



Material Safety Data Sheet

Product Name: COPPER WIRE, UNINSULATED

ID: 1015

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

Product Use: Automotive wiring; Electrical wire

Other Designations: Copper wire, single and multiple strand construction, bare and tin and/or lead coated

Alcoa Inc.
201 Isabella Street
Pittsburgh, PA 15212-5858

Phone: Health and Safety: 1-412-553-4649

Manufacturer/Supplier

Alcoa Fujikura Ltd.
AFL Wire Products
P.O. Box 90208
Nashville, TN 37209-0208

Phone: +1-615-363-6803

Emergency Information:

USA: Chemtrec: 1-800-424-9300 or 1-703-527-3887

Alcoa: 1-412-553-4001

Website:

For a current MSDS, refer to Alcoa websites: www.alcoa.com or Internally at my.alcoa.com EHS Community

*** Section 2 - Composition / Information on Ingredients ***

Complete composition is provided below and may include some components classified as non-hazardous.

CAS #	Component	Percent
7440-50-8	Copper	90-100
7439-92-1	Lead	0-10
7440-31-5	Tin	0-10

*** Section 3 - Hazards Identification ***

EMERGENCY OVERVIEW

Solid. Reddish brown color. Odorless. Non-combustible as supplied.

Explosion/fire hazards may be present when (See Sections 5, 7 or 10 for additional information):

* Heavily concentrated dust clouds are dispersed in the air.

* Molten metal is in contact with water/moisture.

Dust and fume from processing can cause irritation of eyes, skin and upper respiratory tract and metal fume fever.

POTENTIAL HEALTH EFFECTS

(If dusts or fumes are generated by processing)

Eyes

Can cause irritation.

Skin

Can cause irritation and discolorations.

Ingestion

May be harmful if swallowed.

Inhalation

Can cause irritation of upper respiratory tract, metal fume fever and other health effects listed below. Cancer and reproductive hazard.

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Health Effects of Ingredients

Copper dust and mists Can cause irritation of eyes, mucous membranes, skin and respiratory tract. Chronic overexposures: Can cause reduction in the number of red blood cells (anemia), skin abnormalities (pigmentation changes) and hair discoloration. **Copper fume** Can cause irritation of eyes, mucous membranes and respiratory tract. Acute overexposures: Can cause nausea, fever, chills, shortness of breath and malaise (metal fume fever).

Lead dust or fume Can cause irritation of eyes and upper respiratory tract. Acute overexposures: Can cause nausea and muscle cramps. Chronic overexposures: Can cause weakness in the extremities (peripheral neuropathy), abdominal cramps and other gastrointestinal tract effects, kidney damage, liver damage, central nervous system damage, damage to blood forming organs, blood cell damage and reproductive harm. Can cause reduced fertility and fetal toxicity in pregnant women. IARC/NTP: Listed as possibly carcinogenic to humans by IARC (Group 2B)*.

Tin (dust and fume) Chronic overexposures: Can cause benign lung disease (stannosis).

Some products are supplied with a lubricant/oil coating or have residual oil from the manufacturing process.

Oil vapor and mist Can cause irritation of respiratory tract. Acute overexposures: Can cause bronchitis, asthma, headache, central nervous system effects (nausea, dizziness and loss of coordination) and drowsiness (narcosis).

*IARC Classification Definitions

Group 2B: The agent is possibly carcinogenic to humans. Generally includes agents for which there is limited evidence in humans and less than sufficient evidence in experimental animals.

Medical Conditions Aggravated By Exposure to the Product and/or Components

Dust or fume from processing: Asthma, chronic lung disease, and skin rashes.

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

First Aid: Eyes

Dust or fume from processing: Flush eyes with plenty of water or saline for at least 15 minutes. Consult a physician.

First Aid: Skin

Dust or fume from processing: Wash skin with soap and water for at least 15 minutes. Consult a physician if irritation persists.

First Aid: Ingestion

Dust or fume from processing: If swallowed, dilute by drinking large amounts of water. Recommend quantities up to 30 mL (~1 oz.) in children and 250 mL (~9 oz.) in adults. *Never give anything by mouth to a convulsing or unconscious person.* Do **not** induce vomiting. Consult a physician immediately.

First Aid: Inhalation

Dust or fume from processing: Remove to fresh air. If unconscious or severely injured, check for clear airway, breathing and presence of pulse. Perform CPR if there is no pulse or respiration. Consult a physician.

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

Flammable/Combustible Properties

This product does not present fire or explosion hazards as shipped. Dust and fines may be readily ignitable.

Fire/Explosion

Heavily concentrated dust clouds generated during processing may be explosive if subjected to a strong ignition source.

Extinguishing Media

Use Class D extinguishing agents on dusts, fines or molten metal. Otherwise, use fire fighting methods and materials that are appropriate for surrounding fire.

