SAFETY DATA SHEET

COPPER BRIDGE | ER316L — Stainless steel solid welding wire and rod

Conforms to GHS criteria and OSHA Hazard Communication Standard 29 CFR 1910.1200 SDS No.: 005-SS | Revision: 5-2018

SECTION 1 — IDENTIFICATION

Field	Information
Product identifier	Copper Bridge ER316L
Other identification	AWS A5.9 stainless steel filler metal; classification ER316L
Recommended use	Welding filler metal
Restrictions on use	Use only with qualified procedures, suitable base materials, ventilation, and protective equipment
Supplier	Copper Bridge LLC
Address	766 Palmyrita Ave, Suite A, Riverside, CA 92507, USA
Website	www.copperbridgeusa.com
Telephone	+1 909-619-3545
Emergency telephone	CHEMTREC US/Canada: +1 800-424-9300
Trade name	**Specification**
ER316L	AWS A5.9 stainless steel filler metal; classification ER316L

SECTION 2 — HAZARD IDENTIFICATION

OSHA GHS classification: Not Classified

Label elements: No pictogram; no signal word; hazard statements not applicable

Hazards not otherwise classified and hazards during use: Welding or brazing fumes, gases, arc radiation, hot metal, sparks, and electrical energy can present hazards during use

- Welding fumes and gases may be hazardous. Their composition depends on this wire, the base metal, coatings, shielding gas, process settings, ventilation, and contaminants in the work area.
- Short-term overexposure may cause eye, nose, and throat irritation, dizziness, nausea, or metal fume fever. Prolonged manganese fume exposure may damage the nervous system; prolonged iron oxide exposure may cause siderosis.
- Arc radiation can injure eyes and burn skin. Electric shock can kill. Hot metal, sparks, and slag can cause burns and ignite combustible materials.
- Shielding gases can displace oxygen, especially in confined spaces. Arc processes may form carbon monoxide, ozone, and nitrogen oxides.

Supplemental precautions: Read and understand the welding equipment instructions, this SDS, and workplace safety procedures. Keep the head out of fumes. Use local exhaust and general ventilation. Wear appropriate welding eye, face, hand, body, hearing, and respiratory protection. Remove combustibles and provide fire watch when required.

SECTION 3 — COMPOSITION / INFORMATION ON INGREDIENTS

Chemical nature: Product classification limits or family-SDS ingredient ranges; values are not lot test results

Component	CAS number	Weight percent	Function or note
Carbon	7440-44-0	0.03 max	Classification limit
Chromium	7440-47-3	18.0-20.0	Classification limit
Nickel	7440-02-0	11.0-14.0	Classification limit
Molybdenum	7439-98-7	2.0-3.0	Classification limit
Manganese	7439-96-5	1.0-2.5	Classification limit
Silicon	7440-21-3	0.30-0.65	Classification limit
Phosphorus	7723-14-0	0.03 max	Classification limit
Sulfur	7704-34-9	0.03 max	Classification limit
Copper	7440-50-8	0.75 max	Classification limit
Iron	7439-89-6	Balance	Balance

Composition note: Actual batch composition may vary within the stated limits. Welding fumes are not compositionally identical to the solid wire and may include metal oxides and constituents from the base metal and coatings.

SECTION 4 — FIRST-AID MEASURES

Inhalation: Move the affected person to fresh air. Keep at rest in a position comfortable for breathing. If breathing is difficult, trained personnel may administer oxygen. If breathing has stopped, begin CPR with a barrier device and obtain emergency medical assistance. Seek medical attention for persistent symptoms or suspected overexposure.

Eye contact: For particles or fume, rinse cautiously with clean water for at least 15 minutes, removing contact lenses if easy to do. Do not rub the eyes. For arc-flash symptoms or persistent irritation, obtain prompt medical evaluation.

Skin contact: Wash dust from skin with soap and water. Remove contaminated clothing. For thermal burns, cool with clean running water; do not apply ice or remove material adhering to skin. Obtain medical attention for significant burns or persistent irritation.

Ingestion: Not an expected route of exposure. Rinse mouth. Do not induce vomiting. Contact a poison center or physician if a significant quantity of dust or residue is swallowed or symptoms develop.

Most important symptoms and effects: Acute effects may include respiratory irritation, coughing, dizziness, nausea, and metal fume fever. Delayed or repeated overexposure may affect the lungs and nervous system. Arc radiation may cause painful eye inflammation and skin burns.

Immediate medical attention and special treatment: Treat symptomatically. Inform medical personnel that welding fume and gas exposure may have occurred.

SECTION 5 — FIRE-FIGHTING MEASURES

Suitable extinguishing media: The solid wire is not combustible. Use extinguishing media appropriate for the surrounding fire.

Unsuitable media: Do not apply water directly to molten metal. Avoid halogenated extinguishing agents on hot or molten metal unless specifically approved for that application.

