



Material Safety Data Sheet

Material Name: Aluminum Dross – Fabrication Plants

MSDS ID: KDS-12

*** Section 1 - Chemical Product and Company Identification ***

Identification Number: KDS-12

Chemical Name: Mixture of Aluminum and Alloy Metals, Oxides and Salts

Synonyms: None

Manufacturer Information

Kaiser Aluminum

27422 Portola Parkway

Suite 350

Foothill Ranch, CA 92610

Emergency # CHEMTREC 1-800-424-9300

*** Section 2 - Hazards Identification ***

Emergency Overview

Product is solid metallic pieces with an ammonia odor when damp. Product may release flammable gases when wet. When damp, product may release ammonia gas, which is irritating to the skin, eyes, mucous membranes and respiratory tract. Firefighters should wear full protective clothing and self contained breathing apparatus. Exposure to dust may be irritating to eyes, nose, and throat. Product contains nickel, which can cause skin and lung sensitization and is a potential carcinogen. Product contains lead, a suspect human carcinogen and reproductive hazard. It may cause damage to the central nervous system and brain. Excessive lead exposure may also adversely affect male and female reproductive capability and cause harm to the unborn fetus. Product contains nickel which can cause skin and lung sensitization and is an identified carcinogen. Product contains hexavalent chromium, which is a known human carcinogen. Hexavalent chromium can also cause skin sensitization, skin and nasal ulcers, and perforation of the nasal septum. See Section 15.

Potential Health Effects: Eyes

Dust, fumes or powder may irritate eye tissue. Ammonia can be released from damp product and can cause moderate to severe eye irritation.

Potential Health Effects: Skin

Dust or powder may irritate the skin. Product contains nickel and chromium, which can cause skin sensitization and skin ulcers. Do not touch or handle dross before determining the temperature. Contact with hot dross may cause severe thermal burns.

Potential Health Effects: Ingestion

Not a likely route of entry. Ingestion of large amounts of dusts or particulates may produce gastrointestinal disturbances including irritation, nausea, and diarrhea.

Potential Health Effects: Inhalation

Dusts of this product may cause irritation of the nose, throat, and respiratory tract. Overexposure to processing fumes may cause metal fume fever, which is an influenza like illness. Symptoms include headache, metallic taste in the mouth, cough, thirst, throat irritation, shortness of breath, fever, sweating and pain in the limbs. This illness is not permanent and recovery usually occurs within 24-48 hours after onset. Wet product may release ammonia, which can cause moderate irritation of the respiratory tract. Product contains nickel, which can cause sensitization of the respiratory tract. Product contains chromium and industrial exposures to which may cause dermatitis, skin ulcers, perforation of the nasal septum, as well as cancers of the lungs, nasal cavity and paranasal sinuses.

HMIS Ratings: Health: 1* Fire: 1 Reactivity: 1 Pers. Prot.: Goggles, Gloves

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

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*** Section 3 - Composition / Information on Ingredients ***

CAS #	Component	Percent ¹
Mixture	Metal Oxides	50-70
Mixture	Metal Halides	0.1-1, 1-5
7429-90-5	Aluminum	20-30, 30-60, 60-100
Alloying Metals and Metal Oxides*		
7440-21-3	Silicon	0.1-1, 1-5, 5-10, 10-15
7631-86-9	Silica, amorphous	0.1-1, 1-5, 5-10, 10-15
7439-89-6	Iron	0.1-1, 1-5, 5-10
1309-37-1	Iron oxide	0.1-1, 1-5, 5-10
7440-66-6	Zinc	0.1-1, 1-5, 5-10
1314-13-2	Zinc oxide	0.1-1, 1-5, 5-10
7440-50-8	Copper	0.1-1, 1-5, 5-10
1344-70-3	Copper oxide	0.1-1, 1-5, 5-10
7439-96-5	Manganese	0.1-1, 1-5, 5-10
1309-55-3	Manganese oxide	0.1-1, 1-5, 5-10
7439-95-4	Magnesium	0.1-1, 1-5, 5-10
1309-48-4	Magnesium oxide	0.1-1, 1-5, 5-10
7440-69-9	Bismuth	0.1-1, 1-5
1304-76-3	Bismuth oxide	0.1-1, 1-5
7440-31-5	Tin	0.1-1, 1-5, 5-10
1332-29-2	Tin oxide	0.1-1, 1-5, 5-10
7440-02-0	Nickel	0.1-1, 1-5, 5-10
1313-99-1	Nickel oxide	0.1-1, 1-5, 5-10
7440-47-3	Chromium	0.1-1, 1-5
1333-82-0	Chromium trioxide	0.1-1, 1-5
7439-92-1	Lead	0.1-1, 1-5
1314-41-6	Lead Oxide	0.1-1, 1-5

Component Information/Information on Non-Hazardous Components

This material is considered hazardous under 29 CFR 1910.1200 (Hazard Communication) and the Canadian Workplace Hazardous Materials Information System (WHMIS). The information in this MSDS is provided for situations where this material may be deformed creating dusts or fumes which may be potentially hazardous

*Aluminum dross consists of a minimum of 20% aluminum and alloying metals and maximum of 70% of the oxides of aluminum and alloying metals. There are less than 5% magnesium chloride and other metal halide salts. There are also trace amounts, <1%, of aluminum and alloying metal carbides and nitrides. The CAS Numbers given below are for the respective metals.

*** Section 4 - First Aid Measures ***

First Aid: Eyes

Flush immediately with water for at least 15 minutes. Do not rub eyes. If irritation persists get medical attention.

First Aid: Skin

For skin contact, flush with large amounts of water. If irritation persists, get medical attention.

First Aid: Ingestion

Due to the physical nature of this material, ingestion is unlikely to occur. If ingestion of a large amount does occur, seek medical attention.

¹ Where more than one range for a component is given in the "Percent" column, the range for the component includes all the individual ranges. Thus, if the column lists 0.1-1, 1-5, 5-10, the material is present in the product at a concentration between 0.1 and 10 percent.

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First Aid: Inhalation

If symptoms are experienced, remove source of contamination or move victim to fresh air. Call a physician if symptoms develop or persist.

* * * Section 5 - Fire Fighting Measures * * *

General Fire Hazards

Product is not flammable, but can be ignited under severe conditions and will burn intensely. Product can release flammable gases when wet. High concentration of airborne dust may form explosive mixture with air. Use adequate ventilation. Care should be taken to employ effective dust control measures.