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Unsuitable Extinguishing Media

DO NOT USE:

- * Halogenated agents on dust or fines.
- * Water around molten metal.

Fire Fighting Equipment/Instructions

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

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

Small/Large Spill: Collect scrap for recycling. Wear appropriate personal protective equipment.

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

Handling/Storage

Avoid contact with sharp or pointed wires. Avoid generating dust. Provide adequate ventilation if dust is formed.

Requirements for Remelting Scrap Material

Molten metal and water can be an explosive combination. The risk is greatest when there is sufficient molten metal to entrap or seal off the water. Water and other forms of contamination on or contained in scrap are known to have caused explosions in melting operations. While the products may have minimal surface roughness and internal voids, there remains the possibility of moisture contamination or entrapment. If confined, even a few drops of water can lead to violent explosions.

During melting operations, the following minimum guidelines should be observed:

- * Inspect all materials prior to furnace charging and completely remove surface contamination such as water, ice, snow, deposits of grease and oil or other surface contamination resulting from weather exposure, shipment, or storage.
- * Store materials in dry, heated areas with any cracks or cavities pointed downwards.
- * Preheat and dry large or heavy items adequately before charging into a furnace containing molten metal. This is typically done by use of a drying oven or homogenizing furnace. The drying cycle should bring the internal metal temperature of the coldest item of the batch to 400°F and then hold at that temperature for 6 hours.

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

Engineering Controls

If dust or fumes are generated through processing: Use with adequate ventilation to meet the limits listed in Section 8, Exposure Guidelines.

Personal Protective Equipment

Respiratory Protection

If dust or fumes are generated through processing: Use NIOSH-approved respiratory protection as specified by an Industrial Hygienist or other qualified professional if concentrations exceed the limits listed in Section 8, Exposure Guidelines. Suggested respiratory protection: P100, (lead)

Eye Protection: Wear safety glasses/goggles to avoid eye injury.

Skin Protection

Wear impervious gloves to avoid repeated or prolonged skin contact with residual oils and to avoid any skin injury.

General

Sampling to establish **lead** exposures is advised where exposures to airborne particulate or fumes are possible. Consult OSHA Lead Standard 29 CFR 1910.1025 for specific health/industrial hygiene precautions and requirements to follow when handling lead compounds.

If the product is coated with **oil**, wear oil-resistant gloves to avoid skin contact. Minimize breathing oil vapors and mist. Remove oil contaminated clothing; launder or dry-clean before reuse. Remove oil contaminated shoes and thoroughly clean and dry before reuse. Cleanse skin thoroughly after contact, before breaks and meals, and at the end of the work period. Oil coating is readily removed from skin with waterless hand cleaners followed by a thorough washing with soap and water.

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Exposure Guidelines

A: General Product Information

Alcoa recommends an Occupational Exposure Limit for Oil Mist of 0.5 mg/m3 TWA.

B: Component Exposure Limits

Copper (7440-50-8)

ACGIH 0.2 mg/m3 TWA (fume); 1 mg/m3 TWA (dust and mist, as Cu)

OSHA 0.1 mg/m3 TWA (fume); 1 mg/m3 TWA (dusts and mists)

Lead (7439-92-1)

ACGIH 0.05 mg/m3 TWA

OSHA 50 µg/m3 PEL (as Pb); 30 µg/m3 Action Level (as Pb. Poison - see 29 CFR 1910.1025)

Tin (7440-31-5)

ACGIH 2 mg/m3 TWA

OSHA 2 mg/m3 TWA

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

Physical State: Solid

Boiling Point: 4703°F (2595°C)

Vapor Pressure: Not applicable

Solubility in Water: Not soluble

Density: 0.323 lb/in3 (8.94 g/cm3)

Odor: Odorless

Octanol-Water Coefficient: Not applicable

Appearance: Reddish brown

Melting Point: 1981°F (1083°C)

Vapor Density: Not applicable

Specific Gravity: See Density

pH Level: Not applicable

Odor Threshold: Not applicable

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

Stability

Stable under normal conditions of use, storage, and transportation as shipped.

Conditions to Avoid

Molten metal can react violently/explosively with water or moisture, particularly when the water is entrapped.

Incompatibility

Reacts with chlorine, fluorine, acetylene and strong acids, bases and oxidizers.

Hazardous Decomposition

No known hazardous decomposition products.

*** Section 11 - Toxicological Information ***

Health Effects of Ingredients

A: General Product Information

No information available for product.

B: Component Analysis - LD50/LC50

No LD50/LC50's are available for this product's components.

Carcinogenicity

A: General Product Information

No information available for product.

