

SAFETY DATA SHEET SPECTRO ALLOYS, INC ALUMINUM ALLOY B390.1

1. MATERIAL NAME **REMELT INGOT AND CAST ALUMINUM ALLOY B390.1**
Chemical description Solid Aluminum Metal Ingot

Manufacturer SPECTRO ALLOYS INC
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2. HAZARD IDENTIFICATION

Classification This product is considered **hazardardous** per 29 CFR 1910.1200

Emergency overview Solid, silver colored. Odorless. Not combustible as shipped.
Small chips, fine turnings and dust from processing are easily Ignitable
Explosion/fire hazards will be present

- Dust or fines dispersed in air
- Chips, dust or fines in contact with water
- Dust and fines in contact with certain oxides (Iron oxide, Copper oxide)
- Molten metal in contact with water or some oxides (iron & copper)

Dust and fume from processing can cause respiratory tract irritation

Potential health hazards

Sensitization, respiratory	Category 1
Sensitization, skin	Category 1
Carcinogenicity	Category 2
Reproductive Toxicity	Category 1A
Specific target organ toxicity, repeated	Category 1 (Respiratory tract)

Precautionary statement

Prevention Obtain special instructions before use. DO NOT BREATHE dust/fume In case of inadequate Ventilation wear respiratory protection. Wear protective gloves/clothing/eye protection DO NOT eat, drink or smoke when using this product. Wash thoroughly after handling .this product. Prevent dust accumulation to minimize explosion hazard

Response If inhaled: If breathing is difficult, remove person to fresh air. If respiratory symptoms are experienced call a doctor at once. IF ON SKIN wash with soap and water. If rash occurs see a doctor promptly. Wash contaminated clothing before reuse

Storage Store in a dry place

Disposal Dispose of contents/container in accordance with local State or Federal Regulations

2. HAZARD IDENTIFICATION

Carcinogenicity &

Reproductive Hazard

As shipped product no hazard Dust from processing can cause problems as Cancer (Cadmium Nickel Cobalt Lead) Reproductive hazard (Lead, Manganese) Dust & fumes from welding or elevated temperature processing can present a cancer hazard (hexavalent chromium compounds, lead compounds, cadmium compounds, cobalt compounds, nickel compounds, welding fumes) can present a reproductive hazard (lead compounds, manganese compounds)

Medical conditions aggravated

Asthma, chronic lung disease,
Secondary Parkinson's disease and skin rash

3. COMPOSITION INFORMATION ON INGREDIENTS

Components	CAS #	Percent
Silicon	7440-21-3	16.0 - 18.0
Aluminum	7429-90-5	>75
Copper	7440-50-8	4.0 - 5.0
Nickel	7440-02-0	0.10
Zinc	7440-66-6	1.40
Manganese	7439-96-5	0.50
Magnesium	7439-95-4	0.50 - 0.65
Chromium	7440-47-3	----
Titanium	7440.32-6	0.20
Tin	7440-31-5	----
Iron	7439-89-6	1.0
Others Total		0.20

4. FIRST AID MEASURES

Eye contact

Dust & fumes from processing: Rinse eyes with water or saline for at least 15 minutes. Consult doctor

Skin contact

Dust & fumes from processing Wash with soap & water for at least 15 minutes. Get medical attention if irritation persists

Inhalation

Dust & fumes from processing remove to fresh air. Check for clear airway, breathing and pulse. If breathing is difficult provide oxygen. Loosen tight clothing. Provide CPR for persons without pulse or respiration Consult a doctor

Ingestion

Not relevant due to nature of product

4. FIRST AID MEASURES (Continued):

Most important Symptoms/effects Health effect from mechanical, processing cutting, grinding) Dust from processing can cause chronic over exposure can cause anemia, skin pigment changes, pulmonary fibrosis,

Acute and delayed secondary Parkinson's disease, lung cancer . Can cause anemia, skin pigmentation changes, pulmonary damage , reproductive harm and central nervous system damage
If contains Cobalt or Nickel may produce allergic reaction

Medical conditions aggravated by exposure Added health effects aggravated by elevated temperature processing (welding, melting) Dust and fumes from processing Over exposure can cause metal fume fever, pulmonary fibrosis, pulmonary edema, secondary Parkinson's disease, lung cancer

Indication of need Immediate medical attention If breathing is difficult, administer oxygen.