Hazardous Combustion Products

Decomposition of this product may yield metallic oxides. Wet product may generate hydrogen, an extremely flammable gas.

Extinguishing Media

Use dry chemical, foam, carbon dioxide, water spray or water fog for oil fires.

Use dry powder, talc, or sand to extinguish metal fires.

Material in or near fires should be cooled with a water spray or fog if compatible with fire fighting techniques for the other materials involved in the fire.

Unsuitable Extinguishing Media

Do NOT use water or halogenated agents.

Fire Fighting Equipment/Instructions

Fire fighters should wear full-face, self contained breathing apparatus and impervious protective clothing. Fire fighters should avoid inhaling any combustion products. Avoid creation of dusts.

NFPA Ratings: Health: 1 Fire: 1 Reactivity: 1

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

* * * Section 6 - Accidental Release Measures * * *

Containment Procedures

Contain the discharged material. Remove sources of ignition. Avoid contact with water.

Clean-Up Procedures

Shovel the material into waste container. Avoid the generation of dusts during clean-up.

Evacuation Procedures

Isolate area. Keep unnecessary personnel away.

Special Procedures

Wear appropriate personal protective equipment. See Section 8. Follow all Local, State, Federal and Provincial regulations for disposal.

* * * Section 7 - Handling and Storage * * *

Handling Procedures

Do not breathe fumes or dust from this material. Use with adequate ventilation. Avoid getting this material into contact with your eyes. Keep away from moisture and water, product may release flammable gases. Appropriate personal protective equipment cited in Section 8 should be worn during handling. Good housekeeping and engineering practices should be employed to prevent the generation and accumulation of dusts. Vacuuming is recommended to clean up any dusts that may be generated during handling and processing. Wash hands and face thoroughly before eating, drinking or smoking.

Storage Procedures

Keep the container tightly closed and in a cool, well-ventilated place. Store away from incompatible materials. If dusts and powders are formed, use adequate ventilation in storage and do not handle or store dusts or powders of this product near an open flame, heat or other sources of ignition. Keep away from moisture. Do not store wet or damp material in un-ventilated or closed container.

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* * * Section 8 - Exposure Controls / Personal Protection * * *

A: Component Exposure Limits

Consult local authorities for acceptable exposure limits.

Aluminum (7429-90-5)

ACGIH:	10 mg/m ³ TWA (metal dust) ²
OSHA:	15 mg/m ³ TWA (total dust); 5 mg/m ³ TWA (respirable fraction)
NIOSH:	10 mg/m ³ TWA (total dust); 5 mg/m ³ TWA (respirable fraction)
Alberta:	10 mg/m ³ TWA (dust)
British Columbia:	10 mg/m ³ TWA (total dust); 3 mg/m ³ TWA (respirable fraction)
Manitoba:	10 mg/m ³ TWA
New Brunswick:	10 mg/m ³ TWA (metal dust)
NW Territories:	10 mg/m ³ TWA 20 mg/m ³ STEL
Nova Scotia:	10 mg/m ³ TWA (metal dust)
Nunavut:	10 mg/m ³ TWA 20 mg/m ³ STEL
Ontario:	5 mg/m ³ TWAEV (powder); 10 mg/m ³ TWAEV (metal and oxide dust)
Quebec:	10 mg/m ³ TWAEV
Saskatchewan:	10 mg/m ³ TWA 20 mg/m ³ STEL

Aluminum oxide (1344-28-1)

ACGIH:	10 mg/m ³ TWA (particulate matter containing no asbestos and <1% crystalline silica) ³
OSHA:	15 mg/m ³ TWA (total dust); 5 mg/m ³ TWA (respirable fraction)
Alberta:	10 mg/m ³ TWA
British Columbia:	10 mg/m ³ TWA (total particulate matter containing no asbestos and less than 1% crystalline silica); 3 mg/m ³ TWA (respirable particulate matter containing no asbestos and less than 1% crystalline silica)
Manitoba:	10 mg/m ³ TWA (as Al, total dust containing no asbestos and <1% crystalline silica)
New Brunswick:	10 mg/m ³ TWA (particulate matter containing no asbestos and < 1% crystalline silica)
NW Territories:	10 mg/m ³ TWA; 5 mg/m ³ TWA (respirable mass); 10 mg/m ³ TWA (total mass) 20 mg/m ³ STEL
Nova Scotia:	10 mg/m ³ TWA (particulate matter containing no asbestos and <1% crystalline silica)
Nunavut:	10 mg/m ³ TWA; 5 mg/m ³ TWA (respirable mass); 10 mg/m ³ TWA (total mass) 20 mg/m ³ STEL
Ontario:	10 mg/m ³ TWAEV (total dust)
Quebec:	10 mg/m ³ TWAEV (total dust, containing no asbestos and less than 1% crystalline silica, as Al)
Saskatchewan:	10 mg/m ³ TWA (as Al) 20 mg/m ³ STEL (as Al)
Yukon:	30 mppcf TWA; 10 mg/m ³ TWA 20 mg/m ³ STEL

Silicon (7440-21-3)

OSHA:	10 mg/m ³ TWA (total dust); 5 mg/m ³ TWA (respirable fraction)
NIOSH:	10 mg/m ³ TWA (total dust); 5 mg/m ³ TWA (respirable fraction)
Alberta:	10 mg/m ³ TWA
British Columbia:	10 mg/m ³ TWA (total dust); 3 mg/m ³ TWA (respirable fraction)
Manitoba:	10 mg/m ³ TWA (total dust containing no asbestos and <1% free silica)
New Brunswick:	10 mg/m ³ TWA
NW Territories:	5 mg/m ³ TWA (respirable mass); 10 mg/m ³ TWA (total mass)
Nova Scotia:	10 mg/m ³ TWA

² The ACGIH has proposed changing the TLV for aluminum from 10 mg/m³ as total dust to 1 mg/m³ as respirable particulate matter.

³ The ACGIH has proposed withdrawing the TLV of 10 mg/m³ for aluminum oxide and replacing it with a newly proposed 1 mg/m³ as respirable particulate matter for "Aluminum, Insoluble Compounds".

