SAFETY DATA SHEET (SDS) Welding Products

Copper Base Alloy Bare / Covered Welding Rods and Wire

J79-195, Rev. H

Dated 30-09-2021

SECTION 1: PRODUCT IDENTIFICATION

Product Identifier: Copper Base Alloy Bare Welding Rods and Wire

Manufacturer's Name:

AMPCO METAL S.A.
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Contact / Telephone number (non emergency)
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Material Name:
AMPCO®-TRODE, AMPCO®-CORE, COPR-TRODE,SIL-TRODE. MIG, TIG and Covered Electrodes

These materials are commonly referred to as AT-7,AT-8N,AT-10, AT-40, AT-46, AT-150, AT-160, AT-200, AT-300, AT-940, AC-200, AC-250, AC-250S, AC-300, .

SECTION 2: HAZARDS IDENTIFICATION

Hazard Classification

This product is exempt from classification according to the OSHA Hazard Communication Standard (CFR 1910.1200) since it is an article as sold and under normal conditions of use.

Label Elements

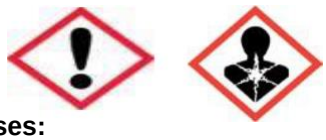
Signal Word	**DANGER**
Symbols	Not applicable
Pictograms	Not applicable

CARCINOGENICITY:
CHROMIUM - Chromium VI is listed as being carcinogenic to humans on *IARC* and *NTP* lists, and is listed by *NIOSH* as being a potential occupational carcinogen (with no further categorization).
NICKEL - is listed as being carcinogenic to humans on *IARC* and *NTP* lists, and is listed by *NIOSH* as being a potential occupational carcinogen (with no further categorization).
MANGANESE is listed by *ACGIH* as Group A4: Not classifiable as a human carcinogen.

TITANIUM DIOXIDE is listed as being unclassifiable as to Carcinogenicity in humans by *IARC* and is listed by *NIOSH* as being a potential occupational carcinogen (with no further categorization).
SILICON DIOXIDE - is listed as being carcinogenic to humans on *IARC* and *NTP* lists, and is listed by *NIOSH* as being a potential occupational carcinogen (with no further categorization).
WELDING FUMES (not otherwise specified) are considered to be carcinogenic defined with no further categorization by *NIOSH* and *IARC***.**

Package Labeling:
Although this product does not require a hazard warning label in all countries, we recommend that the safety advice should be observed:

GHS Pictograms GHS 07, GHS 08
- Contains Nickel



R-Phrases:

Limited evidence of carcinogenic effect
Maycause sensitization by skin contact
Toxic: danger of serious damage to health by prolonged exposure through inhalation
Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment
Brazing/welding fumes and vapors may cause metal fume fever (headache, dizziness, dryness, cough, nausea, and fever) and these symptoms may appear 4-12 hours after exposure May cause irritation by prolonged inhalation of brazing/welding fumes.

GHS: Nickel

Hazard categories:
Respiratory/skin sensitization: Skin Sens: 1
Carcinogenicity: Carc. 2
Specific target organ toxicity – repeated exposure: STOT RE 1
May cause an allergic skin reaction.
Suspected of causing cancer.
Causes damage to organs through prolonged or repeated exposure.

Hazard Statements: Nickel

H317	May cause an allergic skin reaction
H351	Suspected of causing cancer
H372	Causes damage to organs through prolonged or repeated exposure

Precautionary Statements:

P285	In case of inadequate ventilation wear respiratory protection
P314	Get medical advice if you do not feel well
P280	Wear protective gloves/protective clothing/eye protection/face protection
P202	Do not handle until all safety precautions have been read and understood
P260	Do not breathe dust/fume/gas/mist/vapors/spray
P501	Dispose of contents/container to waste treatment facility in accordance with local and national regulations

Potential Health Effects

Eyes:	Radiation: Arc rays from welding can injure eyes. Heat and molten metal can severely damage eyes
Skin	Heat: Spatter and molten metal can cause burn injuries Electricity: Electric shock can kill Radiation from the arc: Skin cancer has been reported
Ingestion	Not an expected route of entry, but if ingested product could cause serious injury
Inhalation:	Fumes: Overexposure to welding fumes may result in symptoms like metal fume fever, Dizziness, nausea, dryness of the nose, throat, or eyes

ACUTE HEALTH HAZARDS: See Section 11
CHRONIC HEALTH HAZARDS: See Section 11
MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Nothing found.

