EGA SPECTRO ALLOYS

Safety data sheet
Aluminum dross

SECTION 1: Product and Company Identification

1.1. Product identifier

Product Name:	Aluminum Dross
Trade Name:	Black Dross
Product Form:	Mixture

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture:	Industrial use Metal recovery

1.3. Details of the supplier of the safety data sheet

Spectro Alloys Corp.
13220 Doyle Path East
Rosemount, MN 55068

1.4. Emergency telephone number

Emergency number:	On-site Emergency 651-480-6135

SECTION 2: Hazard(s) Identification

2.1. Classification of the substance or mixture

GHS-US classification

Physical Hazards:	Substance and mixtures which, in contact with water, emit flammable gasses	Category 3
	Skin corrosion / irritation	Category 2
	Serious eye damage / eye irritation	Category 2
	Carcinogenicity	Category 2
	Sensitization, respiratory	Category 1
Health Hazards:	Sensitization, skin	Category 1
	Specific target organ toxicity, repeated exposure (inhalation) (lungs, central nervous system, systemic toxicity)	Category 1
	Reproductive toxicity	Category 1B
OSHA defined hazards:	Combustible Dust	

2.2. Label elements

GHS US labeling

Hazard pictograms (GHS US)

Signal work (GHS US):	Danger
Hazard statements (GHS US)	In contact with water releases flammable and/or toxic gases. Causes skin irritation. Causes serious eye irritation. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction. Suspected of causing cancer by inhalation. May damage fertility or unborn child. Causes damage to organs through prolonged or repeated exposure. May form combustible dust concentrations in air.
Precautionary statements (GHS US)	
Prevention	P232: Protect from moisture. P201: Obtain special instructions before use. P280: Wear protective gloves/protective clothing/ eye protection/face protection. P260: Do not breathe dust/fumes/gas/mist/ vapors/spray. P272: Contaminated work clothing should not be allowed out of the workplace. P264: Wash thoroughly after handling.
Response	P370: In case of fire: Use Class D agent to extinguish. P305: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists get medical advice/attention. P304: IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. If experiencing respiratory symptoms: Call a poison center/ doctor. P302: IF ON SKIN: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse. P308: If exposed or concerned: Get medical advice/attention.
Storage	P402: Store in a dry place. Protect from moisture, especially in enclosed areas.
Disposal	P501: Dispose of contents/container in accordance with local/regional/national/ international regulations

2.3. Other hazards

Other hazards not contributing to the clasification	Substance and mixtures which, in contact with water, emit flammable gasses
2.4. Unknown acute toxicity (GHS US)	No data available

SECTION 3: Composition/Information on ingredients

Aluminum dross composition varies within the wide ranges shown below depending on the procedures used to skim it from the molten aluminum, the alloy being melted, and the types and amounts of flux applied.

Material	Element	Percent by Weight	CAS Number	EC Number
Aluminum	Al	10-20	7429-90-5	231-072-3
Aluminum Oxide(Non-fibrous)	Al_2O_3	45-60	1344-28-1	215-691-6
Other Metallic Oxides	-	2-3	-	-
Sodium Chloride	NaCl	15-18	7646-14-5	231-598-3
Potassium Chloride	KCl	15-18	7447-40-7	231-211-8
Barium	Ba	≤ 0.06	7440-39-3	231-149-1
Boron	B	≤ 0.01	7440-42-5	231151-2
Chromium	Cr	≤ 0.05	7440-47-3	231157-5
Copper	Cu	≤ 0.9	7440-50-8	231142-3
Iron	Fe	≤ 0.3	7439-89-6	231-104-6
Lead*	Pb	≤ 0.1	7439-92-1	231-100-4
Magnesium	Mg	≤ 0.3	7439-95-4	231-159-6
Manganese	Mn	≤ 0.1	7439-96-5	231-130-8
Nickel	Ni	≤ 0.5	7440-02-0	231-111-4
Silicon	Si	≤ 2.6	7440-21-3	231-096-4
Strontium	Sr	≤ 0.01	7440-24-6	231-133-4
Sulfur	S	≤ 0.06	7704-34-9	231-722-6
Tin	Sn	≤ 0.1	7440-31-5	231-141-8
Titanium	Ti	≤ 0.1	7440-32-6	231-158-0
Zinc	Zn	≤ 0.6	7440-66-6	231-105-1

*Present as an impurity. While lead is not intentionally added to this mixture, it could potentially enter through the recycle stream.