General information If exposed see a doctor

5. GENERAL FIRE HAZARDS This product as shipped does not present a hazard. Small chips, fine turnings and dust from processing may be readily ignited.

Extinguishing media
Suitable extinguishing media

Use Class D Extinguishing agents on fines dust or molten metal Use coarse dry sand to surround molten metal DO NOT USE water on spray chip & turnings

Unsuitable extinguishing media

DO NOT USE halogenated agents on small chips or fines
DO NOT USE water in fighting fires around MOLTEN METAL
These fire extinguishing agents react with the burning material

Specific hazards arising from the Chemical

The product does not present fire or explosion hazard as shipped Small chips, turnings and dust from processing is readily ignitable be a potential hazard under following conditions;

- Dust clouds may be explosive. Even a minor dust cloud can explode violently. Dust accumulation on floor, ledges and beams can present a risk of ignition, flame propagation and secondary explosions
- Chips, fines and dust in contact with water can generate flammable hydrogen gases. These gases present an explosion hazard in poorly ventilated spaces

5. FIRE FIGHTING MEASURES (continued)

Dust and fines in contact with certain metal oxides (Iron oxide, copper oxide) A thermite reaction with heat generation can be initiated by a weak ignition source

Molten metal in contact with moisture or certain oxides iron, copper) Moisture trapped in molten metal can be explosive. Contact with molten aluminum with certain oxides (lead, iron, copper,, bismuth and some other metals) an initiate a thermite reaction

Protective equipment and precautions for fire fighters

Fire fighters should wear NIOSH approved positive pressure, self contained breathing apparatus and full protective clothing

Hazardous combustion Products

No hazardous decomposition products

Fire fighting Equipment

Use gentle surface application of Class D extinguishing agent or **dry** inert granular (sand) to cover the fire and ring the burning material. If impossible to extinguish ring the burning material let fire burn out. Apply extinguishing agent to NOT stir up dust

Explosion data Sensitivity to Mechanical impact

Not applicable

Sensitivity to Static discharge

Prevent static discharge when dust explosion is possible

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Avoid generating dust. Avoid inhalation of dust. Avoid inhalation of fume from molten metal. Avoid contact with sharp edges or molten metal. Molten, heated and cold aluminum look alike. Do not touch unless you KNOW it is cold. Use personal protective equipment as noted elsewhere in this SDS

