MET006

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Aluminum Company of America, 1501 Alcoa Building, Pittsburgh, PA 15219

ALCOA

NO. 668C

Common Name	Phone	Date
Wrought Aluminum Products, 6XXX Series Alloys	Emergency: 412-553-4001 Chemtrec: 800-424-9300 Technical: 412-553-2881	Rev 91-05-01 Orig 90-03-16

Prepared by the Hazardous Materials Control Committee.

SECTION I. Material Description

Chemical Name & Formula: Mixture

Other Designation: 6XXX Series Alloys, C56, C118, C176, C206, C209, C210, C211, C914, C915, C989, C47F, C50F, C51F, C52F, C61F, C62F, C68F, CB90, CD27, CD91, CD92, CD93, CD96, CE65, CE93, CH36, CK80, CM91, CS46, CT24, CT32, CT64, CT78, CU39, CU40, CU42, CU46, CU51, CU74, CU88, CW07, CW13, CW15, CW17, CW20, CW30, CW31, CW32, CW43, CW78, CW79, CW82, CW87, CW90, CZ01, CZ61, CZ64, CZ74, CZ75, CZ76, CZ77, and Alclad 6061. Does not include 6262 (MSDS No. 390).

CAS No.: See Section II

Manufacturer: Alcoa

Product Use: Various fabricated aluminum parts and products

SECTION II. Hazardous Ingredients and Occupational Exposure Limits

Hazardous ingredients are listed if they comprise ≥ 1.0% by weight. "Special Hazardous Substances" (Pennsylvania Right-to-Know Regulations) are listed if they comprise ≥ 0.01%.

Ingredient	CAS Number	% by Weight	Ingredient	CAS Number	% by Weight
Aluminum	(7429-90-5)	93.0 min.	Copper	(7440-50-8)	1.2 max.
Zinc	(7440-66-6)	2.4 max.	Manganese	(7439-96-5)	1.1 max.
Silicon	(7440-21-3)	1.8 max.	Iron	(7439-89-6)	1.0 max.
Magnesium	(7439-95-4)	1.5 max.	Chromium	(7440-47-3)	0.4 max.

Occupational Exposure Limits (TWA in mg/m^3 unless noted)

	ACGIH TLV	OSHA PEL
Aluminum, dust	10.0	15 (total) 5 (respirable)
Aluminum, fume	5.0	5.0
Chromium, metal	0.5	1.0
Cr II & III compounds	0.5	0.5
Cr VI cmpds, water soluble and water insoluble	0.05	--
Copper, fume	0.2	0.1
Iron oxide, fume	5.0	10.0
Magnesium oxide, fume	10.0	10.0 (total) 5 (respirable)
Manganese, dust	5.0 (Ceiling)	5.0 (Ceiling)
Manganese, fume	1.0, 3.0 (STEL)	1.0, 3.0 (STEL)
Silicon, nuisance dust	10.0 (total dust)	10 (total dust); 5 (respirable)
Zinc oxide, fume	5, 10 (STEL)	5, 10 (STEL)
Zinc oxide, nuisance dust	10.0 (total dust)	10 (total dust), 5 (respirable)
* Ozone	0.1 ppm, 0.3 ppm (STEL)	0.1 ppm, 0.3 ppm (STEL)
*Nitric oxide	25 ppm	25 ppm
*Nitrogen dioxide	3 ppm, 5 ppm (ceiling)	5 ppm (ceiling)

* Refer to Section VI for processes where ozone and nitric oxide limits apply.

No LD_{50} or LC_{50} found for oral, dermal or inhalation routes of administration except for: Silicon - oral rat LD_{50}: 3160 mg/kg body weight
Manganese - oral rat LD_{50}: 9000 mg/kg body weight

SECTION III. Physical Data

Physical Form: Solid: Sheet, plate, wire, rod, bar, extrusions, forgings, etc.
Boiling Temperature: NA
Freeze-Melt Temperature: Wide range: generally 1030-1210°F (554-654°C)
Vapor Pressure (mm): NA
Vapor Density (air = 1): NA
Evaporation Rate: NA
Specific Gravity: NA
Density: Range: generally 2.69-2.72 g/cm^3 (0.097-0.099 lb/in^3)
Water Solubility: None
pH: NA
Color: Silvery
Odor: None
Odor Threshold (ppm): NA
Coefficient of water/oil distribution: NA

SECTION IV. Fire and Explosion Data

Flashpoint:	Auto-Ignition Temp.:	Flammability Limits in Air: Upper: Lower:
NA	NA	NA

Wrought aluminum products do not present fire or explosion hazards under normal conditions. Use firefighting methods and materials that are appropriate for surrounding fire.

Small chips, fine turnings, and dust may ignite readily. Use coarse water spray on chips, turnings, etc. Use Class D extinguishing agents or dry sand on fines. Do not use halogenated extinguishing agents on small chips/fines.

Dust clouds may be explosive; prevent formation of a dust cloud.

Molten aluminum and water can be an explosive combination. The risk is greater when there is sufficient molten metal to entrap or seal off the water. If confined, even a few pounds of molten aluminum added to water can lead to violent explosions. Drops of molten aluminum in water (e.g., plasma arc cutting), while not normally an explosion hazard, can generate enough flammable hydrogen gas to present an explosion hazard. Circulation of the water and removal of the metal particles minimize the hazards.

Firefighters should wear self-contained breathing apparatus and full protective clothing when appropriate.