Specific hazards: Welding arcs and sparks can ignite nearby combustibles. Containers and spools may burn. Hot or molten metal can react violently with water. Welding fumes and gases may be hazardous.

Firefighter protection: Wear full protective clothing and positive-pressure self-contained breathing apparatus when smoke, fumes, or oxygen-deficient conditions may be present. Isolate the area and cool exposed packaging from a safe distance.

SECTION 6 — ACCIDENTAL RELEASE MEASURES

Personal precautions: Solid wire presents no conventional spill hazard. Wear gloves to avoid cuts and use safe lifting practices for spools or drums. Avoid creating or breathing dust from damaged, ground, or abraded material.

Environmental precautions: Prevent metal fines and cleanup residues from entering drains, soil, or surface water.

Containment and cleanup: Collect intact wire mechanically and return it to a suitable container. Use a HEPA-filtered vacuum or wet cleanup method for fine particulate where appropriate; do not dry sweep airborne dust. Allow hot or molten material to cool and solidify before recovery. Recycle clean metal scrap when possible.

SECTION 7 — HANDLING AND STORAGE

Safe handling: Use only with adequate ventilation and appropriate welding controls. Avoid contact with sharp wire ends and moving feed equipment. Keep hands, clothing, food, and beverages free from dust and residues. Wash hands after handling. Do not eat, drink, or smoke in welding areas.

Safe storage: Store in the original labeled package in a cool, dry, well-ventilated location. Protect from moisture, physical damage, acids, strong oxidizers, and halogens. Secure spools and bulk packages against movement or falling. Keep away from combustible materials during hot work.

SECTION 8 — EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters: Air contaminants generated during welding must be evaluated for the actual process and materials. The following federal OSHA limits are relevant to likely fume constituents or alloy components. More protective state, local, or employer limits may apply.

Substance or fume constituent	CAS number	Federal OSHA PEL	Basis
Iron oxide fume	7439-89-6	10	OSHA PEL, mg/m³
Manganese fume	7439-96-5	1; 3 STEL; 5 ceiling	OSHA PEL, mg/m³
Silicon dust	7440-21-3	15 total; 5 respirable	OSHA PEL, mg/m³
Chromium	7440-47-3	1 metal; 0.5 Cr(III); 0.005 Cr(VI)	OSHA PEL, mg/m³
Nickel	7440-02-0	1	OSHA PEL, mg/m³
Molybdenum	7439-98-7	15 dust; 5 soluble compounds	OSHA PEL, mg/m³
Copper	7440-50-8	1 dust; 0.1 fume	OSHA PEL, mg/m³

Engineering controls: Use local exhaust at the arc and adequate general ventilation to keep fumes and gases below applicable limits and oxygen at safe levels. Position exhaust so fumes move away from the breathing zone. Keep the welder's head out of the plume. Use exposure monitoring to verify controls, especially for confined spaces, coated or plated base metal, stainless or high-alloy base metal, and multiple-welder operations.

Respiratory protection: When ventilation cannot keep exposure below applicable limits, use a NIOSH-approved respirator selected by a qualified person for the measured contaminants and used under a complete respiratory protection program meeting 29 CFR 1910.134. Use supplied air for oxygen-deficient atmospheres or where air-purifying respirators are not appropriate.

Eye and face protection: Wear a welding helmet or hand shield with the correct filter shade for the process and current, plus safety glasses with side shields meeting applicable ANSI requirements. Shield nearby personnel from arc radiation and spatter.

Skin and body protection: Wear dry, hole-free welding gloves and flame-resistant protective clothing that covers exposed skin. Use protective sleeves, aprons, footwear, and hearing protection as required. Insulate the body from the work and ground; replace wet or damaged PPE.

Hygiene measures: Wash hands and face before eating, drinking, smoking, or leaving the work area. Keep work clothing separate and launder contaminated clothing before reuse. Do not take welding dust into vehicles or homes.

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

Property	Value
Physical state and appearance	Silver-to-gray round solid welding wire or rod
Odor and odor threshold	Odorless
pH	Not applicable to solid metal product
Melting or freezing point	No data available
Boiling point and range	No data available
Flash point and evaporation rate	Not applicable
Flammability	Nonflammable as shipped
Upper and lower explosive limits	Not applicable
Vapor pressure and vapor density	Not applicable
Relative density	No data available
Solubility	No data available
Partition coefficient	Not applicable
Auto-ignition temperature	Not applicable
Decomposition temperature	No data available
Viscosity	Not applicable
Particle characteristics	Wire, rod, or coated electrode; size varies by product form

SECTION 10 — STABILITY AND REACTIVITY

Reactivity and stability: Stable and non-reactive as shipped under normal storage and handling conditions.

Hazardous reactions: Hazardous polymerization will not occur. Fine metal particles may react with strong oxidizers; contact between molten metal and water may be violent.

Conditions to avoid: Moisture, strong acids, strong oxidizers, halogens, physical damage, and uncontrolled heat or hot-work conditions.