Environmental precautions

Reuse or recycle material

7. HANDLING AND STORAGE

Evacuation procedure	Persons not wearing personal protective equipment should be excluded from the spill Area until clean up is complete
Spill or leak procedure	Collect scrap for recycling. IF MOLTEN Use DRY sand to contain flow of metal. All tools and containers must be preheated or coated, rust free and approved for use Allow spill to cool before remelting as scrap
Handling	Keep material dry. Avoid generating dust AVOID contact with sharp edges or hot metal. Hot and cold aluminum are not visually different Use personal protective gear as noted in this document.
Storage	Store in DRY place.
Processes That generate Dust or Fines	<p>If processing this product can generate dust or fines, obtain following safety procedures equipment guides from the Aluminum Association Bulletin F-1 and NFPA brochure 654</p> <p>Use non-sparking tools and natural bristle brushes. Cover and reseal partially empty containers. Provide static bonding as needed to prevent static charge buildup during transfer operations Local ventilation and vacuum systems must be designed to handle explosive dusts</p> <p>Do not let small chucks, dust or fines to contact water. Avoid ignition sources. Maintain good housekeeping dust accumulation on floors, beams or ledges is an explosion hazard DO NOT USE DRY VACCUMS OR ELECTROSTATIC PRECIPITATORS DO NOT mingle fines from iron or other metal oxides with aluminum fines</p>
Requirements for	Molten metal and waste Use non-sparking tools and natural bristle brushes. Containers - Cover and reseal partially empty Provide static bonding as needed to prevent static charge buildup during transfer operations Local ventilation and vacuum systems must be designed to handle explosive dusts and fines can be an explosive.
Remelting Scrap	DRY all ingot or scrap before charging
Material or ingot	<p>Preheat large items before charging filled space into a where molten aluminum traps water. Water and other contaminants can cause explosions. Tools must be preheated or coated. Rust free and approved for use. Any hot or molten that MAY contact surfaces concrete) must be coated during melting operations all material must be inspected prior to charging and surface contaminant removed (ice, snow, grease, or contaminants caused by storage)</p> <p>Store ingot and sow in heated areas with cracks or cavities pointed down preheat and dry large items before charging into a partially filled furnace Fine turnings and dust from processing is readily ignitable in furnaces that previously had been used to melt lead, bismuth or other low melting point metals</p>
Dross Handling	Small amounts of beryllium maybe present. This beryllium in dross does not present a health hazard during processing however can be accumulated in dross.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

- Engineering controls** Dust and fumes must be controlled by an explosion proof ventilation system designed to handles combustible particulates see NFPA bulletin 645
- Personal protective Equipment**
- Eye/face protection** Wear safety glasses with side shields. A face shield must be worn around molten metal
- Skin & body protection** Around molten metal wear heat resistant glove and Flame retardant clothing
- Thermal hazards** Contact with molten material can cause thermal burns. Hot aluminum does not glow red when heated. Wear gloves to protect from burns. Wear flame retardant clothes
- Respiratory protection** If dust or fumes from processing is present wear respirators. If lead suspected sue special lead respirator
- Hygiene measures** Handle following good hygiene and safety practices. Wash hands before eating, smoking or drinking
- General**
- Personnel handling molten aluminum should wear protective clothing, polycarbonate face shields, fire resistant jackets and pants, spats, snoods, flame resistant hard toed shoes etc. NO synthetic fiber underwear or other clothing
- Sample to establish lead levels
- Personnel who handle and work with metal use utilize primary protective clothing, fire resistant jackets, poly carbonate face shields, leggings, spats, etc. Synthetic material should never be worn even as under garments.
- Sampling to establish lead level exposure is needed where exposure to lead level exposure is possible. See OSHA standard 29 CFR 1910.1025 for specific precautions and requirements.

EXPOSURE CONTROLS/ PERSONAL PROTECTION (Continued)

OSHA

Components	Type	Value	Form
Cobalt (CAS 7440-16-41)	TWA	0.1mg/m ³	Dust and fume
Aluminum (CAS 7429-90-5)	TWA	5 mg/m ³	Respirable fraction
		15mg/m ³	Total dust
Chromium (CAS 7440-47-3)	TWA	1mg/m ³	
Copper (CAS 7440-50-8)	TWA	1mg/m ³	Dust and mist
		0.1mg/m ³	fume
Manganese (CAS7439-96-5)	Ceiling	5 mg/m ³	fume
Silicon (CAS 7440-21-3)	TWA	5 mg/m ³	Respirable fraction
		15mg/m ³	Total dust
Aluminum Oxide Non fibrous (CAS1644-28-1)	TWA	5 mg/m ³	Respirable fraction
Chromium (II) Compound	TWA	0.5mg/m ³	(as Cr)
Chromium (III) Compound	TWA	0.5mg/m ³	(as Cr)
Chromium (VI) (CAS 18540-20-9)	TWA	0.0025mg/m ³	Action level as Cr VI
Cobalt Compound	TWA	0.01mg/m ³	Metal dust/fume
Iron Oxide (CAS 1309-37-1)	TWA	10mg/m ³	fume
Lead Compound Inorganic	TWA	0.05mg/m ³	As Pb
		0.03mg/m ³	Action level Pb
Manganese Compound	Ceiling	5mg/m ³	fume
Nickel Compound Insoluble	TWA	1mg/m ³	As Ni
Nitric Oxide (CAS 10102-43-9)	TWA	30mg/m ³	
Ozone (CAS 10028-15-6)	TWA	25ppm	
		0.2mg/m ³	
Lead (CAS 7439-92-1)	TWA	5mg/m ³	fume
Lead (CAS 7439-92-1)		15mg/m ³	Total dust
Lead (CAS 7439-92-1)	TWA	0.05mg/m ³	
Cadmium (CAS 7440-43-9)	TWA	0.005mg/m ³	
Chromium (CAS 7440-47-3)	TWA	0.05mg/m ³	