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Nunavut: 5 mg/m³ TWA (respirable mass); 10 mg/m³ TWA (total mass)
Ontario: 10 mg/m³ TWAEV (total dust)
Quebec: 10 mg/m³ TWAEV (total dust, containing no asbestos and less than 1% crystalline silica)
Saskatchewan: 10 mg/m³ TWA
20 mg/m³ STEL
Yukon: 30 mppcf TWA; 10 mg/m³ TWA
20 mg/m³ STEL

Silica, amorphous (112926-00-8)

NIOSH: 6 mg/m³ TWA
NW Territories: 2 mg/m³ TWA (respirable mass); 5 mg/m³ TWA (total mass); 0.05 mg/m³ TWA (respirable mass, regulated under silica flour); 0.15 mg/m³ TWA (total mass, regulated under silica flour)
Nunavut: 2 mg/m³ TWA (respirable mass); 5 mg/m³ TWA (total mass); 0.05 mg/m³ TWA (respirable mass, regulated under silica flour); 0.15 mg/m³ TWA (total mass, regulated under silica flour)
OSHA: 20 mppcf or 80mg/m³/% SiO₂
Yukon: 300 particles/mL TWA; 20 mppcf TWA; 2 mg/m³ TWA (respirable mass)

Iron (7439-89-6)

ACGIH: 5 mg/m³ TWA (respirable fraction) (related to Iron oxide (Fe₂O₃))
OSHA: 10 mg/m³ TWA (fume) (related to Iron oxide)
NIOSH: 5 mg/m³ TWA (dust and fume, as Fe) (related to Iron oxide)
Alberta: 5 mg/m³ TWA (dust and fume, as Fe) (related to Iron oxide)
British Columbia: 5 mg/m³ TWA (dust and fume, as Fe) (related to Iron oxide)
10 mg/m³ STEL (fume, as Fe) (related to Iron oxide)
Manitoba: 5 mg/m³ TWA (as Fe, welding fumes, dust, total particulate) (related to Iron oxide (Fe₂O₃))
New Brunswick: 5 mg/m³ TWA (particulate matter containing no asbestos and < 1% crystalline silica, dust and fume, as Fe) (related to Iron oxide (Fe₂O₃))
NW Territories: 5 mg/m³ TWA (respirable mass); 10 mg/m³ TWA (total mass) (related to Rouge)
Nova Scotia: 5 mg/m³ TWA (respirable fraction) (related to Iron oxide (Fe₂O₃))
Nunavut: 5 mg/m³ TWA (respirable mass); 10 mg/m³ TWA (total mass) (related to Rouge)
Ontario: 5 mg/m³ TWAEV (dust and fume, as Fe) (related to Iron oxide)
Quebec: 5 mg/m³ TWAEV (dust and fume, as Fe) (related to Iron trioxide)
Saskatchewan: 5 mg/m³ TWA (fume, as Fe) (related to Iron oxide)
10 mg/m³ STEL (fume, as Fe) (related to Iron oxide)
Yukon: 5 mg/m³ TWA (fume as Fe₂O₃) (related to Iron oxide)
10 mg/m³ STEL (fume, as Fe₂O₃) (related to Iron oxide)

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Zinc (7440-66-6)

- ACGIH: 2 mg/m³ TWA (respirable fraction) (related to Zinc oxide)
10 mg/m³ STEL (respirable fraction) (related to Zinc oxide)
- OSHA: 5 mg/m³ TWA (fume); 15 mg/m³ TWA (total dust); 5 mg/m³ TWA (respirable fraction) (related to Zinc oxide)
- NIOSH: 5 mg/m³ TWA (dust and fume) (related to Zinc oxide)
10 mg/m³ STEL (fume) (related to Zinc oxide)
15 mg/m³ Ceiling (dust) (related to Zinc oxide)
- Alberta: 10 mg/m³ TWA (dust); 5 mg/m³ TWA (fume) (related to Zinc oxide)
10 mg/m³ STEL (fume) (related to Zinc oxide)
- British Columbia: 2 mg/m³ TWA (respirable) (related to Zinc oxide)
10 mg/m³ STEL (respirable) (related to Zinc oxide)
- Manitoba: 5 mg/m³ TWA (fume); 10 mg/m³ TWA (total dust containing no asbestos and <1% crystalline silica) (related to Zinc oxide)
10 mg/m³ STEL (fume) (related to Zinc oxide)
- New Brunswick: 5 mg/m³ TWA (fume); 10 mg/m³ TWA (particulate matter containing no asbestos and < 1% crystalline silica, dust) (related to Zinc oxide)
10 mg/m³ STEL (fume) (related to Zinc oxide)
- NW Territories: 5 mg/m³ TWA (fume); 5 mg/m³ TWA (dust, respirable mass); 10 mg/m³ TWA (dust, total mass) (related to Zinc oxide)
10 mg/m³ STEL (fume) (related to Zinc oxide)
- Nova Scotia: 2 mg/m³ TWA (respirable fraction) (related to Zinc oxide)
10 mg/m³ STEL (respirable fraction) (related to Zinc oxide)
- Nunavut: 5 mg/m³ TWA (fume); 5 mg/m³ TWA (dust, respirable mass); 10 mg/m³ TWA (dust, total mass) (related to Zinc oxide)
10 mg/m³ STEL (fume) (related to Zinc oxide)
- Ontario: 2 mg/m³ TWAEV (respirable) (related to Zinc oxide)
10 mg/m³ STEV (respirable) (related to Zinc oxide)
- Quebec: 5 mg/m³ TWAEV (fume); 10 mg/m³ TWAEV (dust) (related to Zinc oxide)
10 mg/m³ STEV (fume) (related to Zinc oxide)
- Saskatchewan: 5 mg/m³ TWA (fume); 10 mg/m³ TWA (dust) (related to Zinc oxide)
10 mg/m³ STEL (fume); 20 mg/m³ STEL (dust) (related to Zinc oxide)
- Yukon: 5 mg/m³ TWA (fume); 30 mppcf TWA (dust); 10 mg/m³ TWA (dust) (related to Zinc oxide)
10 mg/m³ STEL (fume); 20 mg/m³ STEL (dust) (related to Zinc oxide)