B: Component Carcinogenicity

Lead (7439-92-1)

ACGIH A3 - Confirmed animal carcinogen with unknown relevance to humans

IARC Supplement 7, 1987; Monograph 23, 1980 (Evaluated as a group)

NTP Reasonably Anticipated To Be A Carcinogen

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*** Section 12 - Ecological Information ***

Ecotoxicity

A: General Product Information

No information available for product.

B: Component Analysis - Ecotoxicity - Aquatic Toxicity

Copper (7440-50-8)

96 Hr LC50 fathead minnow: 23 µg/L; 96 Hr LC50 rainbow trout: 13.8 µg/L; 96 Hr LC50 bluegill: 236 µg/L

72 Hr EC50 freshwater algae (*Scenedesmus subspicatus*): 120 µg/L

96 Hr LC50 water flea: 10 µg/L; 96 Hr LC50 water flea: 200 µg/L

Lead (7439-92-1)

96 Hr LC50 brook trout: 4.1 mg/L; 96 Hr LC50 fathead minnow: 6.5 mg/L

48 Hr LC50 water flea: 600 µg/L

Environmental Fate

No information available for product.

*** Section 13 - Disposal Considerations ***

Disposal Instructions

Reuse or recycle material whenever possible.

US EPA Waste Number & Descriptions

A: General Product Information

If reuse or recycle is not possible, then characterize in accordance with applicable regulations (40 CFR 261 or state equivalent in the U.S.) prior to disposal. TCLP leachate testing is recommended for lead.

B: Component Waste Numbers

RCRA waste codes other than described under Section A may apply depending on use of product. Refer to 40 CFR 261 or state equivalent in the U.S.

*** Section 14 - Transportation Information ***

Special Transportation

	PSN #1	PSN #2	PSN #3	PSN #4
Notes:	(1)	(2)(3)	(4)	
Proper Shipping Name:	Not regulated	Hazardous waste, solid, n.o.s.	Environmentally hazardous substances, solid, n.o.s.	
Hazard Class:	-	9	9	
UN NA Number:	-	NA 3077	UN 3077	
Packing Group:	-	III	III	
RQ:	-	RQ	-	
Other - Tech Name:	-	(D008)	(lead)	
Other - Marine Pollutant:	-	-	-	

Notes:

- (1) When "Not regulated," enter the proper freight classification, "MSDS Number," and "Product Name" on the shipping paperwork.
- (2) Classification applies in the domestic U.S. when a hazardous waste meeting the TLCP criteria for lead.
- (3) Delete "RQ" for packages less than 10 lbs.
- (4) Classification applies in Canada when (a) intended for disposal and (b) meeting the leachate criteria of greater than 5 mg/L for lead.

Canadian TDG Hazard Class & PIN:	PSN #1: Not regulated; PSN #2: Not applicable; PSN #3: 9, UN 3077
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*** Section 15 - Regulatory Information ***

US Federal Regulations

A: General Product Information

In reference to Title VI of the Clean Air Act of 1990, this material does not contain nor was it manufactured using ozone-depleting chemicals.

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).

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)

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)

SARA 311/312 Physical and Health Hazard Categories:

Immediate (acute) Health Hazard: Yes, if particulates/fumes generated during processing

Delayed (chronic) Health Hazard: Yes, if particulates/fumes generated during processing

Fire Hazard: No

Sudden Release of Pressure: No

Reactive: No

State Regulations

A: General Product Information

Chemical(s) known to the State of California to cause cancer: Lead.

Chemical(s) known to the State of California to cause reproductive toxicity: Lead.

B: 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
Copper	7440-50-8	Yes	No	Yes	Yes	Yes	Yes
Lead	7439-92-1	Yes	No	Yes	Yes	Yes	Yes
Tin	7440-31-5	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.

Other Regulations

A: General Product Information

Material meets the criteria for inclusion in WHMIS Class D2A and D2B.

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B: Component Analysis - WHMIS IDL

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

Component	CAS #	Minimum Concentration
Copper	7440-50-8	1 %
Lead	7439-92-1	0.1 %
Tin	7440-31-5	1 %

C: Component Analysis - Inventory

Component	CAS #	TSCA	DSL	EINECS	AUST.	MITI
Copper	7440-50-8	Yes	Yes	Yes	Yes	No
Lead	7439-92-1	Yes	Yes	Yes	Yes	Yes
Tin	7440-31-5	Yes	Yes	Yes	Yes	No

MITI Inventory: Pure metals are not specifically listed by CAS or MITI number on the MITI Inventory. However, the class of compounds for each of these metals is listed.

* * * Section 16 - Other Information * * *

MSDS History

Original: August 12, 1998
Supersedes: July 19, 2002
Revised: October 7, 2005

MSDS Status

10/07/05: Reviewed on a periodic basis in accordance with Alcoa policy.
Changes in Sections 1, 3, 4, 5, 6, 7, 8, 10, 12, 13, 14 and 15.

