

# Safety Data Sheet

Product Identifier: Zinc Scrap

SDS ID : NFE-0104

## \*\*\*Section 1 - Identification\*\*\*

**Product Identifier:** Zinc Scrap

**Chemical Family:** Mixture

**Recommended Use:** Scrap metal usage.

**Restriction on Use:** None known.

### Manufacturer Information

The David J. Joseph Company  
300 Pike Street  
Cincinnati, OH 45202

Non-Emergency Contact: Safety Department  
Non-Emergency Phone: 513-419-6200  
Emergency Contact: DJJ  
Emergency Phone: 513-562-1699

## \*\*\*Section 2 - Hazard(s) Identification\*\*\*

### Classification in accordance with 29 CFR 1910.1200.

Product is supplied as scrap metal consisting of zinc. This alloy is a non-combustible, non-reactive solid material. Solid material, as supplied, is not hazardous. Processing of this material may produce hazardous vapors, fumes, mists and dusts which are considered hazardous under 29 CFR 1910.1200 (Hazard Communication). Dust, particles or powder generated during processing would have the following classification:

Acute Toxicity (Oral), Category 4

Eye Damage / Irritation, Category 2A

Sensitization - Respiratory, Category 1

Sensitization - Skin, Category 1

Carcinogenicity, Category 1A

Toxic to Reproduction, Category 1B

Specific Target Organ Toxicity - Repeated Exposure, Category 1 (lungs, liver)

### GHS LABEL ELEMENTS

#### Symbol(s)



#### Signal Word

DANGER

#### Hazard Statement(s)

Causes serious eye irritation

May cause allergy or asthma symptoms or breathing difficulties if inhaled

May cause allergic reactions.

May cause cancer

May damage fertility or the unborn child

Causes damage to liver and lungs through prolonged or repeated exposure.

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## Precautionary Statement(s)

### Prevention

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust, mist, fumes or vapors. In case of inadequate ventilation wear respiratory protection. Do not eat, drink, or smoke when using this product. Wear appropriate protective gloves/clothing and eye/face protection if contact is possible. Wash thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace.

### Response

IF exposed or concerned: Get medical advice/attention. IF INHALED: If breathing is difficult, remove person to fresh air and keep at rest in a position comfortable for breathing. If experiencing respiratory symptoms call a POISON CENTER or doctor/physician. 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. 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. IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth.

### Storage

Store in a secure area.

### Disposal

Dispose of material in accordance with all local, regional, national and international regulations.

### Hazard(s) Not Otherwise Classified

Dust may present an explosion hazard if allowed to accumulate in an industrial or manufacturing environment. Coatings and oils applied to the product may enhance flammability.

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

CAS	Component	Percent
7440-66-6	Zinc	>69
7429-90-5	Aluminum	<28
7440-50-8	Copper	<3
7440-47-3	Chromium	<1
7440-43-9	Cadmium	<1
7440-02-0	Nickel	<1
7439-96-5	Manganese	<1

### Component Related Regulatory Information

This product may be regulated, have exposure limits or other information identified as the following: Zinc compounds.

### Component Information/Information on Non-Hazardous Components

Processing of this material may produce hazardous vapors, fumes, mists and dusts which are considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

This data sheet is prepared as a guideline for typical uses of scrap materials. The user should be aware that the composition of the scrap can vary based upon the raw materials, processes used, and protective coatings that may have been applied to the original materials. The list of ingredients above are typical ingredients thought to be present in the scrap material. This list includes contaminants that may or may not be present. The percentages given vary from shipment to shipment and may not be entirely accurate for a given shipment.

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Protective coatings, including paints, lubricants, corrosion inhibitors, etc., may have been applied to the material before it came under the control of the recycler. These coatings may contain hazardous materials. Typical hazardous materials contained in these coatings include: lead, zinc, chromium, and cadmium. Some organic materials may also be present. The supplier (recycler) may have no specific knowledge of the particular contaminant. However, it is anticipated that the hazardous materials present in the coatings would generally represent less than 0.1% of the total material present. The health hazards presented by these contaminants would produce their greatest potential for exposure during processes such as melting, cutting, welding. These processes could generate metal fumes that might produce the health hazards identified in section 2 of this MSDS.

It is suggested that the user protect employees by utilizing engineering controls that reduce exposures to acceptable concentrations. Where engineering controls are not feasible, appropriate personal protective equipment should be utilized.

## **\*\*\*Section 4 - First Aid Measures\*\*\***

### **Description of Necessary Measures**

#### **Inhalation**

If adverse effects occur during processing, remove to uncontaminated area. Get immediate medical attention.