Copper (7440-50-8) also applicable to Copper Oxide

- ACGIH: 0.2 mg/m³ TWA (fume); 1 mg/m³ TWA (dust and mist, as Cu)
- OSHA: 0.1 mg/m³ TWA (fume, dusts, mists as Cu)
- NIOSH: 1 mg/m³ TWA (dust and mist); 0.1 mg/m³ (respirable fume)
- Alberta: 0.2 mg/m³ TWA (fume); 1 mg/m³ TWA (dust and mist, as Cu)
- British Columbia: 1 mg/m³ TWA (dust and mist, as Cu); 0.2 mg/m³ TWA (fume, as Cu)
- Manitoba: 0.2 mg/m³ TWA (fume); 1 mg/m³ TWA (dust and mist, as Cu)
- New Brunswick: 0.2 mg/m³ TWA (fume); 1 mg/m³ TWA (dust and mist, as Cu)
- NW Territories: 0.2 mg/m³ TWA (fume); 1 mg/m³ TWA (dust and mist)
0.6 mg/m³ STEL (fume); 2 mg/m³ STEL (dust and mist)
- Nova Scotia: 0.2 mg/m³ TWA (fume); 1 mg/m³ TWA (dust and mist, as Cu)
- Nunavut: 0.2 mg/m³ TWA (fume); 1 mg/m³ TWA (dust and mist, as Cu)
0.6 mg/m³ STEL (fume); 2 mg/m³ STEL (dust and mist, as Cu)
- Ontario: 0.2 mg/m³ TWAEV (fume, as Cu); 1 mg/m³ TWAEV (dust and mist, as Cu)
- Quebec: 0.2 mg/m³ TWAEV (fume, as Cu); 1 mg/m³ TWAEV (dust and mist, as Cu)
- Saskatchewan: 0.2 mg/m³ TWA (fume, as Cu); 1 mg/m³ TWA (dust and mist, as Cu)
0.6 mg/m³ STEL (fume, as Cu); 2 mg/m³ STEL (dust and mist, as Cu)
- Yukon: 0.2 mg/m³ TWA (fume); 1 mg/m³ TWA (dust and mist, as Cu)
0.2 mg/m³ STEL (fume); 2 mg/m³ STEL (dust and mist, as Cu)

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Manganese (7439-96-5)

ACGIH:	0.2 mg/m ³ TWA
OSHA:	5 mg/m ³ Ceiling (Mn fume and Mn compounds)
NIOSH:	1 mg/m ³ TWA (Mn fume and Mn compounds) 3 mg/m ³ STEL (Mn fume and Mn compounds)
Alberta:	1 mg/m ³ TWA (fume, as Mn)
British Columbia:	0.2 mg/m ³ TWA
Manitoba:	1 mg/m ³ TWA (fume) 3 mg/m ³ STEL (fume) 5 mg/m ³ Ceiling (dust)
New Brunswick:	0.2 mg/m ³ TWA
NW Territories:	1 mg/m ³ TWA (fume) 3 mg/m ³ STEL (fume) 5 mg/m ³ Ceiling
Nova Scotia:	0.2 mg/m ³ TWA
Nunavut:	1 mg/m ³ TWA (fume) 3 mg/m ³ STEL (fume) 5 mg/m ³ Ceiling
Ontario:	0.2 mg/m ³ TWAEV
Quebec:	5 mg/m ³ TWAEV (dust); 1 mg/m ³ TWAEV (fume)
Saskatchewan:	5 mg/m ³ TWA; 1 mg/m ³ TWA (fume) 5 mg/m ³ STEL; 3 mg/m ³ STEL (fume)
Yukon:	5 mg/m ³ Ceiling

Magnesium (7439-95-4)

ACGIH:	10 mg/m ³ TWA (inhalable fraction) (related to Magnesium oxide)
OSHA:	10 mg/m ³ TWA (total particulate) (related to Magnesium oxide fume)
Alberta:	10 mg/m ³ TWA (fume) (related to Magnesium oxide)
British Columbia:	10 mg/m ³ TWA (fume, inhalable, as Mg); 3 mg/m ³ TWA (respirable dust and fume, as Mg) (related to Magnesium oxide) 10 mg/m ³ STEL (respirable dust and fume, as Mg) (related to Magnesium oxide)
Manitoba:	10 mg/m ³ TWA (fume) (related to Magnesium oxide)
New Brunswick:	10 mg/m ³ TWA (fume) (related to Magnesium oxide)
NW Territories:	10 mg/m ³ TWA (fume, as Mg) (related to Magnesium oxide) 20 mg/m ³ STEL (fume, as Mg) (related to Magnesium oxide)
Nova Scotia:	10 mg/m ³ TWA (inhalable fraction) (related to Magnesium oxide)
Nunavut:	10 mg/m ³ TWA (fume, as Mg) (related to Magnesium oxide) 20 mg/m ³ STEL (fume, as Mg) (related to Magnesium oxide)
Ontario:	10 mg/m ³ TWAEV (inhalable) (related to Magnesium oxide)
Quebec:	10 mg/m ³ TWAEV (fume, as Mg) (related to Magnesium oxide)
Saskatchewan:	10 mg/m ³ TWA (fume) (related to Magnesium oxide) 20 mg/m ³ STEL (fume) (related to Magnesium oxide)
Yukon:	10 mg/m ³ TWA (fume as Mg) (related to Magnesium oxide) 10 mg/m ³ STEL (fume, as Mg) (related to Magnesium oxide)

Bismuth (7440-69-9)

Note: There are currently no applicable limits for the bismuth component of the products in the US.

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Tin (7440-31-5)

ACGIH: 2 mg/m³ TWA
OSHA: 2 mg/m³ TWA
NIOSH: 2 mg/m³ TWA
Alberta: 2 mg/m³ TWA
British Columbia: 2 mg/m³ TWA
Manitoba: 2 mg/m³ TWA
New Brunswick: 2 mg/m³ TWA
Nova Scotia: 2 mg/m³ TWA
Ontario: 2 mg/m³ TWAEV
Quebec: 2 mg/m³ TWAEV
Saskatchewan: 2 mg/m³ TWA
4 mg/m³ STEL

Nickel (7440-02-0)

ACGIH: 1.5 mg/m³ TWA (inhalable fraction); 0.2 mg/m³ as insoluble compounds; 0.1 mg/m³ as soluble compounds (inhalable fraction); 0.2 mg/m³ (Inhalable) for Nickel Oxide
OSHA: 1 mg/m³ TWA; 1.0 mg/m³ as Ni
NIOSH: 0.015 mg/m³ TWA
Alberta: 1.5 mg/m³ TWA
British Columbia: 0.05 mg/m³ TWA
Manitoba: 1 mg/m³ TWA
New Brunswick: 1 mg/m³ TWA
NW Territories: 1 mg/m³ TWA
2 mg/m³ STEL
Nova Scotia: 1.5 mg/m³ TWA (inhalable fraction)
Nunavut: 1 mg/m³ TWA
2 mg/m³ STEL
Ontario: 1 mg/m³ TWAEV (inhalable)
Quebec: 1 mg/m³ TWAEV
Saskatchewan: 0.50 mg/m³ TWA
1.50 mg/m³ STEL
Yukon: 1 mg/m³ TWA
3 mg/m³ STEL

