.20	0.50	0.60	0.80	1.00	0.10	0.25	0.10	95.4
6061	0.80	0.70	0.40	0.15	1.20	0.35	0.25	0.15	96.0
6082	1.30	0.50	0.10	1.00	1.20	0.25	0.20	0.10	95.3
K062	0.80	0.70	0.40	0.15	1.50	0.35	0.25	0.15	96.0
K412	1.80	0.70	0.30	1.00	0.80	0.10	0.40	0.10	94.8
K423	2.30	0.70	0.32	1.00	0.80	0.10	0.40	0.10	94.2

CAS Numbers: Aluminum (7429-90-5); Chromium (7440-47-3); Copper (7440-50-8); Iron (7439-89-6); Magnesium (7439-95-4); Manganese (7439-96-5); Silicon (7440-21-3); Titanium (744-32-6); Zinc (7440-66-6)

Section 3 Occupational Exposure Limits (TWA's in mg/m³)

		ACGIH TLV	OSHA PEL
Aluminum,	total dust	10.0	15.0 (total); 5 (respirable)
	fume	5.0	5.0
Chromium		0.5 (metal & Cr III)	1.0 (metal & insoluble salts)
		0.05 (water soluble Cr VI)	0.5 (Cr II & Cr III)
		0.01 (insoluble Cr VI)	
Copper		0.20 (fume)	0.10
Iron		5.0 (oxide dust & fumes)	10.0 (total oxide particulate)
Manganese		0.2	5.0 (ceiling)
Magnesium		10.0 (oxide fume)	15.0 (total oxide particulate)
Silicon		10.0	15.0 (total); 5 (respirable)
Titanium Dioxide dust		10.0	N/A
Zinc		5.0 (fume); 10.0 (dust)	5.0 (respirable); 10.0 (total dust)

Appearance: Solid, silvery-white color. Shape is large coils of metal.
Physical State: Solid
Melting Point: 950 - 1220° (510-660°)
Specific Gravity: 2.7 (water = 1)
Solubility: Soluble in strong acids and alkalis.

Odor: N/A
Boiling Point: N/A
pH: N/A
Vapor Pressure: N/A
Vapor Density: N/A

Section 5 Fire and Explosion Hazard Data

Hazard Identification (Emergency Overview):

This product as metal coil, sheet or as a finished article is considered to be practically non-toxic under normal conditions. It is a solid, silvery, odorless and non-flammable. Dust clouds may be explosive. Water coming in contact with molten metal may be explosive. Dust, small chips and fines can generate flammable/explosive hydrogen gas on contact with water. Do not confine this mixture.

This product does not present a fire or explosion hazard under normal conditions.

Flammable Properties: Small chips, fines and dust can ignite.

Fire and Explosion: Adding water to molten metal can cause an explosion. Ensure aluminum is fully dry before melting. Dust clouds can be explosive, and should be prevented with adequate ventilation.

Extinguishing Media: Fires involving molten metal, use class "D" fire extinguishers. **DO NOT USE WATER**. Fires involving chips, fines or dusts, use water spray. **DO NOT USE HALOGENATED EXTINGUISHING AGENTS**.

Section 6 Health Hazard Data

Eye: Dust or chips may cause abrasions.

Skin: Dust or chips may cause abrasions. Hot metal may cause burns.

Ingestion: Not a hazard.

Inhalation: Dusts and fines present a low health risk. Overexposure to zinc and copper fumes may cause "metal fume fever" resulting in temporary flu-like symptoms. Chronic overexposure to manganese fumes could cause nervous system disorders, inflammation and/or scarring of the lungs.

Section 7 First Aid Measures

Eye: Flush the eyes with clean water for 15 minutes. Seek medical attention if irritation persists.

Skin: Wash with soap and water. For minor burns, apply cold water. For more severe burns, seek medical attention.

Ingestion: Not a hazard.

Inhalation: Remove to fresh air. Seek medical attention if symptoms develop.

Scrap, Chips, Fines, Turnings: Collect for remelt, recycling or disposal. Pick up or sweep solid metal into container.

Molten Metal: Dam the molten metal with dry sand or dirt and allow to cool to room temperature, then pick up metal for remelt, recycling or disposal.