Incompatible materials: Strong acids, strong oxidizing agents, and halogens.

Hazardous decomposition products: Welding produces fumes and gases whose composition depends on the consumable, base metal, coatings, shielding gas, process, and contaminants. Expected products may include oxides of iron, manganese, silicon, copper, and other metals; carbon monoxide, carbon dioxide, ozone, and nitrogen oxides may also form. Welding chromium-containing materials can generate hexavalent chromium.

SECTION 11 — TOXICOLOGICAL INFORMATION

Likely routes of exposure: Inhalation of welding fumes and gases is the principal route during use. Eye and skin exposure may occur from fume, particles, spatter, heat, and arc radiation. Ingestion is not expected in normal use but can occur through poor hygiene.

Acute effects: The solid wire is not classified for acute toxicity, skin corrosion, serious eye damage, or sensitization. Welding fume overexposure may cause irritation, coughing, dizziness, nausea, and metal fume fever. Arc radiation can cause eye injury and skin burns. Shielding and process gases may cause asphyxiation in poorly ventilated spaces.

Chronic effects: Repeated welding-fume exposure may damage the lungs; reports include bronchitis and lung fibrosis. Iron oxide fume may cause siderosis. Excessive manganese exposure may cause irreversible neurological effects, including impaired movement, speech, coordination, and mood. Nickel-containing fumes may cause sensitization and may contribute to cancer risk.

Carcinogenicity: The product as shipped is not classified as carcinogenic. IARC classifies welding fumes and ultraviolet radiation from welding as carcinogenic to humans (Group 1). Metallic nickel is listed by the U.S. National Toxicology Program as reasonably anticipated to be a human carcinogen. Actual fume hazards depend strongly on the base metal, coatings, and process.

Other hazard classes: Based on available product information, the solid wire is not classified for germ cell mutagenicity, reproductive toxicity, specific target organ toxicity, or aspiration hazard. No product-specific toxicological test data are available.

SECTION 12 — ECOLOGICAL INFORMATION

Ecotoxicity: No product-specific test data are available. Metal fines, welding dust, and residues may contain constituents harmful to aquatic organisms at sufficient concentrations.

Persistence and degradability: Metals are not biodegradable and may persist in the environment in elemental, oxide, or ionic forms.

Bioaccumulative potential and mobility: No product-specific data are available. Mobility depends on particle size, pH, and environmental conditions.

Other adverse effects: Prevent uncontrolled release of wire fragments, fines, and welding residues.

SECTION 13 — DISPOSAL CONSIDERATIONS

Waste treatment: Minimize waste and recycle clean steel wire and scrap where practical. Collect welding dust, filters, and cleanup residues in labeled containers. Determine waste classification using the actual composition and applicable federal, state, and local requirements. Do not discharge residues to sewers or waterways.

Packaging: Recycle or dispose of spools, drums, liners, and cartons in accordance with local requirements after removing product residue.

SECTION 14 — TRANSPORT INFORMATION

Transport system	Classification
U.S. DOT	Not regulated as dangerous goods
IMDG	Not regulated as dangerous goods
IATA	Not regulated as dangerous goods
UN number / proper shipping name / class / packing group	Not applicable
Environmental hazards	No transport environmental hazard stated
Special precautions	Prevent release of dust and process residues; secure packages during transport

SECTION 15 — REGULATORY INFORMATION

OSHA Hazard Communication: Not classified as hazardous as shipped under 29 CFR 1910.1200. Hazards created during welding must be addressed through the employer's hazard assessment, controls, training, and protective equipment programs.

U.S. TSCA: The elemental constituents identified in Section 3 are listed on, or exempt from, the Toxic Substances Control Act inventory requirements.

EPCRA SARA Title III Section 313: Refer to the product composition in Section 3. Facilities must evaluate actual composition, processing, quantity thresholds, and applicable exemptions when determining reporting duties.

CERCLA: Copper, nickel, and chromium are listed hazardous substances in certain forms and particle sizes. The intact wire is not expected to create a reportable release; evaluate fines, dusts, and process residues under applicable requirements.

⚠ **CALIFORNIA PROPOSITION 65 WARNING:** Welding with this product can expose you to welding fumes and chemicals including nickel, which is known to the State of California to cause cancer. Other listed chemicals may be generated from the base metal, coatings, or process. For more information go to www.P65Warnings.ca.gov.

SECTION 16 — OTHER INFORMATION

Approval Date: May 29, 2018

Revision: 5-2018

Rating System	Health / Flammability / Physical (Reactivity)
HMIS	HMIS Health 2 / Flammability 0 / Physical Hazard 0
NFPA	NFPA Fire 0 / Health 2 / Reactivity 0



U.S. DOT = Not hazardous and not considered a dangerous item

Technical review basis: SDS 005-SS for the identified product family

Notice: The information is based on product composition and sources considered reliable on the approval date. Welding-fume and gas hazards vary with the base metal, coatings, process, shielding gas, and workplace controls.