

According to Federal Register / Vol 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 1: IDENTIFICATION

1.1. Product Identifier

Product Form: Mixture

Product Name: Copper Aluminum

Synonyms: Cu Al

1.2. Intended Use of the Product

Use of the Substance/Mixture: No use is specified.

1.3. Name, Address, and Telephone of the Responsible Party

Stanford Advanced Materials

Address : 23661 Birtcher Dr.,

Lake Forest, CA 92630 U.S.A.

Tel: (949) 407-8904

1.4. Emergency Telephone Number

Emergency Number : (949) 407-8904

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the Substance or Mixture

Classification (GHS-US)

Not classified

2.2. Label Elements

GHS-US Labeling No labeling applicable

2.3. Other Hazards

This product is present in a massive form as an alloy. It does not present the same hazards when the individual components are in their powdered forms. The materials present in this product in their powdered forms present aquatic toxicity to the environment, pyrophoricity, flammability, self-heating capabilities, carcinogenicity, water reactivity, and acute toxicity. When processed or where dust is generated a combustible dust hazard may be present. Avoid generating dust, generating sparks, ignition sources, and take all precautions.

Inhalation of dusts and fumes can cause metal fume fever. Symptoms can include a metallic or sweet taste in the mouth, sweating, shivering, headache, throat irritation, fever, chills, thirstiness, muscle aches, nausea, vomiting, weakness, fatigue, and shortness of breath.

Under normal use and handling of the solid form of this material there are few health hazards. Cutting, welding, melting, grinding etc. of these materials will produce dust, fume or particulate containing the component elements of these materials. Exposure to the dust, fume or particulate of these materials may present significant health hazards. Exposure to dust or fume may cause irritation of the eyes, skin and respiratory tract. Fine particulates dispersed in air may present an explosion hazard.

2.4. Unknown Acute Toxicity (GHS-US) No data available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Not applicable

Name	Product Identifier	% (w/w)	Classification (GHS-US)
Aluminum	(CAS No) 7429-90-5	48-52	Comb. Dust Flam. Sol. 1, H228 Water-react. 2, H261

According to Federal Register / Vol 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Copper	(CAS No) 7440-50-8	48-52	Comb. Dust Aquatic Acute 1, H400 Aquatic Chronic 3, H412
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Full text of H-phrases: see section 16

More than one of the ranges of concentration prescribed by Controlled Products Regulations has been used where necessary due to varying composition.

SECTION 4: FIRST AID MEASURES

4.1. Description of First Aid Measures

General: IF exposed or concerned: Get medical advice/attention. Never give anything by mouth to an unconscious person.

Inhalation: When symptoms occur: go into open air and ventilate suspected area. Keep at rest and in a position comfortable for breathing. Obtain medical attention if breathing difficulty persists.

Skin Contact: Cool skin rapidly with cold water after contact with molten product. Removal of solidified molten material from skin requires medical assistance. Remove contaminated clothing. Drench affected area with water for at least 15 minutes. Wash with plenty of soap and water. Wash contaminated clothing before reuse. Obtain medical attention if irritation persists.

Eye Contact: Removal of solidified molten material from the eyes requires medical assistance. Immediately rinse with water for a prolonged period (at least 15 minutes) while holding the eyelids wide open. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention if irritation develops or persists.

Ingestion: Rinse mouth. Do NOT induce vomiting. Call a POISON CENTER/doctor/physician if you feel unwell.

4.2. Most Important Symptoms and Effects Both Acute and Delayed

General: Welding, cutting, or processing this material may release dust or fumes that are hazardous.

Inhalation: Inhalation of dusts and fumes can cause metal fume fever. Symptoms can include a metallic or sweet taste in the mouth, sweating, shivering, headache, throat irritation, fever, chills, thirstiness, muscle aches, nausea, vomiting, weakness, fatigue, and shortness of breath.

Skin Contact: May cause an allergic skin reaction. Dust from physical alteration of this product causes skin irritation. Causes severe skin burns. Contact with fumes or metal powder will irritate skin. Contact with hot, molten metal will cause thermal burns. Dust may cause irritation in skin folds or by contact in combination with tight clothing. Mechanical damage via flying particles and chipped slag is possible.

Eye Contact: Dust may cause mechanical irritation to eyes, nose, throat, and lungs.

Ingestion: Ingestion is likely to be harmful or have adverse effects.

Chronic Symptoms: The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed If exposed or concerned, get medical advice and attention.

SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing Media

Suitable Extinguishing Media: Use extinguishing media appropriate for surrounding fire. Dry sand; Class D Extinguishing Agent (for metal powder fires).