SECTION 4: First aid measures

4.1. Description of first aid measures

First Aid Eyes: Flush with tepid water for at least 20 minutes holding the eyelids wide open. Seek medical attention if irritation develops.

First Aid Skin: Wash thoroughly with mild soap and water for at least 15 minutes. Seek medical attention if irritation develops. Remove any contaminated clothing and launder thoroughly before reuse.

First Aid Inhalation: Remove exposed person to fresh air. If breathing is difficult, oxygen may be administered. If breathing has stopped, artificial respiration should be started immediately. Seek medical Attention.

First Aid Ingestion: Not expected to be an important route of entry into the body. If large amounts of product are ingested, seek medical attention and advise physician.

First Aid Notes to Physician: Symptoms may be delayed. May cause sensitization of susceptible persons. Treat symptomatically. Dust and fumes from processing can

cause irritation of the upper respiratory tract. Chronic exposure can cause reduction in the number of red blood cells, skin abnormalities, respiratory sensitization, scarring of lungs, central nervous system damage, secondary Parkinson's Disease and reproductive harm. Health effects from additional compounds that may be formed on contact with water include difficulty breathing and the accumulation of fluid in the lungs (pulmonary edema). Chronic exposure can cause lung and liver damage.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media: Use coarse water spray on chips and fines. Use Class D extinguishing agents on dusts, fines or molten metal. Apply extinguishing media carefully to avoid creating airborne dust.

5.2. Special hazards arising from the substance or mixture

Small chunks, dusts, or fines in contact with water can generate flammable or toxic gas. These gases could present an explosion hazard in confined or poorly ventilated spaces. Molten metal in contact with water/moisture or certain metal oxides (e.g. rust). Moisture entrapped by molten metal can be explosive. Contact of molten aluminum with certain metal oxides can initiate a thermite reaction. Finely divided metals (e.g. powders) may have enough surface oxide to produce a thermite reaction/explosion.

5.3. Advice for firefighters

Confine dross powder dust fire, avoid spreading. Apply Class D powder in heavy quantities. Do NOT use water or moist sand. Fire Fighters should wear NIOSH approved, positive pressure, self-contained breathing apparatus and full protective clothing when appropriate.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Avoid dust formation. Protect from water run-on, including precipitation. For dust or fines, pick up released product with appropriate implements and return to original container if reusable. If not reusable, place in appropriate containers for disposal. If material is molten, contain the flow using dry sand or salt flux as a dam. Do not use shovels or hand tools to handle the flow of molten metal. Allow the spill to cool and harden, then follow above.

6.2. Environmental precautions

Prevent further leakage or spillage if it is safe to do so. Prevent product from entering drains. Do not flush into surface water or sanitary sewer system.

6.3. Methods and material for containment and cleaning up

Avoid generating dust. Avoid contact with skin and eyes. Avoid contact with sharp edges or hot metal. Avoid breathing dust/fumes/vapors/gas/mists/sprays. Ensure adequate ventilation. Appropriate personal protective equipment cited in Section 8 should be worn during all clean-up operations.

6.4. Reference to other sections

See also sections 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling: Product should be kept dry. Avoid generating dust. Avoid contact with sharp edges or hot metal. Avoid contact with skin and eyes.

Appropriate personal protective equipment cited in Section 8 should be worn during handling. Good housekeeping practices must be maintained. If wetted, remove to open area. Wash hands thoroughly after handling. Prior to shipment, material should be cooled to ambient temperature and dry. Avoid release to the environment. Use appropriate personal protective equipment cited in section 8.
Local ventilation and vacuum systems must be designed to handle explosive dusts. Dry vacuums and electrostatic precipitators must not be used, unless specifically approved for use with flammable/explosive dusts. Dust collection systems must be dedicated to aluminum dust only and should be clearly labeled as such. Do not co-mingle fines of aluminum with fines of iron, iron oxide (rust) or other metal oxides.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions: Keep containers tightly closed in a dry and well-ventilated area. Keep material dry. If wetted, remove to an open area. Incompatible with acids, alkalis, water, halogenated compounds, metal oxides, iron powder and water: may cause an explosive reaction forming hydrogen gas when heated above 1470°F (800°C).