WARNING: This product contains or produces a chemical known to the State of California to cause birth defects (or other reproductive harm) and cancer. (California Health & Safety Code 25249.5 *et seq.*)

WARNING: avoid breathing welding fumes and gases; they may dangerous to your health. Always use adequate ventilation and use appropriate personal protection equipment.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Individual AMPCO Alloy compositions are shown on the Certification of Chemical and Mechanical Properties, when supplied, or may be found in AMPCO promotional literature.

Element	CAS Number	Percent(%) by weight
Aluminum**	7429-90-5	0-20
Chromium*	7440-47-3	0-2
Cobalt*	7440-48-4	0-3
Copper*	7440-50-8	50-100
Iron	7439-89-6	0-6
Lead*	7439-92-1	0-3
Manganese*	7439-96-5	0-14
Nickel	7440-02-0	0-14
Silicon	7440-21-3	0-4
Tin	7440-31-5	50-100
Zinc	7440-66-6	0-42
Zirconium	7440-67-7	0-0.5

Elements having a listed percentage greater than zero will be present in all grades. Elements having percentages starting with zero may not be present in certain grades.
* This constituent, a toxic chemical, makes this product subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. Quantity threshold for this chemical, below which reporting of releases is not required, is 25,000 pounds.

** This constituent is reportable only if in the form of dust or fume.

Note: **Chromium, lead** and **nickel** have been identified as potential human carcinogens. This material is classified as not hazardous under OSHA regulations

Coating Material:

Component	CAS Number	Percent	OSHA PEL 8-Hr TWA	ACGIH-TLV 8-Hr TWA
			Milligrams Per Cubic Meter	
Sodium Silicate	6834-92-0	26.9	None	None
Cryolite (as Fluoride)	15096-52-3	51.0	2.5	2.5
Petroleum Coke	64743-05-1	1.8	None	None
Magnesite	546-93-0	5.1	None	None
Silica Sand	7631-86-9	3.2	10 %Si02+2	0.1
Feldspar Nuisance Dust Respirable		2.7	None 15 5	None

The decomposition of this coating during the welding process should not produce levels of the above components in amounts above the permissible exposure limit. However, if use in improperly ventilated or exhausted areas should generate fumes, vapors or dust, use approved (NIOSH) respirators only.

Fluorides are highly irritating to the eyes, nose and throat. Overexposures have been associated with cumulative bone damage. Long-term silica exposure is associated with a lung disease called silicosis. The degree of the hazard depends upon the concentration, size and length of exposure.

Incomplete combustion may produce carbon monoxide and/or carbon dioxide: odorless, colorless gases which are asphyxiants.

None of the coating components are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and 40 CFR Part 372. This material is classified as not hazardous under OSHA regulations

SECTION 4: FIRST AID MEASURES

Eye Contact

No need for first aid is anticipated under normal use conditions

Flush well with running water to remove particulate. Get medical attention.

Inhalation

No need for first aid is anticipated under normal use conditions.

If symptoms develop following exposure to fumes or dusts released from the processing of the casting (e.g. machining, grinding, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting), immediately remove person from exposure. Seek medical attention if symptoms persist.

Skin

No need for first aid is anticipated under normal use conditions.

Vacuum off excess dust. Wash well with soap and water. Avoid blowing particulate into the atmosphere. Contact with these grades in the molten condition will cause severe burns. Get medical attention.

Ingestion

No need for first aid is anticipated under normal use conditions.

Seek medical attention if large quantities of material have been ingested.

Most Important Symptoms and Effects, both Acute and Delayed None expected under normal conditions of use.

Dust or fumes generated by machining, grinding, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting of the casting may produce airborne contaminants (see Sections 8 and 11) that are hazardous.