Unsuitable Extinguishing Media: Do not use a heavy water stream. Use of heavy stream of water may spread fire. Do not use water when molten material is involved, may react violently or explosively on contact with water.

According to Federal Register / Vol 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

5.2. Special Hazards Arising From the Substance or Mixture

Fire Hazard: A non-combustible material, not considered flammable but will melt above 1470F (800C).

Explosion Hazard: In molten state: reacts violently with water (moisture).

Reactivity: Hazardous reactions will not occur under normal conditions.

5.3. Advice for Firefighters

Precautionary Measures Fire: Under fire conditions, hazardous fumes will be present.

Firefighting Instructions: Exercise caution when fighting any chemical fire.

Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

Hazardous Combustion Products: Oxides of copper. Oxides of aluminum.

Reference to Other Sections Refer to section 9 for flammability properties.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Do not handle until all safety precautions have been read and understood. Do not breathe vapors from molten product.

6.1.1. For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).

Emergency Procedures: Evacuate unnecessary personnel.

6.1.2. For Emergency Personnel

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Ventilate area.

6.2. Environmental Precautions

Prevent entry to sewers and public waters.

6.3. Methods and Material for Containment and Cleaning Up

For Containment: Contain and collect as any solid.

Methods for Cleaning Up: Clear up spills immediately and dispose of waste safely. For particulates and dust: Avoid actions that cause dust to become airborne during clean-up such as dry sweeping or using compressed air. Use HEPA vacuum or thoroughly wet with water to clean-up dust. Use PPE described in Section 8. Vacuum must be fitted with HEPA filter to prevent release of particulates during clean-up.

6.4. Reference to Other Sections

See heading 8, Exposure Controls and Personal Protection. Concerning disposal elimination after cleaning, see item 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for Safe Handling

Additional Hazards When Processed: May generate flammable/explosive dusts or turnings when brushed, machined or ground. Use care during processing to minimize generation of dust. Where excessive dust may result, use approved respiratory protection equipment. Heating of product can release toxic or irritating fumes; ensure proper ventilation is employed, proper precautions are enforced, and applicable regulations are followed. Inhalation of fumes may cause metal fume fever.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work. Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse.

7.2. Conditions for Safe Storage, Including Any Incompatibilities

Storage Conditions: Store in a dry, cool and well-ventilated place.

According to Federal Register / Vol 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Incompatible Materials: Strong acids, strong bases, strong oxidizers. Alkalis. Metal oxides. Water, humidity. Corrosive substances in contact with metals may produce flammable hydrogen gas.

7.3. Specific End Use(s)

No use is specified.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control Parameters

For substances listed in section 3 that are not listed here, there are no established Exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), NIOSH (REL), OSHA (PEL), Canadian provincial governments, or the Mexican government.

	OSHA/PEL	NIOSH/REL	ACGIH/TWA	IDLH
Aluminum (7429-90-5)	15 mg/m ³ (total dust) 0.1 5 mg/m ³ (respirable fraction)	10 mg/m ³ (total dust) 5.695 mg/m ³ (respirable dust)	1 mg/m ³ (respirable fraction)	
Copper (7440-50-8)	0.2 mg/m ³ (fume) 1 mg/m ³ (dust and mist)	5.70mg/m ³ (fume) 1 mg/m ³ (dust and mist)	0.2 mg/m ³ (fume)	100 mg/m ³ (dust and fume)

8.2. Exposure Controls

Appropriate Engineering Controls: Use local exhaust or general dilution ventilation or other suppression methods to maintain dust levels below exposure limits. Power equipment should be equipped with proper dust collection devices. Ensure all national/local regulations are observed.

Personal Protective Equipment: Protective clothing. Gloves. Safety glasses. Dust formation: dust mask. Insufficient ventilation: wear respiratory protection.



Materials for Protective Clothing: Chemically resistant materials and fabrics. With molten material wear thermally protective clothing.

Hand Protection: Wear chemically resistant protective gloves. If material is hot, wear thermally resistant protective gloves.

Eye Protection: Chemical goggles or safety glasses.

Skin and Body Protection: Wear suitable protective clothing. Wash contaminated clothing before reuse.