AGIH Threshold limits

Components	CAS	TWA	VALUE	FORM
ALUMINUM NON FIBER	1344-28-1	TWA	1 mg/m ³	Respirable fraction (as Al)
CADMIUM	7440-43-9	TWA	0.01 mg/m ³	
			0.002 mg/m ³	Respirable fraction
CHROMIUM	7440-47-3	TWA	0.5 mg/m ³	
COBALT	7440-48-4	TWA	0.02 mg/m ³	
COPPER	7440-50-8	TWA		Dust & Mist
			1 mg/m ³	
COPPER	7440-50-8	TWA	0.2 mg/m ³	Fume
LEAD	7439-92-1	TWA	0.05 mg/m ³	
MANGANESE	7439-96-5	TWA	0.1 mg/m ³	Inhalable fraction
NICKEL	7440-02-0	TWA	0.02 mg/m ³	Respirable fraction
NICKEL	7440-02-0	TWA	1.5 mg/m	Inhalable fraction

9. PHYSICAL & CHEMICAL PROPERTIES

Form	Solid
Color	Silver
Odor	None
Auto-ignition temp	none
Boiling point	2917 °C
Density	2.50 – 3.12 g/cm ³
Melting point	899.6° C
pH	Not applicable
Solubility in water	Not applicable

10. CHEMICAL STABILITY & REACTIVITY INFORMATION

Chemical stability	Stable under normal conditions of use, storage and transport as shipped
Conditions to avoid	Chips, fines dust and molten metal are much more reactive with: water, generates flammable hydrogen gas and heat. The finer the particles the faster the rate. Molten metal can react violently with water if the water is entrapped Heat: Oxidizes at a rate dependent on temperature and particle size
Possible hazardous Reactions	Hazardous polymerization does not occur
Incompatible materials	Chips, fines, dust and molten metal are much more reactive with: Strong oxidizers: violent reaction with lots of heat. Will explode violently With nitrates such as ammonium nitrate or fertilizers contain nitrate when heated or molten Acids and alkalis: reacts to generate flammable / explosive hydrogen gas Halogenated compounds can react with fines or molten metal Iron oxide and other metal oxides can create a Thermite reaction Iron oxide can react with molten aluminum without an external ignition source Iron powder and water form s an hydrogen gas when heated to 1470°F Thermite explosions have occurred in furnaces that had previously melted lead, bismuth or other low melting point metals Thermite reactions can occur with oxides of lead, copper, iron bismuth and some others
Hazardous decomposition products	no decomposition products known

11. TOXICOLOGICAL INFORMATION

Aluminum dust and fines and fume: Low health risk by inhalation considered biologically inert
 Cadmium dust fumes and mist: Can cause severe irritation of the respiratory tract. . Acute overexposure can cause metal fume fever, inflammation of lung tissue Can cause lung damage (pulmonary edema)
 If contains cobalt or nickel may produce allergic reaction
 Heating above melting point releases metal oxides which may cause metal fume fever by inhalation as well as muscle pain.
 Long term breathing may cause lung or nasal cancer or chronic lung disease
 Chronic exposure to low levels of manganese dust/fume can result in a disease similar the Parkinson's disease, gait impairment muscle spasms and behavioral changes
 Lead may damage kidney function, Blood forming system and reproductive system
 Cobalt may irritate eyes, skin and/or respiratory tract. Skin contact may cause allergic reactions. Overexposure may cause asthma, pulmonary fibrosis and may harm the heart muscle.