Chromium (7440-47-3)

ACGIH: 0.5 mg/m³ TWA
OSHA: 1 mg/m³ TWA
NIOSH: 0.5 mg/m³ TWA
Alberta: 0.5 mg/m³ TWA
British Columbia: 0.5 mg/m³ TWA
Manitoba: 0.5 mg/m³ TWA
New Brunswick: 0.5 mg/m³ TWA
NW Territories: 0.5 mg/m³ TWA
1.5 mg/m³ STEL
Nova Scotia: 0.5 mg/m³ TWA
Nunavut: 0.5 mg/m³ TWA
1.5 mg/m³ STEL
Ontario: 0.5 mg/m³ TWAEV
Quebec: 0.5 mg/m³ TWAEV
Saskatchewan: 0.5 mg/m³ TWA
1.5 mg/m³ STEL
Yukon: 0.1 mg/m³ TWA
3.0 mg/m³ STEL

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Chromium trioxide (1333-82-0)

ACGIH: 0.05 (soluble) or 0.01 mg/m³ (insoluble) for hex chrome
NIOSH: 0.001 mg/m³ TWA (as Cr) (both soluble and insoluble)
OSHA: 0.005 mg/m³ TWA PEL with an Action Level of 0.0025 mg/m³

Lead (7439-92-1)

ACGIH: 0.05 mg/m³ TWA
OSHA: 50 µg/m³ TWA (as Pb); 30 µg/m³ Action Level (as Pb. Poison - see 29 CFR 1910.1025)
NIOSH: 0.050 mg/m³ TWA; Blood lead level <0.06mg/100 ml of whole blood
Alberta: 0.05 mg/m³ TWA
British Columbia: 0.05 mg/m³ TWA
Manitoba: 0.15 mg/m³ TWA (dust and fume)
New Brunswick: 0.05 mg/m³ TWA
NW Territories: 0.15 mg/m³ TWA
0.45 mg/m³ STEL
Nova Scotia: 0.05 mg/m³ TWA
Nunavut: 0.15 mg/m³ TWA
0.45 mg/m³ STEL
Ontario: 0.05 mg/m³ TWAEV (designated substance regulation)
Quebec: 0.15 mg/m³ TWAEV (dust and fume)
Saskatchewan: 0.15 mg/m³ TWA
0.45 mg/m³ STEL

Engineering Controls

Use local exhaust ventilation.

PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment: Eyes/Face

Wear safety glasses with side shields.

Personal Protective Equipment: Skin

Wear leather or other appropriate work gloves, if necessary for type of operation.

Personal Protective Equipment: Respiratory

If ventilation is not sufficient to effectively control exposures, appropriate NIOSH approved respirators should be used. Respirators should be selected and used under the direction of trained health and safety professionals in accordance with all applicable health, safety, and environmental regulations.

Personal Protective Equipment: General

Eye wash fountain is recommended.

*** Section 9 - Physical & Chemical Properties ***

Appearance:	Silver/Gray Solid Pieces	Odor:	None
Physical State:	Solid	pH:	Not Available
Vapor Pressure:	Not Available	Vapor Density:	Not Available
Boiling Point:	Not Available	Melting Point:	900-1200°F (482-649°C)
Solubility (H₂O):	<1 %	Specific Gravity:	2.7 g/cc

*** Section 10 - Chemical Stability & Reactivity Information ***

Chemical Stability

Stable under normal conditions.

Chemical Stability: Conditions to Avoid

Avoid ignition sources where dust is produced. Avoid incompatible materials. Product can release flammable gases when wet.

Material Safety Data Sheet

Material Name: Dross- Fabrication Plants

MSDS ID: KDS-12

Special Sensitivity: When melting aluminum, aluminum alloys, aluminum scrap or dross, care must be taken to exclude water or moisture. Water or moisture trapped under hot or molten metal can result in a violent explosion. Strong oxidizing agents must be excluded during heating and melting operations to prevent the possibility of an explosion. Finely divided aluminum dusts may form explosive mixtures in air. Care should be taken to employ effective dust control measures.

Incompatibility

This product may react with strong acids, bases and oxidizing agents to product hydrogen gas, which is highly flammable. Contact with chlorinated solvents may release toxic and corrosive hydrogen chloride gas. Hot aluminum may react with chlorinated solvents to produce phosgene, a highly irritating and toxic gas.

Hazardous Decomposition

Decomposition of this product may yield metallic oxides. Wet product may generate hydrogen, an extremely flammable gas.

Possibility of Hazardous Reactions

Will not occur.

* * * Section 11 - Toxicological Information * * *

Acute Dose Effects

A: General Product Information

Inhalation of metal fumes may cause metal fume fever, a flu-like illness generally lasting 24 hours or less.

Aluminum: Chronic overexposure to aluminum can result in lung damage and has been associated with asthma-like syndrome. Accumulation of aluminum in the body may result in neurological damage, anemia and bone softening. Repeated overexposure to high levels of aluminum oxide may lead to pulmonary fibrosis, a progressive lung disorder.

Silicon: Silicon dust seems to have little adverse effect on lungs and does not appear to produce significant organic disease or toxic effects when exposures are kept under reasonable control.

Iron: Chronic inhalation of iron has resulted in mottling of the lungs, a condition referred to as siderosis. This is considered benign pneumoconiosis and does not ordinarily cause significant physiologic impairment.

Zinc: Zinc poisoning can cause anemia, lethargy and dizziness. Inhalation of zinc fumes may cause metal fume fever, a flu-like illness generally lasting 24 hours or less.

Manganese: Overexposure to manganese may result in CNS effects, anemia and pneumonitis which increased the risk of pneumonia.

Tin: Prolonged exposure to high concentration of tin-containing dusts and/or fumes may result in the development of Stannosis which is a rare benign pneumoconiosis. The maximum concentration of tin in the product is such that Stannosis should not present a potential hazard.

Nickel: Systemic effects from ingestion of nickel salts include capillary damage, kidney damage, myocardial weakness and central nervous system depression. Allergic skin sensitization reactions are the most frequent effect of exposure to nickel compounds. Contact with nickel compounds may also result in allergic lung sensitization reactions. Nickel is an identified human carcinogen.