#### **Skin Contact**

Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse. Cuts or abrasions should be treated promptly with thorough cleansing of the affected area.

#### **Eye Contact**

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. In case of mechanical abrasions and cuts, seek medical attention immediately.

#### **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. Do not induce vomiting unless directed to do so by medical personnel.

### **Most Important Symptoms/Effects**

#### **Acute**

Processing by-products: Harmful if swallowed. Symptoms/effects may include asthma, allergic reactions, eye irritation, mild skin irritation, and respiratory tract irritation.

#### **Delayed**

Processing by-products: Symptoms/effects may include asthma, allergic reactions, cancer, reproductive effects, lung damage, and liver damage.

### **Indication of immediate Medical Attention and Special Treatment Needed**

Treat symptomatically and supportively.

## **\*\*\*Section 5 - Fire Fighting Measures\*\*\***

### **Extinguishing Media**

Media to use includes regular dry chemical and dry sand.

### **Unsuitable Extinguishing Media**

Molten metal may react violently with water.

### **Specific Hazards Arising from the Chemical**

Coatings and oils applied to the product may enhance flammability. Dust or fine particles may present a flammability hazard if allowed to accumulate in an industrial or manufacturing environment.

### **Hazardous Combustion Products**

This product may release metal oxide fumes by thermal decomposition.

### **Fire fighting measures**

Fight fire with normal precautions from a reasonable distance. Cool materials with water spray until well after the fire is out.

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## Special Protective Equipment and Precautions for Firefighters

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

### \*\*\*Section 6 - Accidental Release Measures\*\*\*

## Personal Precautions, Protective Equipment and Emergency Procedures

If dusts or particulates are generated, eliminate sources of ignition. Wear personal protective clothing and equipment, see Section 8.

## Methods and Materials for Containment and Cleaning Up

Containment of this material should not be necessary. If dusts or particulates are generated, eliminate sources of ignition. Small pieces of this product may be collected with a broom and shovel. Collect spilled material in appropriate container for reuse or disposal.

### \*\*\*Section 7 - Handling and Storage\*\*\*

## Precautions for Safe Handling

Observe good hygiene and safety practices when handling this product. Processing of this material may produce hazardous vapors, fumes, mists, and dusts. Avoid inhaling dusts or fumes produced during product processing. Handle with adequate ventilation during processing. Wash thoroughly after handling.

## Condition for Safe storage, Including any incompatibilities

Store in a secure area.

## Incompatibility

Zinc may react with ammonium nitrate, barium oxide, barium nitrate, cadmium, carbon disulfide, chlorates, chlorine, chromates, fluorine, strong acids, oxidizers, calcium chloride and sodium hydroxide.

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

## Exposure Limits

Follow all applicable exposure limits. Keep formation of dusts, particulates and fumes to a minimum.

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## Component Exposure Limits

### Aluminum (7429-90-5)

<b>ACGIH:</b>	1 mg/m3 TWA (respirable fraction)
<b>OSHA:</b>	15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)
<b>NIOSH:</b>	10 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable dust)
<b>Alberta:</b>	10 mg/m3 TWA (dust)
<b>British Columbia:</b>	1.0 mg/m3 TWA (respirable)
<b>Manitoba:</b>	1 mg/m3 TWA (respirable fraction)
<b>New Brunswick:</b>	10 mg/m3 TWA (metal dust)
<b>NW Territories:</b>	10 mg/m3 TWA 20 mg/m3 STEL
<b>Nova Scotia:</b>	1 mg/m3 TWA (respirable fraction)
<b>Nunavut:</b>	10 mg/m3 TWA 20 mg/m3 STEL
<b>Ontario:</b>	1 mg/m3 TWA (respirable)
<b>Quebec:</b>	10 mg/m3 TWAEV
<b>Saskatchewan:</b>	10 mg/m3 TWA (dust) 20 mg/m3 STEL (dust)