**12. ECOLOGICAL INFORMATION
 ECOTOXICOLOGICAL DATA**

Components		Species	Test Results
Aluminum (CAS 7429-90-5)			
Aquatic			
Cladocera	LC50	Water flea	3.5mg/l 24 hours
Fish	LC50	Trout	0.31 mg/l 96 hours
Iron (CAS 7439-89-6)			
Crustacea	LC50	Shrimp	100+ mg/l 48 hours
Fish	LC50	Catfish	>500 mg/; 96 hours
Aluminum oxide (non-fibrous) (CAS 1334-28-1)			
Aquatic toxicity	Not harmful to aquatic organisms		
Persistence	Not biodegradable		
Bioaccumulation	Due to low water solubility not likely		

13. DISPOSAL CONSIDERATIONS

Disposal instructions Reuse or recycle material when possible. If reuse or recycling is not possible disposal must be made according to local or other regulations

Waste from residues/ Not applicable

Unused products Not applicable

Mobility in environment Not applicable

14. Transport Information

General Shipping Information

Basic shipping requirements

UN number -

Proper shipping name not regulated

Hazard class -

Packing group -

When "not regulated" enter the proper freight classification, SDS number and Product name onto the shipping papers

Disclaimer

This section provides basic classification information and information re: special modal regulations, environmental hazards and special precautions

15. REGULATORY INFORMATION (United States)

SEE Toxic Substances Control Act (TSCA) Inventory

16. OTHER INFORMATION

This product contains the following toxic chemicals subject to then reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and 40 CFR 372

CAS Number	Chemical Name	Percent By Weight
7429-90-5	Aluminum (fume or dust only)	[a,b]
7429-47-3	Chromium	[a,b]
7440-50-8	Copper	[a,b]
7439-92-1	Lead	[a,b]
7439-95-5	Manganese	[a,b]
7440-02-0	Nickel	[a,b]
7440-66-6	Zinc	[a,b]

[a] See section **Hazardous ingredient/s**(Sections 2 & 3) identity information by weight percentage

[b] Must be adjusted for the fraction of the material which exists as fume or dust

16. OTHER INFORMATION

References:

Aluminum Association Bulletin F-1 'Guidelines for Handling Aluminum Flkes. Generated during Various Aluminum Fabricating Operations The Aluminum Association, 1525 Wilson Boulevard. Suite 600, Arlington VA 22209. www.aluminum.org

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Bretherick, Handbook of Reactive Chemical Hazards, Butterworth's 1995

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Lewis, Richard J., Sr. Hazardous Chemicals Desk Reference CDROMS edition John Wiley 1998

National Fire Protection Association, National Fire Codes. Manual of Hazardous Chemical Rreactions Quincy MA 2015

Plunkett, E. R. Handbook of Industrial Toxicology: Chemical Publishing Co, New York 1976

Sax, M. Irving: Dangerous Properties of Industrial Materials CDROM edition, John Wiley New YORK 2112

US Dept of Health & Human services, NIOSH Pocket Guide to Chemical Hazards Cincinnati, 2010

US Dept of Health & Human services, NIOSH Register of Toxic Effects of Chemical Substances 2014

US Dept of Labor, OSHA Regulations 29CFR1910.1000 -1910-1200 January 2015

US Environmental Protection Agency LIST OF lists EPA 550-b3 Washington DC 2015

NOTICE

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November 28, 2015

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