Chromium: Industrial exposure to chromium may cause dermatitis, skin ulcers, perforation of the nasal septum, as well as cancers of the lungs, nasal cavity and paranasal sinuses. The cancer sites are mainly associated with hexavalent chrome which can also cause skin sensitization, skin and nasal ulcers, and perforation of the nasal septum.

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Material Name: Dross- Fabrication Plants

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Lead: Inorganic lead has been found to have toxic effects on both the central and peripheral nervous systems. Symptoms of lead toxicity include behavioral disturbances such as irritability, restlessness, insomnia, and other sleep disturbances, fatigue, vertigo, headache, poor memory, tremor, depression, and apathy. With more severe exposure, symptoms can progress to drowsiness, stupor, hallucinations, delirium, convulsions, and coma. Lead compounds can have a variety of effects. Lead poisoning is characterized by muscle weakness, weight loss, listlessness, insomnia, gastrointestinal disturbances, and low blood pressure. In severe cases, neuromuscular damage can occur as well as permanent brain damage. In addition to generalized poisoning, lead can have potentially serious reproductive effects for both males and females. Lead exposure can cause decreased fertility in both males and females. Male sperm counts can be decreased and sperm morphology altered while the female ovulatory cycle can be disrupted. Lead can also cross the placental barrier and affect the developing fetus. Studies have shown that in-utero lead exposure can lead to potentially severe developmental disabilities.

B: Component Analysis - LD50/LC50

Silicon (7440-21-3)

Oral LD50 Rat: 3160 mg/kg

Silica, amorphous (7631-86-9)

Oral LD50 Rat: >5000 mg/kg; Dermal LD50 Rabbit: >2000 mg/kg

Iron (7439-89-6)

Oral LD50 Rat: 984 mg/kg

Iron oxide (1309-37-1)

Oral LD50 Rat: >10000 mg/kg

Zinc oxide (1314-13-2)

Oral LD50 Rat: >5000 mg/kg

Manganese (7439-96-5)

Oral LD50 Rat: 9 g/kg

Magnesium (7439-95-4)

Oral LD50 Rat: 230 mg/kg

Bismuth (7440-69-9)

Oral LD50 Rat: 5 g/kg

Bismuth oxide (1304-76-3)

Oral LD50 Rat: 5 g/kg

Nickel (7440-02-0)

Oral LD50 Rat: >9000 mg/kg

Nickel oxide (1313-99-1)

Oral LD50 Rat: >5000 mg/kg

Chromium trioxide (1333-82-0)

Inhalation LC50 Rat: 0.217 mg/L/4H; Oral LD50 Rat: 50 mg/kg; Dermal LD50 Rat: 55 mg/kg; Dermal LD50 Rabbit: 20 mg/kg

Material Safety Data Sheet

Material Name: Dross- Fabrication Plants

MSDS ID: KDS-12

Repeated Dose Effects

Exposure to metal dusts and oxides may cause fume fever. Fume fever is a temporary flu-like condition characterized by chills, fever, muscle aches and pains, nausea and vomiting. Typically the symptoms appear within a few hours after exposure and subside within 2-3 days with no permanent effects.

Asthma induced by occupational exposure to nickel has been documented. The asthma can result from either primary irritation or from an allergic response. Contact dermatitis in workers exposed to nickel compounds is one of the most prevalent effects of nickel exposure.

Carcinogenicity

A: General Product Information

The carcinogenic effect of nickel has been well documented in occupationally exposed nickel refinery workers. Lung and nasal cancers were the predominant forms of cancer in the exposed workers. Lung and nasal cancers were the predominant forms of cancer in the exposed workers. In experimental animals injection of nickel produced injection site tumors although some of these tumors metastasized. Upon inhalation of nickel, lymphosarcomas were observed in mice and aveolar carcinomas in guinea pigs. Hexavalent chromium is a known human carcinogen.

B: Component Carcinogenicity

Silica, amorphous (7631-86-9)

IARC: Monograph 68 [1997], Supplement 7 [1987] (Group 3 (not classifiable))

Iron oxide (1309-37-1)

ACGIH: A4 - Not Classifiable as a Human Carcinogen (dust and fume)

IARC: Supplement 7 [1987], Monograph 1 [1972] (Group 3 (not classifiable))

Magnesium oxide (1309-48-4)

ACGIH: A4 - Not Classifiable as a Human Carcinogen

Nickel (7440-02-0)

ACGIH: A5 - Not Suspected as a Human Carcinogen

NIOSH: potential occupational carcinogen

NTP: Reasonably Anticipated To Be A Carcinogen (Possible Select Carcinogen)

IARC: Monograph 49 [1990], Supplement 7 [1987] (Group 2B (possibly carcinogenic to humans))

Nickel oxide (1313-99-1)

IARC: Monograph 49 [1990] (listed under Nickel and Nickel compounds) (Group 1 (carcinogenic to humans))

Chromium (7440-47-3)

ACGIH: A4 - Not Classifiable as a Human Carcinogen

IARC: Monograph 49 [1990] (listed under Chromium and Chromium compounds) Supplement 7 [1987] (Group 3 (not classifiable))

Chromium trioxide (1333-82-0)

NIOSH: potential occupational carcinogen

NTP: Known Carcinogen (listed under Chromium hexavalent compounds) (Select Carcinogen)

IARC: Monograph 49 [1990], Supplement 7 [1987], Monograph 23 [1980], Monograph 2 [1973] (Group 1 (carcinogenic to humans))

OSHA: 29 CFR 1910.026

Material Safety Data Sheet

Material Name: Dross- Fabrication Plants

MSDS ID: KDS-12

Lead (7439-92-1)

- ACGIH: A3 - Confirmed animal carcinogen with unknown relevance to humans
OSHA: 50 µg/m³ TWA (as Pb); 30 µg/m³ Action Level (as Pb. Poison - see 29 CFR 1910.1025)
NTP: Reasonably Anticipated To Be A Carcinogen (Possible Select Carcinogen)
IARC: Supplement 7 [1987], Monograph 23 [1980] (evaluated as a group) (Group 2B (possibly carcinogenic to humans))

Lead tetraoxide (1314-41-6)

- IARC: Supplement 7 [1987] (listed under Lead and Lead compounds) (Group 2B (possibly carcinogenic to humans))

Reproductive Toxicology

Lead has a wide variety of reproductive effects in humans. It can affect both the male and female reproductive organs as well as egg and sperm production and development. Lead can also cause neurodevelopmental debilitations in children from both prenatal and postnatal exposures.