SECTION V. Reactivity Data

Molten alumiuum may react violently with water. rust, certain metal oxides (e.g., oxides of copper, iron, and lead), and nitrates (e.g., ammonium nitrate and fertilizers containing ammonium nitrate).

Stable under normal conditions of use, storage, and transportation.
For finely divided aluminum (e.g., small chips, fines):
- With water: Generates hydrogen and heat slowly. Water/aluminum mixtures may be hazardous when confined.
- With heat: Oxidizes at a temperature-dependent rate.
- With strong oxidizers: Violent reaction with much heat generation.
- With acids and alkalies: Reacts to generate hydrogen.
- With halogenated compounds: Halogenated hydrocarbons can react violently with finely divided aluminum.

SECTION VI. Health Hazard Information (See Section II for exposure limits.)

Certain chromium compounds have been shown to cause nasal and lung cancer by inhalation. Chromium and its compounds are listed in the latest Annual Report on Carcinogens by the National Toxicology Program (NTP) and by the International Agency for Research on Cancer (IARC).

The potential for overexposure to copper fume may exist when welding, flame cutting, etc. on alloys containing copper. Overexposure to copper fume can result in upper respiratory tract irritation, nausea, and metal fume fever.

Exposure to zinc oxide fume subsequent to burning, welding, and molten metal work can result in "zinc chills" (metal fume fever). Temporary symptoms can include fever, chills, nausea, vomiting, and muscular pain. Exposure to dust/fines presents a low health risk by inhalation.

Overexposure to manganese oxide fumes may cause metal fume fever. Chronic overexposure to manganese fumes may cause nervous system disorders, (e.g, Parkinsonian-type symptoms), pneumonitis, and fibrosis of lung tissue.

Exposure to magnesium oxide fumes may cause metal fume fever. Temporary symptoms can include fever, chills, nausea, vomiting, and muscular pain. Exposure to magnesium metal or oxide dust should be a low health risk by inhalation and should be treated as a nuisance dust.

Welding aluminum, plasma arc cutting, and arc spray metalizing can generate ozone. Ozone overexposure can result in mucous membrane irritation as well as pulmonary changes including irritation/congestion/edema. See Alcoa MSDS No. 214 for hazards and appropriate safeguards concerning welding with aluminum.

When plasma arc cutting with auxiliary gases containing nitrogen, the exposure limits for oxides of nitrogen can be exceeded. Nitrogen dioxide can cause irritation of eyes, nose, throat and delayed pulmonary edema. Short exposure to very high concentrations (>250 ppm) may cause pulmonary edema and death.

Nitric oxide is a severe eye, skin, and mucuous membrane irritant; it may cause formation of methemoglobin and subsequent action on the central nervous system. Nitrogen monoxide can be fatal if inhaled at very high concentrations (>100 ppm).

Aluminum dust/fines and fumes are a low health risk by inhalation. For standard operations (e.g., milling, cutting, grinding), aluminum should be treated as a nuisance dust and is so defined by the American Conference of Governmental Industrial Hygienists (ACGIH).

Some aluminum products are supplied with an oil coating which protects them from moisture penetration. Prolonged or repeated skin contact with these oils or residual processing lubricants may cause skin irritation due to defatting action on the skin.

First Aid:

Inhalation: Immediately remove to fresh air. If breathing has stopped, provide oxygen and respiration. Consult a physician.

Skin and eyes: If irritation develops, consult a physician.

SECTION VII. Spill, Leak & Disposal Procedures

Collect scrap for remelting.

RCRA Hazardous Waste No. Not Federally Regulated

SECTION VIII. Special Protection and Precautions

Use with adequate ventilation to meet exposure limits as listed in Section II. Where the exposure limit is or may be exceeded, use NIOSH approved respiratory protection. Select the appropriate respirator (e.g. dust and fume respirator) based on concentrations of actual or potential airborne contaminants present.

Persons who handle metal manually should wear impervious gloves to avoid repeated exposures to residual lubricants or other lubricants on the metal, which may have been added for protection against corrosion. Gloves will also help to prevent cuts due to sharp edges on the metal.

SECTION IX. Regulatory Information

Chemical substance components have been reported to the EPA Office of Toxic Substances in accordance with the requirements of the Toxic Substances Control Act (Title 40 CFR Part 710).

Chromium is listed by Pennsylvania as "Special Hazardous Substance" under Pennsylvania Worker and Community Right-to-Know Regulations.

Hexavalent chromium is known to the State of California to cause cancer (California Prop. 65).

For purposes of SARA III reporting, this substance contains the following listed ingredient/s:

Chromium, Copper, Zinc -- CERCLA List

Aluminum (fume/dust), Chromium, Copper, Manganese, Zinc -- Section 313 List

If molten, this material would fit the EPA Hazard Category of Reactive Hazard under SARA Sections 311, 312.

If particulates or fumes are generated during processing, this material would fit the EPA Hazard Category of Delayed (Chronic) Health Hazard under SARA Sections 311, 312.

D.O.T. Shipping Name, Hazard Class, I.D. No. (if applicable) Not Regulated

Canadian TDG Hazard Class & PIN -- Not Regulated

SECTION X. References

For specific information on special hazards, reference these Alcoa MSDSs:

Molten Aluminum - MSDS No. 478

Remelt Ingot - MSDS Nos. 682-689

Aluminum Powder & Granules - MSDS Nos. 123 and 125

Welding Wire - MSDS No. 214

Information herein is given in good faith as authoritative and valid; however, no warranty, express or implied, can be made