7.3. Specific end use(s)

None.

SECTION 8: Exposure controls/personal protection

Respiratory Protection

Employees may wear NIOSH or MSHA approved respirators as specified by an Industrial Hygienist or qualified Safety Engineer for protection against airborne dusts or fumes.

Ventilation

Local exhaust ventilation is required when dust or fumes are generated. Use general and local exhaust ventilation to keep airborne concentrations of dust below the OSHA, PEL, and TWA shown below.

Protective Gloves

Advisable to avoid cuts and skin abrasions. Gloves and barrier creams may be necessary to prevent skin sensitization and dermatitis.

Eye Protection Other Protective Clothing or Equipment

Approved safety glasses or goggles should be worn when exposed to dusty or hot material. Face shields should be worn around hot metal. Safety eyewash stations should be provided near work areas.

Work/Hygienic Practices

Do not eat, drink, or use tobacco products in work areas. Wash thoroughly after skin contact and before eating, drinking, use of tobacco, or the restroom.
Pre-employment medical evaluations should be provided. Attention should be directed to the skin, Eyes, respiratory tract, blood, kidneys, pulmonary function, and neurological health. Chest x-rays should be included if symptoms are present.

Exposure limits

Material	Element	CAS Number	Human Carcinogen[a]	Form	OSHAa 8-Hr PEL mg/m³	ACGIH 8-Hr TLV mg/m³
Aluminum	Al	7429-90-5	No	Dust Fume	15 TD[b] 5 RF[c]	1 ND[b]
Aluminum Oxide (Non-fibrous)	Al_2O_3	1344-28-1	No	All	15 TD 5 RF	1 RF (as Al)
Sodium Chloride	NaCl	7646-14-5	No	All	ND	ND
Potassium Chloride	KCl	7447-40-7	No	All	ND	ND
Boron	B	7440-42-5	No	All	ND	ND
Chromium	Cr	7440-47-3	Yes[a]	All	1	0.5
Copper	Cu	7440-50-8	No	Dust Fume	1 0.1	1 0.2
Iron	Fe	7439-89-6	No	All	ND	ND
Lead*	Pb	7439-92-1	Yes[a]	All	0.05	0.05
Magnesium	Mg	7439-95-4	No	All	ND	ND
Manganese	Mn	7439-96-5	No	Dust Fume	5 C[e]	0.2 0.2
Nickel	Ni	7440-02-0	Yes	All	1	0.05
Silicon	Si	7440-21-3	No	All	15 TD 5 RF	ND
Strontium	Sr	7440-24-6	No	All	ND	ND
Tin	Sn	7440-31-5	No	All	2	2
Titanium	Ti	7440-32-6	No	All	ND	ND
Zinc	Zn	7440-66-6	No	Dust Fume	ND	ND
Other Metallic Oxides	-	N/A		All	ND	ND

Notes:

[a]: Identified as a potential human carcinogen
[b]TD: Total Dust
[c]RF: Respirable Fraction of Dust
[d]ND: For dust without an explicit OSHA PEL, a nuisance dust PEL applies (15 mg/m3 total dust, 5mg/m3 respirable fraction of dust.)
[e]C: Ceiling Limit

SECTION 9: Physical and chemical properties

- Appearance: Silvery gray or black solid (dust to large chunks)
- Specific Gravity: 2.3-3.0
- Melting Point: 1050-1220 °F
- Boiling Point: N/A
- Flammability: Nonflammable
- Upper/Lower Explosive Limits: N/A
- Vapor Pressure: N/A
- Odor: Slight ammonia odor
- Vapor Density (Air=1): N/A
- Evaporation Rate (Butyl Acetate=1): N/A
- Solubility in Water (At 20°C): Slightly soluble
- pH: <11.5 (saturated aqueous solution)
- Flash Point: N/A
- NFPA Fire Code: 0

SECTION 10: Stability and reactivity

Stability
Stable and non-reactive at room temperature if handled correctly.
Incompatibility (Materials to Avoid)
NEVER PUT WATER ON MOLTEN ALUMINUM DROSS-IT WILL EXPLODE!
Reaction with water, mineral acids, water soluble cutting oils, dilute hydrochloric acid, sulfuric acid, potassium hydroxide, or sodium hydroxide may liberate hydrogen. Generation rate is greatly increased with fines and dust. Avoid contact with acids, bases, and oxidizing agents. For additional information consult Safety Data Sheets for component materials.
A violent thermite reaction generating considerable heat can occur when this material reacts with iron oxide (rust) and other oxides.
Evolved hydrogen in confined areas may be an explosive hazard (see directly above)
Hazardous Decomposition or By-Products Hazardous Polymerization
No hazardous decomposition products are known.