* * * Section 12 - Ecological Information * * *

Ecotoxicity

A: General Product Information

No data available for this product. Product is not expected to present an environmental hazard to aquatic and terrestrial flora and fauna.

B: Component Analysis - Ecotoxicity - Aquatic Toxicity

Silica, amorphous (7631-86-9)

Test & Species		Conditions
96 Hr LC50 Brachydanio rerio	5000 mg/L	static
72 Hr EC50 Selenastrum capricornutum	440 mg/L	
48 Hr EC50 Ceriodaphnia dubia	7600 mg/L	

Iron (7439-89-6)

Test & Species		Conditions
96 Hr LC50 Morone saxatilis	13.6 mg/L	static

Zinc (7440-66-6)

Test & Species		Conditions
96 Hr LC50 Pimephales promelas	6.4 mg/L	
96 Hr EC50 Selenastrum capricornutum	30 µg/L	
72 Hr EC50 water flea	5 µg/L	

Copper (7440-50-8)

Test & Species		Conditions
96 Hr LC50 Pimephales promelas	23 µg/L	
96 Hr LC50 Oncorhynchus mykiss	13.8 µg/L	
96 Hr LC50 Lepomis macrochirus	236 µg/L	
72 Hr EC50 Scenedesmus subspicatus	120 µg/L	
96 Hr EC50 water flea	10 µg/L	
96 Hr EC50 water flea	200 µg/L	

Nickel (7440-02-0)

Test & Species		Conditions
96 Hr LC50 Oncorhynchus mykiss	31.7 mg/L	adult
96 Hr LC50 Pimephales promelas	3.1 mg/L	

Material Safety Data Sheet

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96 Hr LC50 Brachydanio rerio	>100 mg/L
72 Hr EC50 freshwater algae (4 species)	0.1 mg/L
72 Hr EC50 Selenastrum capricornutum	0.18 mg/L
96 Hr EC50 water flea	510 µg/L

Nickel oxide (1313-99-1)

Test & Species		Conditions
96 Hr LC50 Brachydanio rerio	>100 mg/L	static
72 Hr EC50 Selenastrum capricornutum	>127.3 mg/L	
48 Hr EC50 Daphnia magna	>100 mg/L	

Chromium trioxide (1333-82-0)

Test & Species		Conditions
96 Hr LC50 Colisa fasciatus	40 mg/L	static

Lead (7439-92-1)

Test & Species		Conditions
96 Hr LC50 Pimephales promelas	6.5 mg/L	
48 Hr EC50 water flea	600 µg/L	

Lead tetraoxide (1314-41-6)

Test & Species		Conditions
96 Hr LC50 Gambusia affinis	>56000 mg/L	static

Environmental Fate

No data available for this product.

*** Section 13 - Disposal Considerations ***

US EPA Waste Number & Descriptions

A: General Product Information

Material, if discarded, is not expected to be a characteristic hazardous waste under RCRA.

B: Component Waste Numbers

Lead (7439-92-1)

RCRA: 5.0 mg/L regulatory level

Chromium (7440-47-3)

RCRA: 5.0 mg/L regulatory level

Disposal Instructions

Dispose of waste material according to Local, State, Federal, and Provincial Environmental Regulations. See Section 7 for Handling Procedures. See Section 8 for Personal Protective Equipment recommendations.

*** Section 14 - Transportation Information ***

US DOT Information

Shipping Name: Aluminum smelting by-products

UN/NA #: UN3170 **Hazard Class:** 4.3 **Packing Group:** III

Required Label(s): DANGEROUS WHEN WET

Additional Info.: Shipment is forbidden if metal is wet and/or hot.

TDG Information

Shipping Name: Aluminum remelting by-products

UN/NA #: UN3170 **Hazard Class:** 4.3 **Packing Group:** III

Material Safety Data Sheet

Material Name: Dross- Fabrication Plants

MSDS ID: KDS-12

Required Label(s): DANGEROUS WHEN WET

Additional Info.: Shipment is forbidden if metal is wet and/or hot.

* * * Section 15 - Regulatory Information * * *

US Federal Regulations

A: General Product Information

Components of this product have been checked against the non-confidential TSCA inventory by CAS Registry Number.

Components not identified on this non-confidential inventory are either exempt from listing (i.e. polymers, hydrates) or are listed on the confidential inventory as declared by the supplier.

B: 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: 1.0 % de minimis concentration (dust or fume only)

Zinc (7440-66-6)

SARA 313: 1.0 % de minimis concentration (dust or fume only)

CERCLA: 1000 lb final RQ (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); 454 kg final RQ (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)

Copper (7440-50-8)

SARA 313: 1.0 % de minimis concentration

CERCLA: 5000 lb final RQ (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); 2270 kg final RQ (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: 1.0 % de minimis concentration

Nickel (7440-02-0)

SARA 313: 0.1 % de minimis concentration

CERCLA: 100 lb final RQ (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); 45.4 kg final RQ (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)

Chromium (7440-47-3)

CERCLA: 5000 lb final RQ (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); 2270 kg final RQ (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)

Hot work operations such as welding, torch cutting, etc. will generate metal oxides, which can include hexavalent chromium. OSHA has enacted a standard for exposure to hexavalent chromium [29 CFR 1910.1026], which mandates very stringent exposure limits. Users of the product are urged to read this standard and determine how it might affect their operations.

Material Safety Data Sheet

Material Name: Dross- Fabrication Plants

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Lead (7439-92-1)

SARA 313: 0.1 % Supplier notification limit; 0.1 % de minimis concentration (when contained in stainless steel, brass, or bronze)

CERCLA: 10 lb final RQ (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); 4.54 kg final RQ (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)

C: Component Marine Pollutants

This material contains one or more of the following chemicals required by US DOT to be identified as marine pollutants.

Component	CAS #	
Copper	7440-50-8	DOT regulated severe marine pollutant

Acute Health: Yes **Chronic Health:** Yes **Fire:** No **Pressure:** No **Reactive:** Yes

State Regulations

A: General Product Information

Other state regulations may apply. Check individual state requirements.