### Copper (7440-50-8)

<b>ACGIH:</b>	0.2 mg/m3 TWA (fume)
<b>OSHA:</b>	0.1 mg/m3 TWA (fume); 1 mg/m3 TWA (dust and mist)
<b>NIOSH:</b>	1 mg/m3 TWA (dust and mist); 0.1 mg/m3 TWA (fume)
<b>Alberta:</b>	0.2 mg/m3 TWA (fume); 1 mg/m3 TWA (dust and mist)
<b>British Columbia:</b>	1 mg/m3 TWA (dust and mist); 0.2 mg/m3 TWA (fume)
<b>Manitoba:</b>	0.2 mg/m3 TWA (fume)
<b>New Brunswick:</b>	0.2 mg/m3 TWA (fume); 1 mg/m3 TWA (dust and mist)
<b>NW Territories:</b>	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)
<b>Nova Scotia:</b>	0.2 mg/m3 TWA (fume)
<b>Nunavut:</b>	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)
<b>Ontario:</b>	0.2 mg/m3 TWA (fume); 1 mg/m3 TWA (dust and mist)
<b>Quebec:</b>	0.2 mg/m3 TWAEV (fume); 1 mg/m3 TWAEV (dust and mist)
<b>Saskatchewan:</b>	0.2 mg/m3 TWA (fume); 1 mg/m3 TWA (dust and mist) 0.6 mg/m3 STEL (fume); 3 mg/m3 STEL (dust and mist)
<b>Yukon:</b>	0.2 mg/m3 TWA (fume); 1 mg/m3 TWA (dust and mist) 0.2 mg/m3 STEL (fume); 2 mg/m3 STEL (dust and mist)

### Cadmium (7440-43-9)

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**ACGIH:** 0.01 mg/m<sup>3</sup> TWA; 0.002 mg/m<sup>3</sup> TWA (respirable fraction)  
**OSHA:** 5 µg/m<sup>3</sup> TWA (See 29 CFR 1910.1027); 2.5 µg/m<sup>3</sup> Action Level  
**OSHA:** 0.1 mg/m<sup>3</sup> TWA (fume, applies to any operations or sectors for which the Cadmium standard is stayed or otherwise not in effect); 0.2 mg/m<sup>3</sup> TWA (dust, applies to any operations or sectors for which the Cadmium standard is stayed or otherwise not in effect); 5 µg/m<sup>3</sup> TWA  
0.3 mg/m<sup>3</sup> Ceiling (applies to any operations or sectors for which the Cadmium standard is stayed or otherwise not in effect, fume); 0.6 mg/m<sup>3</sup> Ceiling (applies to any operations or sectors for which the Cadmium standard is stayed or otherwise not in effect, dust)

**Alberta:** Designated substance - requires code of practice  
0.01 mg/m<sup>3</sup> TWA

**British Columbia:** ACGIH Category A2 - Suspected Human Carcinogen; IARC Category 1 - Human Carcinogen

0.01 mg/m<sup>3</sup> TWA; 0.002 mg/m<sup>3</sup> TWA (respirable)

**Manitoba:** 0.01 mg/m<sup>3</sup> TWA; 0.002 mg/m<sup>3</sup> TWA (respirable fraction)

**New Brunswick:** 0.01 mg/m<sup>3</sup> TWA (inhalable fraction); 0.002 mg/m<sup>3</sup> TWA (respirable fraction)

**NW Territories:** 0.05 mg/m<sup>3</sup> TWA (dust)

0.2 mg/m<sup>3</sup> STEL (dust)

**Nova Scotia:** 0.01 mg/m<sup>3</sup> TWA; 0.002 mg/m<sup>3</sup> TWA (respirable fraction)

**Nunavut:** 0.05 mg/m<sup>3</sup> TWA (dust)

0.2 mg/m<sup>3</sup> STEL (dust)

**Ontario:** 0.01 mg/m<sup>3</sup> TWA; 0.002 mg/m<sup>3</sup> TWA (respirable)

**Quebec:** 0.025 mg/m<sup>3</sup> TWAEV

**Saskatchewan:** Present

0.01 mg/m<sup>3</sup> TWA (total); 0.002 mg/m<sup>3</sup> TWA (respirable fraction)

0.03 mg/m<sup>3</sup> STEL (total); 0.006 mg/m<sup>3</sup> STEL (respirable fraction)

**Yukon:** 0.05 mg/m<sup>3</sup> TWA (dust)

0.15 mg/m<sup>3</sup> STEL (dust)