SECTION 11: Toxicological information

Acute Toxicity
Aluminum (7429-90-5): Oral LD50 Rat >2000 mg/kg
Aluminum Oxide (1344-28-1): Oral LD50 Rat >5000 mg/kg
Nickel (7440-02-0): Oral LD50 Rat >9000 mg/kg
Zinc (7440-66-6): Oral LD50 Rat 630 mg/kg
Ammonia (7664-41-7): Oral LD50 Rat 350 mg/kg
Inhalation
Inhalation of finely divided aluminum powder may cause pulmonary fibrosis (aluminosis). Symptoms include anorexia, shortness of breath, dry cough, chest pain on respiration and epigastric abdominal pain.
Fumes with copper, magnesium, manganese, and zinc oxide may cause metal fume fever with flu-like symptoms. Overexposure to manganese fumes may cause chronic manganese poisoning. Early symptoms include headaches, apathy, sleepiness, and weakness or cramped legs. Chronic overexposure may affect the central nervous system, ultimately leading to emotional disturbances, gait and balance difficulties, and paralysis.
Overexposure to tin dust may cause irritation of the skin and mucous membranes and may result in benign pneumoconiosis (stannosis).
Chromium and nickel compounds have been associated with allergic reactions, rashes, and lung change. Nickel is a respiratory irritant and may cause pneumonitis.
Skin
Dusts or fumes containing component elements of aluminum alloys may cause skin or mouth irritation. Copper may cause skin and hair discoloration. Magnesium particles imbedded in the skin may cause severe lesions with slow healing.
Eyes
Dust or fumes containing component elements of aluminum alloys may cause eye irritation.
Ingestion
Ingestion of significant amounts of material is unlikely. Get medical attention.
Unusual Chronic Toxicity
Chromium, nickel, and lead have been identified as potential human carcinogens.
Carcinogenicity (Aluminum)
NTP: No
IARC Monographs: No
OSHA Regulated: No
Signs and Symptoms of Exposure
Irritation of skin and mucus membranes, cough, difficulty in breathing.
Medical Conditions Generally Aggravated by Exposure
None reported

SECTION 12: Ecological information

Ecotoxicity
Has not been demonstrated using standard OECD protocol.
Mobility
Aluminum is not mobile in the environment unless contact is made with aqueous environment with a pH below 5.5 or above 8.5.
Biodegradability
Not relevant for metals.
Bioaccumulation
This product does not contain any substances expected to be bioaccumulating.

SECTION 13: Disposal considerations

Waste Disposal Method
See Section 7 for Handling Procedures. See Section 8 for Personal Protective Equipment recommendations. Reuse or recycle material whenever possible. If reuse or recycling is not possible, disposal must be made according to local or governmental regulations.

SECTION 14: Transport information

Proper Shipping Name
Aluminum remelting by-products
UN Number
UN3170
Hazard Class
4.3
Packing Group
III
Required Label

DANGEROUS WHEN WET
Additional Information
Shipment is prohibited if material is wet and/or hot.

SECTION 15: Regulatory information

US Federal Regulations
In reference to Title VI of the Clean Air Act of 1990, this material does not contain nor was it manufactured using ozone-depleting chemicals. All electrical equipment must be suitable for use in hazardous atmospheres involving aluminum powder in accordance with 29 CFR 1910.307. The National Electrical Code, NFPA 70, contains guidelines for determining the type and design of equipment and installation which will meet this requirement. This product is a „Hazardous Chemical“ as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

CERCLA HAZARDOUS SUBSTANCES: (40 CFR 302.4) See below.
TSCA STATUS: Not regulated.
SARA TITLE III: Section 311/312 Hazardous Categories: Immediate hazard, delayed hazard, reactivity hazard.

