

Safety Data Sheet

Section 1 – Product and Company Identification

Material Name: Wrought Aluminum Alloy Wire and Rod

Synonyms: May be labelled by specific alloy designation as defined by Aluminum Association.

Product Use: Fabricated Articles

Manufacturer Information: Beneke Wire Company
5540 National Turnpike
Louisville, KY 40214

Emergency Contact: (502) 367 6434

Section 2 – Hazards Identification

Overview: Product is shipped as solid metallic product. Defined as “articles” under OSHA Hazard Communication Standard (29 CFR 1910.1200). This product is non-hazardous in solid form. Material contains elements that are classified as hazardous and can be emitted if subjected to processing by cutting, sawing, brazing, welding, grinding, machining, melting or similar operations. Fines and/or particles resulting from processing may be readily ignitable. Fine particles and molten metal are highly reactive with water, oxidizer, acids and alkalis, halogenated compounds and certain metal oxides.

Classification Review only for hazardous elements which may be released during processing:

Flammable Solid: Category 1

Eye Damage/Irritation: Category 2B

Respiratory Sensitizer: Category 1

Skin Sensitizer: Category 1

Carcinogen: Category 1

Germ Cell Mutagenicity: Category 2

Toxic to Reproduction: Category 1A

Target Organ Toxicity: Category 1

Hazardous to Aquatic Environment: Acute-Category 1; Chronic-Category 2



WARNING

Hazard Statements:

Flammable solid

Dust, fumes or powder may irritate eyes and skin

Product may contain residual coating which may add to skin sensitization

When heated, product does not change color, may cause severe burns when hot

Ingestion of large amounts of dust may cause irritation, nausea and diarrhea

Inhalation of dust may irritate nose, throat and respiratory tract

Fine dust or powder may form an explosive mixture with air

Section 3 – Composition/Information on Ingredients

Amounts of element in each product will vary depending on specific alloy as defined by the Aluminum Association. Below is an overview of alloying elements.

CAS #	Component	Common max comp by wt	Specific exceptions (% by wt)			
7429-90-5	Aluminum	70-99.99				
64771-72-8	Coating Oil	0 – 1.0				
7440-21-3	Silicon	0 – 1.2	4XXX	2.0– 15.0		
7440-66-6	Zinc	0 - 0.40	7XXX	0 – 10.0		
7440-50-8	Copper	0 – 0.50	2XXX	1.0 – 6.0	4XXX	0 – 1.5
7439-95-4	Magnesium	0 – 3.0			7XXX	0 – 3.0
7439-89-6	Iron	0 – 1.5			5XXX	0 – 6.0
7439-96-5	Manganese	0 – 1.5				
7440-32-6	Titanium	0 – 0.20				
64771-72-8	Coating Oil	0 – 1.0				
7439-92-1	Lead	0	2011	0.20 - 0.6	6262	0.40 - 0.7
7440-47-3	Chromium	0 - 0.35				
7440-02-0	Nickel	0			4032	0.50 – 1.3

This information is provided for situations where the product may be processed and result in the creation of fine particles that are potentially hazardous.

Section 4 – First Aid Measures

Eyes: Immediately flush with water for at least 15 minutes. Keep eyes open while flushing. Do not rub eyes. If irritation continues, seek medical attention.

Skin: Flush skin with large amount of water. Wash skin with soap and water. If irritation continues, seek medical attention.

Ingestion: If ingestion of a large amount occurs, seek medical attention

Inhalation: Move to fresh air. Give oxygen if breathing is difficult. If symptoms continue, seek medical attention.

Section 5 – Fire Fighting Measures

General Statement:

This product does not present fire or explosion hazards as shipped. Fines and/or particles resulting from processing may be readily ignitable. Coating oils that may be present can be ignited by open flames and other sources of ignition.

Hazardous Combustion Products:

Thermal decomposition of base metal product may yield metallic oxides, irritating gases and vapors. Do not breath fumes; may cause sensitization by inhalation and skin contact.

Thermal decomposition of coating oils will release carbon monoxide, carbon dioxide, and other hydrocarbon species.

Extinguishing Media:

Class D extinguishing agents on fines, dust or molten metal. Material near fires should be cooled with water spray if compatible with fire fighting techniques for other materials in fire.

Unsuitable Extinguishing Media:

DO NOT use halogenated extinguishing agents on small chips or fines.

DO NOT use water for fires involving molten metal.

Fire Fighting Equipment/Instructions

Fire fighters should wear full face, self contained breathing apparatus and protective clothing. Avoid inhalation of combustion product. Avoid creation of dusts.

Section 6 – Accidental Release Measures

Containment: Avoid dust formation and collection. Remove sources of ignition.

Clean Up: In the event of dust or small particle formation and collection; shovel the material into waste container. Remove all sources of ignition. Use non sparking tools. Do not flush into surface water or sanitary sewer.

Personnel Precautions: Isolate area. Keep unnecessary personnel away from cleanup.

Wear appropriate PPE.