**Chromium (7440-47-3)**

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<b>ACGIH:</b>	0.5 mg/m <sup>3</sup> TWA
<b>OSHA:</b>	1 mg/m <sup>3</sup> TWA
<b>NIOSH:</b>	0.5 mg/m <sup>3</sup> TWA
<b>Alberta:</b>	0.5 mg/m <sup>3</sup> TWA
<b>British Columbia:</b>	0.5 mg/m <sup>3</sup> TWA
<b>Manitoba:</b>	0.5 mg/m <sup>3</sup> TWA
<b>New Brunswick:</b>	0.5 mg/m <sup>3</sup> TWA
<b>NW Territories:</b>	0.5 mg/m <sup>3</sup> TWA 1.5 mg/m <sup>3</sup> STEL
<b>Nova Scotia:</b>	0.5 mg/m <sup>3</sup> TWA
<b>Nunavut:</b>	0.5 mg/m <sup>3</sup> TWA 1.5 mg/m <sup>3</sup> STEL
<b>Ontario:</b>	0.5 mg/m <sup>3</sup> TWA
<b>Quebec:</b>	0.5 mg/m <sup>3</sup> TWAEV
<b>Saskatchewan:</b>	0.5 mg/m <sup>3</sup> TWA 1.5 mg/m <sup>3</sup> STEL
<b>Yukon:</b>	0.1 mg/m <sup>3</sup> TWA 3.0 mg/m <sup>3</sup> STEL
<b>Manganese (7439-96-5)</b>	
<b>ACGIH:</b>	0.02 mg/m <sup>3</sup> TWA (respirable fraction); 0.1 mg/m <sup>3</sup> TWA (inhalable fraction)
<b>OSHA:</b>	5 mg/m <sup>3</sup> Ceiling (fume)
<b>NIOSH:</b>	1 mg/m <sup>3</sup> TWA (fume) 3 mg/m <sup>3</sup> STEL
<b>Alberta:</b>	0.2 mg/m <sup>3</sup> TWA
<b>British Columbia:</b>	Adverse reproductive effect 0.2 mg/m <sup>3</sup> TWA
<b>Manitoba:</b>	0.02 mg/m <sup>3</sup> TWA (respirable fraction); 0.1 mg/m <sup>3</sup> TWA (inhalable fraction)
<b>New Brunswick:</b>	0.2 mg/m <sup>3</sup> TWA
<b>NW Territories:</b>	1 mg/m <sup>3</sup> TWA (fume) 3 mg/m <sup>3</sup> STEL (fume) 5 mg/m <sup>3</sup> Ceiling
<b>Nova Scotia:</b>	0.02 mg/m <sup>3</sup> TWA (respirable fraction); 0.1 mg/m <sup>3</sup> TWA (inhalable fraction)
<b>Nunavut:</b>	1 mg/m <sup>3</sup> TWA (fume) 3 mg/m <sup>3</sup> STEL (fume) 5 mg/m <sup>3</sup> Ceiling
<b>Ontario:</b>	0.2 mg/m <sup>3</sup> TWA
<b>Quebec:</b>	0.2 mg/m <sup>3</sup> TWAEV (total dust and fume)
<b>Saskatchewan:</b>	0.2 mg/m <sup>3</sup> TWA 0.6 mg/m <sup>3</sup> STEL
<b>Yukon:</b>	5 mg/m <sup>3</sup> Ceiling
<b>Nickel (7440-02-0)</b>	

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<b>ACGIH:</b>	1.5 mg/m <sup>3</sup> TWA (inhalable fraction)
<b>OSHA:</b>	1 mg/m <sup>3</sup> TWA
<b>NIOSH:</b>	0.015 mg/m <sup>3</sup> TWA
<b>Alberta:</b>	1.5 mg/m <sup>3</sup> TWA
<b>British Columbia:</b>	IARC Category 2B - Possible Human Carcinogen 0.05 mg/m <sup>3</sup> TWA
<b>Manitoba:</b>	1.5 mg/m <sup>3</sup> TWA (inhalable fraction)
<b>New Brunswick:</b>	1 mg/m <sup>3</sup> TWA
<b>NW Territories:</b>	1 mg/m <sup>3</sup> TWA 2 mg/m <sup>3</sup> STEL
<b>Nova Scotia:</b>	1.5 mg/m <sup>3</sup> TWA (inhalable fraction)
<b>Nunavut:</b>	1 mg/m <sup>3</sup> TWA 2 mg/m <sup>3</sup> STEL
<b>Ontario:</b>	1 mg/m <sup>3</sup> TWA (inhalable)
<b>Quebec:</b>	1 mg/m <sup>3</sup> TWA EV
<b>Saskatchewan:</b>	Present 1.5 mg/m <sup>3</sup> TWA (inhalable fraction) 3 mg/m <sup>3</sup> STEL (inhalable fraction)
<b>Yukon:</b>	1 mg/m <sup>3</sup> TWA 3 mg/m <sup>3</sup> STEL

## Appropriate Engineering Controls

For outdoor applications, special ventilation is not required under normal conditions of use. Under normal conditions of use, no special ventilation equipment is needed. Ventilation should be sufficient to effectively remove and prevent buildup of any dusts or fumes that may be generated during handling or thermal processing.