Section 9 Handling and Storage

Keep chips, fines and dust dry to prevent generating hydrogen gas. Water coming into contact with molten aluminum can be explosive. Avoid storing aluminum, which is to be remelted anywhere it can get wet. Before charging remelt furnace, ensure removal of surface contamination such as water, ice, snow, grease, oil or comparable materials.

Section 10 Exposure Controls, Personal Protection

Workers handling molten aluminum should wear primary protective clothing such as face shields, safety glasses with side shields, burn resistant clothing and similar equipment to prevent burns.

Engineering Controls: When working with molten aluminum, or welding/brazing aluminum, use adequate ventilation to meet the exposure limits listed in Section 2 of this MSDS.

Eye/Face Protection: Wear safety glasses with side shields to prevent eye contact during cutting, grinding or milling operations. A face shield in addition to safety glasses with side shields is recommended when working with molten metal.

Skin Protection: Wear appropriate gloves to avoid cuts and abrasions as needed.

Respiratory Protection: Use NIOSH approved respiratory protection for dust and fumes.

Section 11 Stability and Reactivity

Solid aluminum is stable under normal conditions of use, storage and transportation. Molten aluminum can react violently with water. Aluminum can have explosive reactions with molten metal oxides (e.g. copper, iron), nitrates, sulfides and sodium carbonate.

Reactivity

Water:	May react with finely divided aluminum to generate flammable and explosive hydrogen gas and heat.
Heat:	Potentially explosive reaction when heated with metal oxides, nitrates, sulfides.
Strong Oxidizers:	Violent reaction with significant heat generation.
Acids/Alkalis:	Reacts to generate flammable/explosive hydrogen gas.
Halogenated Compounds:	May react violently with finely divided aluminum, this includes halogenated fire extinguishing agents.
Alcohols: **(butanol, methanol, 2-propanol, etc.)**	Can have exothermic reaction to release hydrogen gas.

Aluminum: Aluminum dusts and fumes are practically non-toxic. Overexposure to fumes or dust may cause slight irritation to the eyes, nose and throat. There is no evidence of carcinogenicity.

Chromium: Chromium metal dust is practically non-toxic. Chromium III compound dusts may irritate the eyes, skin and nose. Chromium VI compounds are irritating and considered carcinogens by IARC, NTP and ACGIH.

Copper: Overexposure to copper fumes or fine dusts may cause Metal Fume Fever with flu-like symptoms. There is no evidence of carcinogenicity.

Iron: Iron does not have significant toxicology. There is no evidence of carcinogenicity.

Magnesium: Magnesium oxide (MgO) dusts may cause slight irritation of the eye and nose. MgO fume may cause Metal Fume Fever with flu-like symptoms. There is no evidence of carcinogenicity.

Manganese: Acute overexposure to manganese oxide fume may cause Metal Fume Fever with flu-like symptoms. Chronic overexposure might cause a CNS disorder resembling Parkinsonism or susceptibility to lung infections. There is no evidence of carcinogenicity.

Silicon: Silicon is a nuisance dust and an eye irritant. There is no evidence of carcinogenicity.

Titanium: Titanium has no significant toxicology.

Zinc: High levels of zinc dust may irritate the nose and throat. Overexposure to zinc oxide fume may cause Metal Fume Fever with flu-like symptoms. There is not evidence of carcinogenicity.

Ingredient	IDLH	LD50	LC50
Aluminum	N.D.	N.D.	N.D.
Chromium	250 mg/m^3	Mouse (ip): 3.5 gm/kg	N.D.
Copper	100 mg/m^3	Mouse (ip): 3.5 gm/kg	N.D.
Iron	2.5 gm/m^3	Rat (or): 30 gm/kg	N.D.
Magnesium	N.D.	N.D.	N.D.
Manganese	500 mg/m^3	Rat (or): 9 gm/kg	N.D.
Silicon	N.D.	Rat (or): 3.2 gm/kg	N.D.
Titanium	N.D.	N.D.	N.D.
Zinc (oxide fume)	500 mg/m^3	N.D.	N.D.