Section 7 – Handling and Storage

Handling Procedures:

Wear protective equipment when handling to prevent unprotected skin contact with sharp edges of material. Heated aluminum does not look different than cold aluminum. Do not touch without knowledge of temperature. Always take precautions when handling dusts and powders from this product. Keep area well ventilated, use non sparking tools and keep away from ignition sources.

Storage Procedures:

Keep dust and/or powders from this material in tightly closed container in a dry and well-ventilated place.

Section 8 – Exposure Controls/Personal Protection

Consult local authorities for acceptable exposure limits.

Aluminum (7429-90-5)

ACGIH: 10 mg/m³ TWA (metal dust)₂
OSHA: 15 mg/m³ TWA (total dust); 5 mg/m³ TWA (respirable fraction)
CAL-OSHA: 10 mg/m³ TWA (total dust); 5 mg/m³ TWA (respirable fraction)
NIOSH: 10 mg/m³ TWA (total dust); 5 mg/m³ TWA (respirable fraction)

Silicon (7440-21-3)

OSHA: 15 mg/m³ TWA (total dust); 5 mg/m³ TWA (respirable fraction)
CAL-OSHA: 10 mg/m³ TWA (total dust); 5 mg/m³ TWA (respirable fraction)
NIOSH: 10 mg/m³ TWA (total dust); 5 mg/m³ TWA (respirable fraction)

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)
CAL-OSHA: 5 mg/m³ TWA, 10 mg/m³ STEL (related to Zinc oxide fume)
10 mg/m³ TWA (total dust); 5 mg/m³ TWA (respirable fraction)
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)

Copper (7440-50-8)

ACGIH: 0.2 mg/m³ TWA (fume); 1 mg/m³ TWA (dust and mist, as Cu)
OSHA/CAL-OSHA: 0.1 mg/m³ TWA (fume), 1.0 mg/m³ (dust and mist)
NIOSH: 1 mg/m³ TWA (dust and mist); 0.1 mg/m³ (respirable fume)

Magnesium (1309-48-4)

ACGIH: 10 mg/m³ TWA (inhalable fraction) (related to Magnesium oxide)
OSHA: 10 mg/m³ TWA (total particulate) (related to Magnesium oxide fume)
CAL-OSHA: 10 mg/m³ TWA (fume)

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)
CAL-OSHA: 5 mg/m³ TWA (fume) (related to Iron oxide)
NIOSH: 5 mg/m³ TWA (dust and fume, as Fe) (related to Iron oxide)

Manganese (7439-96-5)

ACGIH: 0.2 mg/m³ TWA
OSHA: 5 mg/m³ Ceiling (Mn fume and Mn compounds)
CAL-OSHA: 0.2 mg/m³ (Mn fume and Mn compounds)
NIOSH: 1 mg/m³ TWA (Mn fume and Mn compounds)
3 mg/m³ STEL (Mn fume and Mn compounds)

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)
CAL-OSHA: 50 µg/m³ TWA (as Pb); 30 µg/m³ Action Level (see GISO, Title 8, Section 5198)
NIOSH: 0.05 mg/m³ TWA; Blood lead level <0.06mg/100 ml of whole blood

Chromium (7440-47-3)

ACGIH: 0.5 mg/m³ TWA
OSHA: 1 mg/m³ TWA
CAL-OSHA: 0.5 mg/m³ TWA
NIOSH: 0.5 mg/m³ TWA

Nickel (7440-02-0)

ACGIH: 1.5 mg/m³ TWA (inhalable fraction)
OSHA: 1 mg/m³ TWA
NIOSH: 0.015 mg/m³ TWA

Engineering Controls: Use exhaust ventilation where feasible.

Personal Protective Equipment:

Safety glasses with side shields

Gloves suitable for process

NIOSH approved respirator if ventilation is not sufficient to control exposure.

Appropriate skin and body covering for task

Section 9 – Physical and Chemical Properties

Appearance: Solid metallic pieces, gray or silver

Physical State: Solid

Vapor Pressure: ND

Melting Point: 950 – 1215 F (510 – 660 C)

Solubility (water): < 1 %

Upper Flammability Limit: NA

Evaporation Rate: ND

Auto ignition Temp: NA

Odor: None

pH: NA

Vapor density: ND

Boiling Point: NA

Flash Point: NA

Density: .097 - .103 #/cu in

Octanol/H₂O Coefficient: ND

Specific Gravity: 2.64 – 2.84

Section 10 – Chemical Stability and Reactivity Information

Aluminum Alloys are stable under normal condition of use, storage and transport.

Conditions to Avoid:

Dust and powder formation and collection during processing. With dust and powder, avoid heat, flames and sparks. Do not mix with water. Will react with acids and alkalis and some halogenated organic compounds especially at higher temperatures. May release hydrogen gas with reactions, which is highly flammable. Chlorinated solvent may release hydrogen chloride gas, which is toxic and corrosive.

Decomposition of product may yield metallic oxides and toxic fumes. Decomposition of coating oil will release carbon monoxide, carbon dioxide and other hydrocarbon species.