Prepared By

Hazardous Materials Control Committee
Preparer: Jon N. Peace, 412-553-2293

MSDS System Number

148731

Other Information

- * Guide to Occupational Exposure Values-2005, Compiled by the American Conference of Governmental Industrial Hygienists (ACGIH).
- * Documentation of the Threshold Limit Values and Biological Exposure Indices, Sixth Edition, 1991, Compiled by the American Conference of Governmental Industrial Hygienists, Inc. (ACGIH).
- * NIOSH Pocket Guide to Chemical Hazards, U.S. Department of Health and Human Services, February 2004.
- * Patty's Industrial Hygiene and Toxicology: Volume II: Toxicology, 4th ed., 1994, Patty, F. A.; edited by Clayton, G. D. and Clayton, F. E.: New York: John Wiley & Sons, Inc.
- * Integrated Index(R), MICROMEDEX, Inc., 2005

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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
CPR	Cardio-pulmonary Resuscitation
DOT	Department of Transportation
DSL	Domestic Substances List (Canada)
EC	Effective Concentration
ED	Effective Dose
EINECS	European Inventory of Existing Commercial Chemical Substances
EPA	Environmental Protection Act
IARC	International Agency for Research on Cancer
LC ₅₀	Lethal concentration (50 percent kill)
LC _{Lo}	Lowest published lethal concentration
LD ₅₀	Lethal dose (50 percent kill)
LD _{Lo}	Lowest published lethal dose
LFL	Lower Flammable Limit
MITI	Ministry of International Trade & Industry
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OEL	Occupational Exposure Limit
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
PIN	Product Identification Number
PSN	Proper Shipping Name
RCRA	Resource Conservation and Recovery Act
SARA	Superfund Amendments and Reauthorization Act
STEL	Short Term Exposure Limit
TCLP	Toxic Chemicals Leachate Program
TDG	Transportation of Dangerous Goods
TLV	Threshold Limit Value
TSCA	Toxic Substance Control Act
TWA	Time Weighted Average
UFL	Upper Flammable Limit
WHMIS	Workplace Hazardous Materials Information System
atm	atmosphere
cm	centimeter
g, gm	gram
in	inch
kg	kilogram
lb	pound
m	meter
mg	milligram
ml, ML	milliliter
mm	millimeter
mppcf	million particles per cubic foot
n.o.s.	not otherwise specified
ppb	parts per billion
ppm	parts per million
psia	pounds per square inch absolute
u	micron
ug	microgram

INFORMATION HEREIN IS GIVEN IN GOOD FAITH AS AUTHORITATIVE AND VALID; HOWEVER, NO WARRANTY, EXPRESS OR IMPLIED, CAN BE MADE.

This is the end of MSDS # 1015

COPPER WIRE, UNINSULATED



CAUTION

Hazards: NOT HAZARDOUS UNDER NORMAL CONDITIONS OF USE.

If dusts or fumes are generated during recycling or processing (e.g., heating, welding):

Dust or fumes can cause irritation of the eyes, skin and upper respiratory tract.

Overexposure to fumes (fine dusts) of copper may cause metal fume fever by inhalation. Chronic overexposure to copper may cause skin and hair discolorations and blood disorders (anemia).

Overexposures to lead dusts or fumes (fine dusts), by inhalation or ingestion, can cause reproductive harm and damage to the blood cells, liver, kidneys, and central nervous system.

Chronic overexposure to tin dust or fume can cause a benign lung disease (stannosis).

WARNING: Lead is a chemical known to the State of California to cause cancer and reproductive toxicity. (Proposition 65).

Precautions: Use with adequate ventilation when processing. Avoid generating dusts. When processing, wear safety glasses and appropriate gloves to avoid eye and skin injury. Wear appropriate respiratory protection (P100) if concentrations exceed the permissible limits.

First Aid (if dusts or fumes are generated): EYES: Flush eyes with plenty of water or saline for at least 15 minutes. Consult a physician. SKIN: Wash with soap and water for at least 15 minutes. Consult a physician if irritation persists. INHALATION: Remove to fresh air. Check for clear airway, breathing, and presence of pulse. Provide CPR for persons without pulse or respirations. Consult a physician. INGESTION: If swallowed, dilute by drinking large amounts of water. Recommend quantities up to 30 mL (~1 oz.) in children and 250 mL (~9 oz.) in adults. *Never give anything by mouth to a convulsing or unconscious person.* Do **not** induce vomiting. Consult a physician immediately.

Read Alcoa Material Safety Data Sheet No. 1015 for more information about use and disposal.

Emergency Phone: (412) 553-4001

INGREDIENTS:	CAS NUMBERS:
Copper	7440-50-8
Lead	7439-92-1
Tin	7440-31-5

Alcoa Inc.
201 Isabella Street, Pittsburgh, PA 15212-5858 USA

10/05 1015