N.D. = Not Determined

Section 13 Ecological Information

No information found concerning these aluminum alloys.

Section 14 Disposal Considerations

Collect scrap for recycling/remelting. These aluminum alloys are not federally regulated as RCRA Hazardous Waste.

The U.S. Department of Transportation does not regulate these aluminum alloys. United Nations/North American number (UN/NA): None

Section 16 Regulatory Information

TSCA: All components of these aluminum alloys are listed on the TSCA Section 8(b) Chemical Inventory.

WHMIS: This MSDS was prepared in compliance with WHMIS requirements. Except for aluminum, chromium and manganese, all materials in these alloys, present on the Ingredient Disclosure List, are in concentrations less than the reporting threshold concentrations.

OSHA Hazard Communications Rule, 29 CFR 1910.1200: The Aluminum, Chromium, Copper, Iron, Magnesium, manganese, Silicon and Zinc components of these alloys are subject to the OSHA HAZCOM requirements.

CERCLA/SUPERFUND, 40 CFR 117, 302: These alloys contain the following Reportable Quantity (RQ) substances: Chromium, Copper and Zinc.

SARA 313 Information: The following materials are subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

Chemical Name	**CAS#**	**Concentration**
Aluminum (fume & dust only)	7429-90-5	greater than 94.3%
Chromium	7440-47-3	0.35% or less
Copper	7440-50-8	0.60% or less
Manganese	7439-96-5	1.20% or less
Zinc (fume & dust only)	7440-66-6	0.40% or less

Note: Aluminum fume (7429-90-5) may be formed if the product is welded, brazed, silver soldered or melted. Aluminum dust (7429-90-5) may be formed if the product is cut or ground.

California Proposition 65: The following statement is made in order to comply with the California Safe Drinking Water and Toxic Enforcement Act of 1986. Depending on the alloy, it may contain Chromium. This metal is known to the State of California to cause cancer or reproductive toxicity.

Massachusetts Substance List: Aluminum, Chromium, Copper, Magnesium, Manganese, and Zinc

New Jersey Right-To-Know Hazardous Substance List: Aluminum, Chromium, Copper, Magnesium, Manganese, and Zinc.

Pennsylvania Hazardous Substance List: Aluminum, Chromium, Copper, Magnesium, Manganese, and Zinc.

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When applicable, the products described in this MSDS are considered to be "articles" within the meaning of Title 29 of the Code of Federal Regulations, Section 1910.1200 et seq. This MSDS is intended to be used solely for the purpose of satisfying informational request made pursuant to that requirement. It is not intended to pre-empt, replace, or expand the terms contained in the Lovejoy Tool Co., Inc. Conditions of Sale.

Compliance with all applicable federal, state and local laws and regulations remains the responsibility of the user, and the user has the responsibility to provide a safe workplace, to examine all aspects of its operation, and to determine if or where precautions, in addition to those described herein, are required. This information may not be valid for these products when manufactured with alternate materials meeting the special requirements of a particular user.

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IN CASE OF QUESTIONS PLEASE CALL:

Company Name: Lovejoy Tool Company, Inc.

Contact and Title of Individual: Kristi C. Morris, Engineering Manager

Telephone Number: (802) 885-2194

ACGIH: American Conference of Governmental Industrial Hygienists

CAS#: Chemical Abstract Service Number

CERCLA: Comprehensive Environmental Response, Compensation and Liability Act

CNS: Central Nervous System

IARC: International Agency for Research on Cancer, World health Organization

IDLH: Immediately Dangerous to Life and Health

LC50: Lethal concentration for 50% of the test population

LD50: Lethal dose for 50% of the test population

MSDS: Material Safety Data Sheet

N/A: Not Applicable

N.D.: Not Determined

NTP: National Toxicology Program, Seventh Annual Report on Carcinogens

OSHA: Occupational Safety and Health Administration

PEL: Permissible Exposure Limit

PPM: Parts Per Million

SARA 313: Superfund Amendments and Reauthorization Act of 1986, Section 313

TLV: Threshold Limit Value

TSCA: Toxic Substances Control Act

TWA: Time Weighted-Average

WHMIS: Workplace Hazardous Materials Information System (Canada)