## Individual Protection Measures, such as Personal Protective Equipment

### Eyes/Face Protection

Eye protection not required under normal conditions. Wear appropriate eye protection if eye contact is possible.

### Skin Protection

Wear gloves and other clothing as required to avoid contact.

### Respiratory Protection

Consult with a health and safety professional for specific respirators appropriate for your use. When dusts or thermal processing fumes are generated and ventilation is not sufficient to effectively remove them, appropriate NIOSH approved respiratory protection must be provided. Where concentrations exceed exposure limits or airborne exposure is likely, use NIOSH approved respiratory protection equipment appropriate for the material and its components.

### General Information

Use good industrial hygiene practices in handling this material. Eye wash fountain and emergency showers are recommended.

**\*\*\*Section 9 - Physical and Chemical Properties\*\*\***



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<b>Appearance:</b>	Depends upon scrap composition, most often appears as a bluish-gray metal.	<b>Odor:</b>	Not available
<b>Physical State:</b>	Solid	<b>pH:</b>	Not applicable
<b>Melting /Freezing Point:</b>	780 °F (420 °C)	<b>Boiling Point:</b>	1650 °F (900 °C)
<b>Flash Point:</b>	Not applicable	<b>OSHA Flammability Class:</b>	Non-flammable
<b>UFL:</b>	Not available	<b>LFL:</b>	Not available
<b>Vapor Pressure:</b>	Not applicable	<b>Vapor Density:</b>	Not applicable
<b>Specific Gravity:</b>	Not available	<b>Solubility (H2O):</b>	Insoluble
<b>Auto Ignition:</b>	Not applicable		

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

### Reactivity

No reactivity hazard is expected.

### Chemical Stability

Stable under normal conditions.

### Possibility of Hazardous reaction

Will not occur.

### Conditions to Avoid

Molten metal may react violently with water. Fine particles, dust or fumes may be flammable or explosive.

### Incompatible Materials

Zinc may react with ammonium nitrate, barium oxide, barium nitrate, cadmium, carbon disulfide, chlorates, chlorine, chromates, fluorine, strong acids, oxidizers, calcium chloride and sodium hydroxide.

### Hazardous Decomposition Products

Decomposition of this product may yield metallic oxides.

## \*\*\*Section 11 - Toxicological Information\*\*\*

### Acute Dose Effects

No information available for the product. Operations which supply sufficient energy to the product (i.e. welding, high speed grinding or melting) can release dust or fumes which may make components of the product biologically available. Exposure to dusts or fumes from some metals including zinc, manganese, cadmium, chromium and copper can produce a condition known as metal fume fever, a flu-like illness generally lasting 24 hours or less including symptoms of nausea, vomiting, chest tightness, muscle aches and weakness. Zinc poisoning can cause anemia, lethargy and dizziness. 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.

### Component Analysis - LD50/LC50

#### Cadmium (7440-43-9)

Inhalation LC50 Rat 25 mg/m<sup>3</sup> 30 min; Oral LD50 Rat 1140 mg/kg

#### Nickel (7440-02-0)

Oral LD50 Rat >9000 mg/kg

### Information on Likely Routes of Exposure

Processing by-products may cause the following.

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## **Inhalation**

May cause allergic respiratory sensitization and cancer. Dusts, vapors, and fumes generated during processing may irritate the respiratory system. 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. Severe acute overexposure or chronic overexposure to dusts or processing fumes may produce more serious toxicities including: siderosis, lung damage, weakness, anorexia, impairment of sleep and vision, personality changes, blood formation effects, nervous and circulatory system damage, kidney damage, and may pose a reproductive hazard.

## **Ingestion**

Ingestion is not a likely route of exposure. Harmful if swallowed. may irritate the respiratory system May cause gastrointestinal disturbances, abdominal pain, fever, vomiting, and diarrhea. Ingestion of large amounts of product may produce more serious toxicities including: shock, metabolic acidosis, decreased white blood cell count, neurological damage, cardiovascular shock, anemia, liver damage, renal failure, lethargy and coma..

## **Skin**

May cause allergic skin reactions. Dust or powder may irritate the skin. This product may produce skin abrasions, lesions, or cuts.

## **Eye**

Dust or powder may irritate eye tissue. Rubbing may cause abrasion of cornea.

## **Immediate Effects**

Processing by-products: Harmful if swallowed. Symptoms/effects may include asthma, allergic reactions, skin irritation, mild skin irritation, and respiratory tract irritation.

## **Delayed Effects**

Processing by-products: Symptoms/effects may include asthma, allergic reactions, cancer, reproductive effects, lung damage, and liver damage.