Indication of Immediate Medical Attention and Special Treatment Needs Not applicable

SECTION 5: FIRE FIGHTING MEASURES

Welding consumables are not flammable. The welding arc and sparks can ignite flammable material. Do not weld in the presence of flammable materials

Suitable Extinguishing Media

Use suitable extinguishing methods for surrounding fire

Special Hazards Arising from the Substance

Not applicable

Special Protective Actions for Fire Fighter

Not applicable

Flash Point: Not Applicable
Methods Used: Not Applicable
Flammable Limits: LFL: Not Applicable
UFL: Not Applicable
Extinguishing Media: See Below

Special Fire Fighting Procedures: Solid, massive form is not combustible under normal conditions. Use firefighting methods that are appropriate for surrounding fire.

Small chips, fine turnings and dust may ignite readily. Use coarse water spray on chips, turnings, etc. Use class D extinguishing agents or dry sand on fines. **DO NOT** use halogenated agents on small chips or fines. Dust clouds may be explosive. PREVENT FORMATION OF A DUST CLOUD.

Molten metal alloys may explode on contact with water. They may also react violently with water, rust and certain other metal oxides (e.g. oxides of copper, iron and lead).

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures
No special measures required
Environmental Precautions
Not applicable
Methods and Material for Containment and Clean-up
Not applicable

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling
No special requirements.
Conditions for Safe Storage, Including Any Incompatibilities
No special storage requirements.

SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

Respiratory Protection: If exposure above the PEL or TLV, NIOSH approved respirator for fume or dust, dependent upon the source of airborne contaminant.

Ventilation: Required if dust or fume created in handling or working on this material.

Exhaust: Required if dust or fume created in handling or working on this material. Mechanical

General: As above to reduce airborne dust or fume.

Protective Gloves: Required for melting, grinding, cutting or welding operations. Select glove approved for the specific operation.

Eye Protection: Required for melting, grinding, cutting or welding operations. Minimum requirement of safety glasses with side shields for these operations. Melting and welding may require special eye protection including face shields and specially tinted glass and/or welder's helmet. Grinding operations may require face shields.

Other Protective Clothing or Equipment: Use leather or equal protective gloves and body clothing while welding as required for all other operations performed on the product.

Work/Hygiene Practices: Use ear muffs or plugs if the noise level is above 90 dBA when performing operations on the product. Always evaluate the operations done on this product in accordance with OSHA or relevant state, federal or local standards.

Occupational Exposure Limits

Dust or fumes generated by machining, grinding, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting of the casting may produce airborne contaminants with the following Occupational Exposure Limits (OELs):

Component	CAS Number	Percent %	OSHA PEL TWA	ACGIH TLV® TWA
			Milligrams Per Cubic Meter (mg/m3)	
Aluminum**	7429-90-5	0-20		

Metal & Insoluble Compounds				
		Dust	15	1 (R)
		Fume	5 (R)	1 (R)
Chromium*	7440-47-3	0-2		
			0.1	0.2
Cobalt*	7440-48-4	0-3		
			0.1	0.02
Copper*	7440-50-8	50-100		
		Dust	1	1
		Fume	0.1	0.2
Iron Iron Oxide	7439-89-6	0-6		
		Dust/Fume	10	5 (R)
Lead* Metal & Inorganic	7439-92-1	0-11		
		Dust/Fume	0.05	0.15
Manganese*	7439-96-5	0-14		
		Dust	5	0.020 (R)
		Fume		0.1 (I)
Component	CAS Number	Percent %	OSHA PEL 8-Hr TWA	ACGIH TLV® 8-Hr TWA
			Milligrams Per Cubic Meter (mg/m3)	
Nickel*	7440-02-0	0-32		
		Elemental	1	1.5 (I)
		Insoluble	1	0.2 (I)
Niobium	7440-03-1	0-3	None Established	
Silicon	7440-21-3	0-4		
		Total Dust	15	
		Respirable	5	
Tin Oxide & Inorganic Compounds	7440-31-5	0-20		
			0.1	0.1
Zinc** Oxide	7440-66-6	0-42		
		Total Dust	15	10
		Fume	5	5
				10 (STEL)
Zirconium	7440-67-7	0-0.5	5	5

Elements having a listed percentage greater than zero will be present in all alloy grades. Elements having percentages starting with zero may not be present in certain alloy grades.