Hazardous Reactions will not occur.

Section 11 – Toxicological Information

Aluminum alloys in solid form do not present any acute health effects.

Acute Toxicity of Components

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 flulike illness generally lasting 24 hours or less.

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

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.

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.

Component Analysis – LD50/LC50

Silicon (7440-21-3):	Oral LD50 Rat: 3160 mg/kg
Zinc (7440-66-6):	Oral LD50 Rat: >5000 mg/kg (related to Zinc oxide)
Magnesium (7439-95-4):	Oral LD50 Rat: 230 mg/kg
Iron (7439-89-6):	Oral LD50 Rat: 984 mg/kg:
Manganese (7439-96-5):	Oral LD50 Rat: 9 g/kg

Carcinogenicity

No Carcinogenicity data available for aluminum alloy wire and rod

Component Carcinogenicity

Aluminum (7429-90-5):	ACGIH: A4 - Not Classifiable as a Human Carcinogen (related to Magnesium oxide)
Magnesium (7439-95-4):	ACGIH: A4 - Not Classifiable as a Human Carcinogen (related to Magnesium oxide)
Iron (7439-89-6):	ACGIH: A4 - Not Classifiable as a Human Carcinogen (dust and fume) (related to Iron oxide) IARC: Supplement 7 [1987], Monograph 1 [1972] (related to Ferric oxide) (Group 3 (not classifiable))
Lead (7439-92-1):	ACGIH: A3 - Confirmed animal carcinogen with unknown relevance to humans OSHA: 50 µg/m ³ TWA (as Pb); 30 µg/m ³ 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))
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))

Reproductive Toxicity

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

General Product Information

No data available for this product. Coating oils may present an environmental hazard to aquatic and terrestrial flora and fauna.

Component Analysis - Ecotoxicity - Aquatic Toxicity

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
Coating Oil (64771-72-8):	Test & Species Conditions 96 Hr LC50 Pimephales promelas >5000 mg/L
Lead (7439-92-1):	Test & Species Conditions 96 Hr LC50 Pimephales promelas 6.5 mg/L 48 Hr EC50 water flea 600 µg/L

Environmental Fate

No data available for this product.

Section 13 – Disposal Considerations

Product is not classified as a hazardous waste if disposed. Always dispose of in accordance with local/regional/state/national/international regulations

Reuse or Recycle whenever possible.

Section 14 – Transportation Information

Aluminum and aluminum alloys in solid form are not regulated for transportation.

Section 15 – Regulatory Information

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

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.

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)

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:** No

State Regulations

General Product Information

Other state regulations may apply. Check individual state requirements.

Aluminum and its alloys 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.

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
Iron (¹ related to Iron oxide) (² related to Iron oxide fume)	7439-89-6	Yes	Yes ¹	Yes ²	Yes ¹	Yes ¹	Yes ¹
Zinc (¹ related to Zinc oxide)	7440-66-6	Yes	Yes	Yes ¹	Yes	Yes	Yes
Copper	7440-50-8	Yes	Yes	Yes	Yes	Yes	Yes
Manganese	7439-96-5	Yes	Yes	Yes	Yes	Yes	Yes
Magnesium (¹ related to Magnesium oxide fume)	7439-95-4	Yes	Yes	Yes ¹	Yes	Yes	Yes
Chromium	7440-47-3	Yes	Yes	Yes	Yes	Yes	Yes
Lead	7439-92-1	Yes	Yes	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.

Canadian WHMIS Information

General Product Information

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

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 %
Iron	7439-89-6	1 % (related to Ferric oxide)
Zinc	7440-66-6	1 % (related to Zinc oxide)
Copper	7440-50-8	1 %
Manganese	7439-96-5	1 %
Magnesium	7439-95-4	1 % (related to Magnesium oxide)
Chromium	7440-47-3	0.1 %
Lead	7439-92-1	0.1 %

WHMIS Classification:

Class D2A: Very Toxic Material

Class D2B: Eye and skin irritation (If dusts are formed)

Additional Regulatory Information

General Product Information

No additional information available.

Component Analysis - Inventory

Component	CAS #	TSCA	CAN	EEC
Aluminum	7429-90-5	Yes	DSL	EINECS
Silicon	7440-21-3	Yes	DSL	EINECS
Iron	7439-89-6	Yes	DSL	EINECS
Zinc	7440-66-6	Yes	DSL	EINECS
Copper	7440-50-8	Yes	DSL	EINECS
Manganese	7439-96-5	Yes	DSL	EINECS
Magnesium	7439-95-4	Yes	DSL	EINECS
Bismuth	7440-69-9	Yes	DSL	EINECS
Coating Oil	64771-72-8	Yes	DSL	EINECS
Chromium	7440-47-3	Yes	DSL	EINECS
Lead	7439-92-1	Yes	DSL	EINECS

Section 16 – 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.

Beneke Wire Company Safety Data Sheet, Revision A: 6/15/2015