## **Medical conditions Aggravated by Exposures**

No data available.

## **Irritation/Corrosivity Data**

May cause mild skin irritation, eye irritation, and respiratory tract irritation.

## **Respiratory Sensitizer**

May cause allergy or asthma symptoms or breathing difficulties if inhaled

## **Dermal Sensitization**

May cause an allergic skin reaction

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## Carcinogenicity

### Component Carcinogenicity

#### Aluminum (7429-90-5)

**ACGIH:** A4 - Not Classifiable as a Human Carcinogen

#### Cadmium (7440-43-9)

**ACGIH:** A2 - Suspected Human Carcinogen

**OSHA:** 5 µg/m<sup>3</sup> TWA (See 29 CFR 1910.1027); 2.5 µg/m<sup>3</sup> Action Level Present (Select Carcinogen)

**NIOSH:** potential occupational carcinogen

**NTP:** Known Human Carcinogen (Select Carcinogen)

**IARC:** Monograph 100C [2012]; Monograph 58 [1993]; Supplement 7 [1987] (Group 1 (Carcinogenic to humans))

#### Chromium (7440-47-3)

**ACGIH:** A4 - Not Classifiable as a Human Carcinogen

**IARC:** Monograph 49 [1990]; Supplement 7 [1987] (Group 3 (Not classifiable))

#### Manganese (7439-96-5)

**ACGIH:** A4 - Not Classifiable as a Human Carcinogen

#### Nickel (7440-02-0)

**ACGIH:** A5 - Not Suspected as a Human Carcinogen

**OSHA:** Present (Select Carcinogen)

**NIOSH:** potential occupational carcinogen

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

**IARC:** Monograph 49 [1990]; Supplement 7 [1987] (Group 2B (Possibly carcinogenic to humans))

## Mutagenicity

No information available for the product. The binding of DNA to aluminum may alter, expose, or hide different critical regions in genes for expression or regulation in vivo. Nickel inhibited DNA repair and induced transformation in experimental assays. Increases in sister chromatid exchanges were seen in lymphocytes of workers exposed to chromium and nickel dusts.

## Reproductive Toxicity

Available data characterizes components of this product as reproductive hazards.

### Specific Target Organ Toxicity - Single Exposure

No target organs identified.

### Specific Target Organ Toxicity - Repeated Exposure

lungs liver

## Aspiration Hazard

No information available for the product.

## Other Toxicological Information

Under normal conditions of handling, the likelihood of inhaling or ingesting amounts necessary for these effects to occur is very small.

## \* \* \*Section 12 - Ecological Information\* \* \*

### Ecotoxicity

Processing by-products: May be harmful to aquatic life.

### Component Analysis - Ecotoxicity - Aquatic Toxicity

#### Zinc (7440-66-6)

**Duration/Test/Species**

96 Hr LC50 Pimephales promelas

**Concentration/Conditions/Notes**

2.16 - 3.05 mg/L [flow-through]

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96 Hr LC50 Pimephales promelas	0.211 - 0.269 mg/L [semi-static]
96 Hr LC50 Pimephales promelas	2.66 mg/L [static]
96 Hr LC50 Cyprinus carpio	30 mg/L
96 Hr LC50 Cyprinus carpio	0.45 mg/L [semi-static]
96 Hr LC50 Cyprinus carpio	7.8 mg/L [static]
96 Hr LC50 Lepomis macrochirus	3.5 mg/L [static]
96 Hr LC50 Oncorhynchus mykiss	0.24 mg/L [flow-through]
96 Hr LC50 Oncorhynchus mykiss	0.59 mg/L [semi-static]
96 Hr LC50 Oncorhynchus mykiss	0.41 mg/L [static]

96 Hr EC50 Pseudokirchneriella subcapitata: 0.11 - 0.271 mg/L [static]; 72 Hr EC50 Pseudokirchneriella subcapitata: 0.09 - 0.125 mg/L [static]

48 Hr EC50 Daphnia magna: 0.139 - 0.908 mg/L [Static]

## Copper (7440-50-8)

Duration/Test/Species	Concentration/Conditions/Notes
96 Hr LC50 Pimephales promelas	0.0068 - 0.0156 mg/L
96 Hr LC50 Pimephales promelas	<0.3 mg/L [static]
96 Hr LC50 Pimephales promelas	0.2 mg/L [flow-through]
96 Hr LC50 Oncorhynchus mykiss	0.052 mg/L [flow-through]
96 Hr LC50 Lepomis macrochirus	1.25 mg/L [static]
96 Hr LC50 Cyprinus carpio	0.3 mg/L [semi-static]
96 Hr LC50 Cyprinus carpio	0.8 mg/L [static]
96 Hr LC50 Poecilia reticulata	0.112 mg/L [flow-through]