This product may contain up to 0.005% beryllium, 0.05% cadmium, <0.1% chromium, 0.05% lead, and 0.05% nickel as impurities if these elements are not listed in Section 3. Beryllium, cadmium, chromium, lead, and nickel have been identified as carcinogens or having developmental or reproductive toxicity by the State of California, as Special Health Hazard Substances by the States of New Jersey and Pennsylvania, and as Extraordinarily Hazardous Substances by the State of Massachusetts.

B: Component Analysis - State

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA	RI
Aluminum	7429-90-5	Yes	Yes	Yes	Yes	Yes	Yes
Silicon	7440-21-3	No	Yes	Yes	Yes	Yes	Yes
Silica, amorphous	7631-86-9	Yes	Yes	Yes	Yes	Yes	No
Iron	7439-89-6	Yes	No	No	No	No	No
Iron oxide	1309-37-1	Yes	Yes	Yes	Yes	Yes	Yes
Zinc	7440-66-6	Yes	Yes	No	Yes	Yes	Yes
Zinc oxide	1314-13-2	Yes	Yes	Yes	Yes	Yes	Yes
Copper	7440-50-8	Yes	Yes	Yes	Yes	Yes	Yes
Manganese	7439-96-5	Yes	Yes	Yes	Yes	Yes	Yes
Magnesium	7439-95-4	Yes	Yes	No	Yes	Yes	Yes
Magnesium oxide	1309-48-4	Yes	Yes	Yes	Yes	Yes	Yes
Tin	7440-31-5	Yes	Yes	Yes	Yes	Yes	Yes
Tin oxide	1332-29-2	No	Yes	No	No	No	No
Nickel	7440-02-0	Yes	Yes	Yes	Yes	Yes	Yes
Nickel oxide	1313-99-1	No	Yes	No	Yes	Yes	No
Chromium	7440-47-3	Yes	Yes	Yes	Yes	Yes	Yes
Chromium trioxide	1333-82-0	No	Yes	No	Yes	Yes	Yes
Lead	7439-92-1	Yes	Yes	Yes	Yes	Yes	Yes
Lead tetraoxide	1314-41-6	No	Yes	No	No	No	No

Material Safety Data Sheet

Material Name: Dross- Fabrication Plants

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The following statement(s) are provided under the California Safe 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 known to the state of California to cause reproductive/developmental effects.

Canadian WHMIS Information

A: General Product Information

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all information required by CPR.

B: Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	Minimum Concentration
Aluminum	7429-90-5	1 %
Silica, amorphous	7631-86-9	1 %
Iron oxide	1309-37-1	1 %
Zinc oxide	1314-13-2	1 %
Copper	7440-50-8	1 %
Manganese	7439-96-5	1 %
Magnesium oxide	1309-48-4	1 %
Nickel	7440-02-0	0.1 %
Nickel oxide	1313-99-1	0.1 %
Chromium	7440-47-3	0.1 %
Chromium trioxide	1333-82-0	0.1 %
Lead	7439-92-1	0.1 %

WHMIS Classification:

B6- Reactive Flammable Material.

D2A- Very Toxic Material.

D2B- Eye and skin irritation (If dusts are formed)

Additional Regulatory Information

A: General Product Information

No additional information available.

Material Safety Data Sheet

Material Name: Dross- Fabrication Plants

MSDS ID: KDS-12

B: Component Analysis - Inventory

Component	CAS #	TSCA	CAN	EEC
Aluminum	7429-90-5	Yes	DSL	EINECS
Silicon	7440-21-3	Yes	DSL	EINECS
Silica, amorphous	7631-86-9	Yes	DSL	EINECS
Iron	7439-89-6	Yes	DSL	EINECS
Iron oxide	1309-37-1	Yes	DSL	EINECS
Zinc	7440-66-6	Yes	DSL	EINECS
Zinc oxide	1314-13-2	Yes	DSL	EINECS
Copper	7440-50-8	Yes	DSL	EINECS
Copper oxide	1344-70-3	No	No	EINECS
Manganese	7439-96-5	Yes	DSL	EINECS
Manganese oxide	1309-55-3	No	DSL	No
Magnesium	7439-95-4	Yes	DSL	EINECS
Magnesium oxide	1309-48-4	Yes	DSL	EINECS
Bismuth	7440-69-9	Yes	DSL	EINECS
Bismuth oxide	1304-76-3	Yes	DSL	EINECS
Tin	7440-31-5	Yes	DSL	EINECS
Tin oxide	1332-29-2	Yes	DSL	EINECS
Nickel	7440-02-0	Yes	DSL	EINECS
Nickel oxide	1313-99-1	Yes	DSL	EINECS
Chromium	7440-47-3	Yes	DSL	EINECS
Chromium trioxide	1333-82-0	Yes	DSL	EINECS
Lead	7439-92-1	Yes	DSL	EINECS
Lead tetraoxide	1314-41-6	Yes	DSL	EINECS

*** Section 16 - Other Information ***

Other Information

Exercise caution when cutting the containment strapping that may secure some products, particularly wrought materials, during transportation. It may rebound and cause serious injury.

Reasonable care has been taken in the preparation of this information, but the manufacturer makes no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. The manufacturer makes no representations and assumes no liability for any direct, incidental or consequential damages resulting from its use.

Key/Legend

ACGIH = American Conference of Governmental Industrial Hygienists. AICS = Australian Inventory of Chemical Substances. CAS = Chemical Abstract Service. CERCLA = Comprehensive Environmental Response, Compensation and Liability Act. CFR = Code of Federal Regulations. CHEMTREC = Chemical Transportation Emergency Center. DSL = Canadian Domestic Substance List. EINECS = European Inventory of New and Existing Chemical Substances. ELINCS = European List of Notified Chemical Substances. EPA = Environmental Protection Agency. HEPA = High Efficiency Particulate Air. HMIS = Hazardous Material Information System. IARC = International Agency for Research on Cancer. IDLH = Immediately Dangerous to Life and Health. MITI = Japanese Ministry of International Trade and Industry. NDSL = Canadian Non-Domestic Substance List. NFPA = National Fire Protection Association. NIOSH = National Institute of Occupational Safety and Health. NJTSR = New Jersey Trade Secret Registry. NTP = National Toxicology Program. OSHA = Occupational Safety and Health Administration. NA = Not available or Not Applicable. SARA = Superfund Amendments and Reauthorization Act. TDG = Transportation of Dangerous Goods. TLV = Threshold Limit Value. TSCA = Toxic Substances Control Act. WHMIS = Workplace Hazardous Materials Information System.

End of Sheet KDS-12