Component Analysis

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

Aluminum (7429-90-5): SARA 313: Form R reporting required for 1.0% de minimis concentration (fume or dust only)
Aluminum Oxide (1344-28-1): SARA 313: Form R reporting required for 1.0% de minimis concentration (fume or dust only)
Copper (7440-50-8): SARA 313: Form R reporting required for 1.0% de minimis concentration CERCLA: Final RQ 5000 pounds (2270 kg) (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is equal to or exceeds 0.004 inches)
Zinc (7440-66-6): SARA 313: Form R reporting required for 1.0% de minimis concentration (only fume or dust) CERCLA: Final RQ = 1000 pounds (454 kg) (no reporting of releases of this hazardous substance is required if the diameter of the solid metal released is equal to or exceeds 0.004 inches)
Nickel (7440-02-0): SARA 313: Form R reporting required for 0.1% de minimis concentration CERCLA: Final RQ = 100 pounds (45.4 kg) (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is equal to or exceeds 0.004 inches.
Manganese (7439-96-5): SARA 313: form R reporting required for 1.0% de minimis concentration
Chromium (7440-47-3): SARA 313: Form R reporting required for 1.0% de minimis concentration CERLA: Final RQ = 5000 pounds (2270 kg) (no reporting of releases of this hazardous material is required if the diameter of the pieces of the solid metal released is equal to or exceeds 0.004 inches)
Beryllium (7440-41-7): SARA 313: Form R reporting required for 0.1% de minimis concentration CERLA: Final RQ = 10 pounds (4.54 kg) (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is equal to or exceeds 0.004 inches)

SARA 311/312 Physical and Health Hazard Categories:

Immediate (acute) Health Hazard: Yes, if particulates/fumes generated during processing.
Delayed (chronic) Health Hazard: Yes, if particulates/fumes generated during processing.
Fire Hazard: No
Sudden Release of Pressure: No
Reactive: Yes, if molten

State Regulations

A. General Product Information
   Pennsylvania" Special Hazardous Substances": Chromium, Chromium compounds, hexavalent, Nickel. Chemicals known to the State of California to cause cancer: Chromium (hexavalent compounds), Cobalt metal powder, Nickel and certain nickel compounds, Lead and lead compounds. Chemical(s) known to the State of California to cause reproductive/development effects: Lead.
B: Component Analysis-State

The following components appear on one or more of the State Hazardous Substances Lists:

CAS #	Component	CA	FL	MA	MN	NJ	PA
7429-90-5	Aluminum	Yes	No	Yes	Yes	Yes	Yes
1344-28-1	Aluminum Oxide	Yes	No	Yes	No	Yes	Yes
7440-21-3	Silicon	No	No	Yes	Yes	Yes	Yes
7440-50-8	Copper	Yes	No	Yes	Yes	Yes	Yes
7440-66-6	Zinc	Yes	No	Yes	No	Yes	Yes
7439-95-4	Magnesium	Yes	No	Yes	No	Yes	Yes
7440-02-0	Nickel	Yes	No	Yes	Yes	Yes	Yes
7439-89-6	Iron	Yes	No	No	No	No	No
7439-96-5	Manganese	Yes	No	Yes	Yes	Yes	Yes
7440-31-5	Tin	No	No	No	No	No	No
7440-47-3	Chromium	Yes	No	Yes	Yes	Yes	Yes
7440-41-7	Beryllium	Yes	No	No	No	Yes	No
7440-32-6	Chromium	Yes	No	Yes	Yes	Yes	Yes
7439-92-1	Lead	Yes	No	No	No	Yes	No

The following statement(s) are provided under the California State Drinking Water and Toxic Enforcement Act of 1986. (Proposition 65)

Warning: This product contains a chemical known to the State of California to cause cancer.
Warning: This product contains a chemical know to the State of California to cause reproductive/developmental effects.

SECTION 16: Other information

THIS SAFETY DATA SHEET SHOULD BE MADE AVAILABLE BY THE BUYER TO EACH OF THE BUYER'S PLANT WORKERS. CHANGES MADE TO THIS DOCUMENT TOTALLY VOID THE VALIDITY OF THIS SDS.

Notice

The buyer assumes all risk in connection with the use of the material. The information contained in this sheet is developed from what are believed to be accurate and reliable sources. SPECTRO ALLOYS CORP. makes no warranties, expressed or implied and assume no responsibility for the accuracy or completeness of the data contained in this Safety Data Sheet.

Reference

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U.S. Environmental Protection Agency, Title III List of Lists, Pub. EPA 550-B3, Washington, DC, 2001

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