72 Hr EC50 Pseudokirchneriella subcapitata: 0.0426 - 0.0535 mg/L [static]; 96 Hr EC50 Pseudokirchneriella subcapitata: 0.031 - 0.054 mg/L [static]

48 Hr EC50 Daphnia magna: 0.03 mg/L [Static]

## Cadmium (7440-43-9)

Duration/Test/Species	Concentration/Conditions/Notes
96 Hr LC50 Oncorhynchus mykiss	0.003 mg/L [flow-through]
96 Hr LC50 Oncorhynchus mykiss	0.006 mg/L [static]
96 Hr LC50 Cyprinus carpio	0.002 mg/L
96 Hr LC50 Cyprinus carpio	4.26 mg/L [semi-static]
96 Hr LC50 Cyprinus carpio	0.24 mg/L [static]
96 Hr LC50 Lepomis macrochirus	21.1 mg/L [flow-through]
96 Hr LC50 Oryzias latipes	0.016 mg/L
96 Hr LC50 Pimephales promelas	0.0004 - 0.003 mg/L

48 Hr EC50 Daphnia magna: 0.0244 mg/L [Static]

## Nickel (7440-02-0)

Duration/Test/Species	Concentration/Conditions/Notes
96 Hr LC50 Brachydanio rerio	>100 mg/L

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96 Hr LC50 Cyprinus carpio	1.3 mg/L [semi-static]
96 Hr LC50 Cyprinus carpio	10.4 mg/L [static]

72 Hr EC50 Pseudokirchneriella subcapitata: 0.18 mg/L; 96 Hr EC50 Pseudokirchneriella subcapitata: 0.174 - 0.311 mg/L [static]

48 Hr EC50 Daphnia magna: >100 mg/L; 48 Hr EC50 Daphnia magna: 1 mg/L [Static]

## Persistence & Degradability

No information available for the product.

## Bioaccumulation

No information available for the product.

## Mobility

No information available for the product.

## \* \* \*Section 13 - Disposal Considerations\* \* \*

### Disposal Methods

Byproducts and residues from this product may be reprocessed or recycled. Upon disposal, collected dusts and other similar wastes could contain a constituent identified as a hazardous waste. Wastes must be tested using methods described in 40 CFR Part 261 to determine if it meets applicable definitions of hazardous wastes.

See Section 7 for Handling Procedures. See Section 8 for Personal Protective Equipment recommendations.

### US EPA Waste Number & Descriptions

This product contains a component or components identified as hazardous under 40 CFR 261.24.

### Component Waste Numbers

#### Cadmium (7440-43-9)

RCRA: 1.0 mg/L regulatory level

#### Chromium (7440-47-3)

RCRA: 5.0 mg/L regulatory level

### Disposal of Contaminated Packaging

Dispose of waste material according to Local, State, Federal, and Provincial Environmental Regulations.

## \* \* \*Section 14 - Transportation Information\* \* \*

### US DOT Information

Certain forms of this material (i.e. powders, borings, shavings, turnings, cuttings, dross, etc.) may be subject to U.S. DOT hazardous material shipping requirements. If the products are shipped in quantities which exceed the reportable quantity (RQ) for individual components, they may also meet the requirements of DOT hazardous materials.

### DOT Reportable Quantities

#### Zinc (7440-66-6)

1000 lbs RQ (The RQ for these hazardous substances is limited to those pieces of the metal having a diameter smaller than 100 µm (0.004 inches).); 454 kg RQ (The RQ for these hazardous substances is limited to those pieces of the metal having a diameter smaller than 100 µm (0.004 inches).)

#### Copper (7440-50-8)

5000 lbs RQ (The RQ for these hazardous substances is limited to those pieces of the metal having a diameter smaller than 100 µm (0.004 inches).); 2270 kg RQ (The RQ for these hazardous substances is limited to those pieces of the metal having a diameter smaller than 100 µm (0.004 inches).)

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## Cadmium (7440-43-9)

10 lbs RQ (The RQ for these hazardous substances is limited to those pieces of the metal having a diameter smaller than 100  $\mu\text{m}$  (0.004 inches).); 4.54 kg RQ (The RQ for these hazardous substances is limited to those pieces of the metal having a diameter smaller than 100  $\mu\text{m}$  (0.004 inches).)