Respiratory Protection: Use a NIOSH-approved respirator or self-contained breathing apparatus whenever exposure may exceed established Occupational Exposure Limits.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on Basic Physical and Chemical Properties

Physical State	: Solid
Appearance	: Metallic
Odor	: Odorless
Odor Threshold	: Not available
pH	: Not available
Evaporation Rate	: Not available
Melting Point	: 1100 - 1300 °F (593 - 704 °C)
Freezing Point	: Not available
Boiling Point	: Not available
Flash Point	: Not applicable

According to Federal Register / Vol 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Auto-ignition Temperature	: Not available
Decomposition Temperature	: Not available
Flammability (solid, gas)	: Not available
Lower Flammable Limit	: Not available
Upper Flammable Limit	: Not available
Vapor Pressure	: Not available
Relative Vapor Density at 20 °C	: Not available
Relative Density	: Not available
Specific Gravity	: 4-10
Solubility	: Insoluble in water
Partition Coefficient: N-octanol/water	: Not available
Viscosity	: Not available
Explosion Data – Sensitivity to Mechanical Impact	: Not expected to present an explosion hazard due to mechanical impact.
Explosion Data – Sensitivity to Static Discharge	: Not expected to present an explosion hazard due to static discharge.

SECTION 10: STABILITY AND REACTIVITY

- 10.1. Reactivity:** Hazardous reactions will not occur under normal conditions.
- 10.2. Chemical Stability:** Stable under recommended handling and storage conditions (see section 7).
- 10.3. Possibility of Hazardous Reactions:** Hazardous polymerization will not occur.
- 10.4. Conditions to Avoid:** Avoid creating or spreading dust. Sparks, heat, open flame and other sources of ignition.
- 10.5. Incompatible Materials:** When molten: water. Strong acids, strong bases, strong oxidizers. Alkalis. Metal oxides. Moisture. Corrosive substances in contact with metals may produce flammable hydrogen gas.
- 10.6. Hazardous Decomposition Products:** Oxides of iron and carbon. Organic acid vapors. Oxides of lead. Chromium (VI) compounds.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on Toxicological Effects - Product

Acute Toxicity: Not classified.

LD50 and LC50 Data: Not available

Skin Corrosion/Irritation: Not classified **Serious Eye Damage/Irritation:** Not classified

Respiratory or Skin Sensitization: Not classified. Not classified.

Germ Cell Mutagenicity: Not classified.

Teratogenicity: Not classified.

Carcinogenicity: Not classified.

Specific Target Organ Toxicity (Repeated Exposure): Not classified.

Reproductive Toxicity: Not classified.

Specific Target Organ Toxicity (Single Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/Injuries After Inhalation: Inhalation of dusts and fumes can cause metal fume fever. Symptoms can include a metallic or sweet taste in the mouth, sweating, shivering, headache, throat irritation, fever, chills, thirstiness, muscle aches, nausea, vomiting, weakness, fatigue, and shortness of breath.

According to Federal Register / Vol 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Symptoms/Injuries After Skin Contact: May cause an allergic skin reaction. Dust from physical alteration of this product causes skin irritation. Causes severe skin burns. Contact with fumes or metal powder will irritate skin. Contact with hot, molten metal will cause thermal burns. Dust may cause irritation in skin folds or by contact in combination with tight clothing. Mechanical damage via flying particles and chipped slag is possible.

Symptoms/Injuries After Eye Contact: Dust may cause mechanical irritation to eyes, nose, throat, and lungs.

Symptoms/Injuries After Ingestion: Ingestion is likely to be harmful or have adverse effects.

Chronic Symptoms: In massive form, no hazard exists. If physically altered to present slivers, ribbons, dusts or fumes from molten material:

Aluminum: Inhalation of finely divided aluminum powder may cause pulmonary fibrosis.

Copper: Overexposure to fumes may cause metal fume fever (chills, muscle aches, nausea, fever, dry throat, cough, weakness, lassitude); metallic or sweet taste; discoloration of skin and hair. Tissue damage of mucous membranes may follow chronic dust exposure.

Otherwise, zinc is non-toxic.

11.2. Information on Toxicological Effects - Ingredient(s)

LD50 and LC50 Data:

	LD50 Oral Rat	LD50 Inhalation Rat	ATE - US	IARC	NTP Status
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SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity No additional information available

Copper (7440-50-8)	
LC50 Fish 1	<= 0.0068 (0.0068 - 0.0156) mg/l (Exposure time: 96 h - Species: Pimephales promelas)
EC50 Daphnia 1	0.03 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
EC50 Other Aquatic Organisms 1	0.0426 (0.0426 - 0.0535) mg/l (Exposure time: 72 h - Species: Pseudokirchneriella subcapitata [static])
LC 50 Fish 2	0.3 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])
EC50 Other Aquatic Organisms 2	0.031 (0.031 - 0.054) mg/l (Exposure time: 96 h - Species: Pseudokirchneriella subcapitata [static])

Persistence and Degradability - Not readily biodegradable.

