SERVICE STEEL
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Material Safety Data Sheet

TRADE NAME (Common Name or Synonym)	CHEMICAL NAME
Aluminum Alloy	**Alloy Series 1000, 2000, 3000, 5000, 6000 and 7000**

I. INGREDIENTS

Material or Component	CAS Number	% Weight	EXPOSURE LIMITS OSHA PEL (mg/m³)	EXPOSURE LIMITS ACGIH TLV (mg/m³)
Base Metal				
Aluminum (Al)	7429-90-5	90-99.7	15 Dust	10.0 Metal Dust & Oxide 5.0 Welded Fume
Alloying Elements				
Chromium (Cr)	7440-47-3	<0.01-0.4	1.0 Chrome Metal	0.5 Chrome Metal
Copper (Cu)	7440-50-8	<0.05-6.0	0.1 Fume/1.0 Dust	0.2 Fume/1.0 Dust
Iron (Fe)	1309-37-1	<0.35-1.0	10 Oxide Fume	5 Oxide Fume
Magnesium (Mg)	1309-48-4	<0.03-4.9	15 Oxide Fume	10 Oxide Fume
Manganese (Mn)	7439-96-5	<0.02-1.5	5c Dust/5c Fume	5c Dust/1 Fume
Silicon (Si)	7440-21-3	<0.25-1.8	15 Dust	10 Total Dust
Zinc (Zn)	1314-13-2	<0.05-6.1	5 Oxide Fume	10 Dust/5 Fume
Lead (Pb)	7439-92-1	<0.40-0.7	.05 Dust & Fume	0.15 Dust & Fume

Note: Aluminum alloys will be comprised of various combinations of the elements shown above. In addition, other alloying elements may be present in minute quantities. No permissible exposure limits (PEL) or threshold limit values (TLV) exist for aluminum alloys. Values shown are applicable to component elements.

II. PHYSICAL DATA

MATERIAL IS (At Normal Conditions)	APPEARANCE AND ODOR	% VOLATILE BY VOLUME	VAPOR DENSITY
☐ LIQUID ■ SOLID ☐ GAS ☐ OTHER	Silvery-Grey, Odorless	N/A	N/A

ACIDITY/ALKALINITY	Melting Point 900-1200 °F	Specific Gravity (H_2O) = 1) Approx. 2.5-2.9	VAPOR PRESSURE (mm Hg at 20° C)
pH = N/A	Boiling Point N/A °F	Solubility in water (% by weight) Negligible	N/A

III. PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY PROTECTION Appropriate dust/mist/fume respirator should be used to avoid excessive inhalation of particulates. If exposure limits are reached or exceeded, use NIOSH approved equipment.	HANDS, ARMS AND BODY Protective gloves should be worn as required for welding, burning or handling operations.
EYES AND FACE Safety glasses should be worn when grinding or cutting. Face shields should be worn when welding or cutting.	OTHER CLOTHING AND EQUIPMENT As required depending on operations and safety codes.

IV. EMERGENCY MEDICAL PROCEDURES

INHALATION:	Remove to fresh air; if condition continues, consult a physician.
EYE CONTACT:	Flush thoroughly with running water to remove particulate; obtain medical attention.
SKIN CONTACT:	Remove particles by washing thoroughly with soap and water. Seek medical attention if condition persists.
INGESTION:	If significant amounts of metal are ingested, consult physician.

V. HEALTH/SAFETY INFORMATION

Health

For standard operations (e.g. melting, cutting, grinding), aluminum alloys present a low health risk by inhalation and are usually considered a nuisance dust. Toxicity by ingestion-none expected. Skin and eyes-not an irritant. Welding and plasma cutting of alloys high in copper (2000 and 7000 series) may present the potential for overexposure to copper fumes which can result in upper respiratory tract irritation, nausea, and metal fume fever. Nickel and chromium are other alloying elements considered hazardous as fume; however, they do not present a carcinogenic or other health concern due to their low concentrations of the chemical form in which they are present. Overexposure to lead fumes over an extended period of time can result in such toxic effects as central nervous system disturbances, renal changes, peripheral neuropathy, gastrointestinal disturbances, anemia, and chromosomal changes. The welding of aluminum alloys may generate carbon monoxide, carbon dioxide, ozone nitrogen oxides, infrared radiation and ultraviolet radiation.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Individuals with chronic respiratory disorders (i.e.: asthma, chronic bronchitis, emphysema, etc.) may be adversely affected by any fume or airborne particulate matter exposure.

OCCUPATIONAL EXPOSURE LIMITS: See Products Ingredients Section I.

Fire and Explosion

FLASH POINT	AUTO IGNITION TEMPERATURE	FLAMMABLE LIMITS IN AIR	EXTINGUISHING MEDIA
N/A °F	N/A	Lower N/A % Upper	For molten aluminum use dry powder or sand.

FIRE AND EXPLOSION HAZARDS
Aluminum tubular products do not present fire or explosion hazards under normal conditions.

EXTINGUISHING MEDIA NOT TO BE USED
Do not use water or halogen agents on molten aluminum.

Reactivity

STABILITY	INCOMPATIBILITY (MATERIALS TO AVOID)
■ Stable ☐ Unstable	Reacts with strong acids to form hydrogen gas.

CONDITIONS TO AVOID: Aluminum products under normal conditions are stable during use, storage and transportation. Halogen acids and sodium hydroxide in contact with aluminum may generate explosive mixtures of hydrogen. Finely divided aluminum, such as small chips and fines, will form explosive mixtures in air. It also will form explosive mixtures in air in the presence of bromates, iodates, or ammonium nitrate. Strong oxidizers cause violent reactions with considerable heat generation.

VI. ENVIRONMENTAL

SPILL OR LEAK PROCEDURES
Fine turnings and small chips should be swept or vacuumed. Scrap metal can be reclaimed for re-use.

WASTE DISPOSAL METHOD*
Used or unused product should be disposed of in accordance with Federal, State or Local Laws and Regulations.
*Disposer must comply with Federal, State and Local disposal or discharge laws.

VII. ADDITIONAL INFORMATION

Do not touch cast aluminum metal or heated aluminum product without knowing metal temperature.
Aluminum experiences no color change during heating. Burns could result.
Series 2000 and 7000 alloys should be stress relieved prior to sawing or cutting to avoid cracking.
Aluminum powder must be packaged and shipped as a flammable solid.
Minimize and control operations producing dust and fume.

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