## Chromium (7440-47-3)

5000 lbs RQ (The RQ for these hazardous substances is limited to those pieces of the metal having a diameter smaller than 100  $\mu\text{m}$  (0.004 inches).); 2270 kg RQ (The RQ for these hazardous substances is limited to those pieces of the metal having a diameter smaller than 100  $\mu\text{m}$  (0.004 inches).)

## Nickel (7440-02-0)

100 lbs RQ (The RQ for these hazardous substances is limited to those pieces of the metal having a diameter smaller than 100  $\mu\text{m}$  (0.004 inches).); 45.4 kg RQ (The RQ for these hazardous substances is limited to those pieces of the metal having a diameter smaller than 100  $\mu\text{m}$  (0.004 inches).)

## TDG Information

Not regulated as a hazardous material.

## 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 (powder)

## \* \* \*Section 15 - Regulatory Information\* \* \*

### U.S. Federal Regulations

Processing of this material may produce hazardous vapors, fumes, mists and dusts which are considered hazardous under 29 CFR 1910.1200 (Hazard Communication). The following component analysis applies only to those facilities that are required to report under applicable regulations.

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## U.S. Federal Regulations

This material contains one or more of the following chemicals required to be identified under SARA Sections 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

### Zinc (7440-66-6)

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

**CERCLA:** 454 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 >100 µm); 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 >100 µm)

### Aluminum (7429-90-5)

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

### 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 >100 µm); 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 >100 µm)

### Cadmium (7440-43-9)

**SARA 313:** 0.1 % de minimis concentration

**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 >100 µm); 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 >100 µm)

### Chromium (7440-47-3)

**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 >100 µm); 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 >100 µm)

### 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 >100 µm); 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 >100 µm)

## 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 (powder)

## SARA 311/312 Hazardous Categories (40 CFR 370 Subparts B and C)

Acute Health Yes (dust/fumes) Chronic Health Yes (dust/fumes) Fire No Pressure No Reactive No

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## U.S. State Regulations

Other state regulations may apply. Check individual state requirements.

## Component Analysis - State

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

Component	CAS #	CA	FL	MA	MN	NJ	PA
Zinc	7440-66-6	Yes	No	Yes	No	Yes	Yes
Aluminum	7429-90-5	Yes	No	Yes	Yes	Yes	Yes
Copper	7440-50-8	Yes	No	Yes	Yes	Yes	Yes
Cadmium	7440-43-9	Yes	No	Yes	Yes	Yes	Yes
Chromium	7440-47-3	Yes	No	Yes	Yes	Yes	Yes
Manganese	7439-96-5	Yes	No	Yes	Yes	Yes	Yes
Nickel	7440-02-0	Yes	No	Yes	Yes	Yes	Yes

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.

## Canada Regulation

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

## Canadian WHMIS Information

WHMIS CLASSIFICATION: D2A, D2B.

## Component Analysis - WHMIS IDL

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

### Aluminum (7429-90-5)

1 %

### Copper (7440-50-8)

1 %

### Cadmium (7440-43-9)

0.1 %

### Chromium (7440-47-3)

0.1 %

### Nickel (7440-02-0)

0.1 %

## Additional Regulatory Information

All components are on the U.S. EPA TSCA Inventory List.

## Component Analysis - Inventory

Component	CAS #	TSCA	CAN
Zinc	7440-66-6	Yes	DSL
Aluminum	7429-90-5	Yes	DSL
Copper	7440-50-8	Yes	DSL
Cadmium	7440-43-9	Yes	DSL
Chromium	7440-47-3	Yes	DSL
Manganese	7439-96-5	Yes	DSL
Nickel	7440-02-0	Yes	DSL



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## \*\*\*Section 16 - Other Information\*\*\*

### Summary of Changes

Updated: 5/12/2015

**NFPA Ratings: Health: 1 Fire: 0 Reactivity: 0**

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

### Key/Legend

EPA = Environmental Protection Agency; TSCA = Toxic Substance Control Act; ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; TLV = Threshold Limit Value; NFPA = National Fire Protection Association; HMIS = High Efficiency Particulate Air; CERCLA = Comprehensive Environmental Response, Compensation and Liability Act; SARA = Superfund Amendments and Reauthorization Act.

### Other Information

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.

### MSDS History:

New MSDS: 7/8/1998

Revision 2/Regulatory Update: 7/19/2002

Revision 3/Regulatory Update: 10/6/2005

Revision 4/Regulatory Update: 8/7/2008

Revision 5/Regulatory Update: 1/26/2010

Revision 6 / Regulatory Update: 11/7/2011

End of Sheet NFE-0104