12.3.	Bioaccumulative Potential	N/A
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12.4. Mobility in Soil Not available

12.5. Other Adverse Effects

Other Information: Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste Treatment Methods: Recycle product or dispose properly.

Waste Disposal Recommendations: Dispose of waste material in accordance with all local, regional, national, and international regulations.

SECTION 14: TRANSPORT INFORMATION

14.1.	In Accordance with DOT	Not regulated for transport
14.2.	In Accordance with IMDG	Not regulated for transport
14.3.	In Accordance with IATA	Not regulated for transport
14.4.	In Accordance with TDG	Not regulated for transport

According to Federal Register / Vol 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 15: REGULATORY INFORMATION

	RTK - MA	RTK - NJ	RTK - PA	SARA 313 – Emission Reporting	Listed on TSCA Inventory
Aluminum (7429-90-5)	Yes	Yes	Environmental Hazard	1.0%	Yes
Copper (7440-50-8)	Yes	Yes	Environmental Hazard	1.0%	Yes

Prop 65 Info	Carcinogen	Developmental	Reproductive - Female	Reproductive - Male
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This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all of the information required by CPR.

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Revision Date : 3/20/2017

Other Information : This document has been prepared in accordance with the SDS requirements of the Stanford Advanced Materials



Safety Data Sheet

According to Federal Register / Vol 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Acute Tox. 1 (Inhalation:dust,mist)	Acute toxicity (inhalation:dust,mist) Category 1	STOT RE 1	Specific target organ toxicity (repeated exposure) Category 1
Acute Tox. 2 (Inhalation)	Acute toxicity (inhalation) Category 2	STOT RE 2	Specific target organ toxicity (repeated exposure) Category 2
Acute Tox. 2 (Inhalation:dust,mist)	Acute toxicity (inhalation:dust,mist) Category 2	Water-react. 2	Substances and mixtures which in contact with water emit flammable gases Category 2
Acute Tox. 2 (Oral)	Acute toxicity (oral) Category 2	H228	Flammable solid - May form combustible dust concentrations in air
Acute Tox. 3 (Inhalation:dust,mist)	Acute toxicity (inhalation:dust,mist) Category 3	H261	In contact with water releases flammable gases
Acute Tox. 3 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 3	H280	Contains gas under pressure; may explode if heated
Acute Tox. 4 (Inhalation:dust,mist)	Acute toxicity (inhalation:dust,mist) Category 4	H300	Fatal if swallowed
Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4	H302	Harmful if swallowed
Aquatic Acute 1	Hazardous to the aquatic environment - Acute Hazard Category 1	H314	Causes severe skin burns and eye damage
Aquatic Acute 3	Hazardous to the aquatic environment - Acute Hazard Category 3	H317	May cause an allergic skin reaction
Aquatic Chronic 1	Hazardous to the aquatic environment - Chronic Hazard Category 1	H318	Causes serious eye damage
Aquatic Chronic 3	Hazardous to the aquatic environment - Chronic Hazard Category 3	H319	Causes serious eye irritation
Carc. 1A	Carcinogenicity Category 1A	H330	Fatal if inhaled
Carc. 1B	Carcinogenicity Category 1B	H331	Toxic if inhaled
Carc. 2	Carcinogenicity Category 2	H332	Harmful if inhaled
Comb. Dust	Combustible Dust	H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled
Compressed gas	Gases under pressure Compressed gas	H340	May cause genetic defects
Eye Dam. 1	Serious eye damage/eye irritation Category 1	H341	Suspected of causing genetic defects
Eye Irrit. 2A	Serious eye damage/eye irritation Category 2A	H350	May cause cancer
Flam. Sol. 1	Flammable solids Category 1	H351	Suspected of causing cancer
Muta. 1B	Germ cell mutagenicity Category 1B	H360	May damage fertility or the unborn child
Muta. 2	Germ cell mutagenicity Category 2	H361	Suspected of damaging fertility or the unborn child
Repr. 1A	Reproductive toxicity Category 1A	H372	Causes damage to organs through prolonged or repeated exposure
Repr. 2	Reproductive toxicity Category 2	H373	May cause damage to organs through prolonged or repeated exposure
Resp. Sens. 1B	Respiratory sensitisation Category 1B	H400	Very toxic to aquatic life
Skin Corr. 1B	Skin corrosion/irritation Category 1B	H402	Harmful to aquatic life
Skin Sens. 1	Skin sensitization Category 1	H410	Very toxic to aquatic life with long lasting effects
		H412	Harmful to aquatic life with long lasting effects

Party Responsible for the Preparation of This Document

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This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.