* This constituent, a toxic chemical, makes this product subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40CFR Part 372. Quantity threshold for this chemical, below which reporting of releases is not required, is 25,000 pounds.

** This constituent is reportable only if in the form of dust or fume.

Exposure Limit Abbreviations

NE= None Established

ACGIH TLV= American Conference of Governmental Industrial Hygienists Threshold Limit Value ®, 2015 Edition

OSHA PEL= Occupational Health and Safety Administration Permissible Exposure Limit

TWA= Time Weighted Average

STEL= Short Term Exposure Limit

C= Ceiling Limit

mg/m3= milligram of substance per cubic meter of air

R= Respirable fraction of particulate sampled

I= Inhalable fraction of particulate sampled

Appropriate Engineering Controls

In the solid state, no special requirements are necessary. If processes such as machining, grinding, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting are used on the casting, local exhaust ventilation may be required to maintain concentrations of airborne hazardous ingredients below the applicable exposure limits.

Personal Protective Equipment

Eye Protection
Wear safety glasses with side-shields if there is a risk of particles getting in eyes **Skin protection**
No chemical protective clothing is required. If material is processed, use appropriate protective clothing and gloves for the application.
Respiratory Protection
In the solid state, no special requirements are necessary. Airborne dust or fumes can be generated by machining, grinding, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting of the castings. Respiratory protection may be necessary if concentrations of these hazardous ingredients exceed the applicable exposure limits. In these cases a NIOSH approved respirator should be selected based on the form and concentration of the contaminant in air.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance	The welding consumable consists of a wire strip, solid wire rod with or without a flux based core or coating
Odor	Not applicable
Odor threshold pH	Not applicable
Melting Point	Not applicable
Initial boiling point & boiling range	1742-2050º F (950-1121º C)
Flash Point	Not applicable
Evaporation Rate	Not applicable
Flammability	Not applicable
Upper/Lower flammability or explosive limits	Not applicable
Vapor Pressure	Not applicable
Vapor Density	Not applicable
Relative Density	Not applicable
Solubility in Water	Not applicable
Partition Coefficient	Not applicable
Auto-Ignition Temperature	Not applicable
Decomposition Temperature	Not applicable

Viscosity	Not applicable

SECTION 10: STABILITY AND REACTIVITY

Reactivity	Inert, not reactive
Chemical Stability	Stable
Possibility of Hazardous Reactions	Will not occur
Conditions to avoid	None known
Incompatible Materials	None known
Hazardous Decomposition Products	None expected under conditions of normal use.

SECTION 11: TOXICOLOGICAL INFORMATION

This product as sold is an article but processing may release hazardous substances. Information about these components is supplied.

Acute Toxicity

Copper	Eye and respiratory irritation may occur. High exposure to copper dust may cause gastrointestinal effects due to oral ingestion.
Nickel	One study showed severe lung and kidney damage following exposure to extremely high levels of nickel powder.

Skin Corrosion / Irritation

None expected

Serious Eye Damage or Irritation

None expected

Respiratory or Skin Sensitization

Cobalt	May cause allergy or asthma symptoms or breathing difficulties if inhaled. Contact allergic dermatitis may occur.
Nickel	Contact allergic dermatitis may occur.

Germ Cell Mutagenicity

Nickel	Chromosomal aberrations and in vitro and in vivo testing has shown that nickel is genotoxic (ASTDR)

Carcinogenicity

Aluminum	Not listed by IARC, NTP or OSHA
Cobalt	Listed by IARC (possibly carcinogenic to humans-Group 2B). Not listed by NTP or OSHA.
Copper	Not listed by IARC, NTP or OSHA
Iron	Not listed by IARC, NTP or OSHA
Manganese	Not listed by IARC, NTP or OSHA
Nickel	Listed by IARC (possibly carcinogenic to humans-Group 2BA) and NTP (known to be a human carcinogen). The strongest evidence for carcinogenicity is for sulfidic nickel forms and the evidence for oxidic forms of nickel are the weakest. There is no evidence that metallic nickel is associated with nasal or lung cancer (ASTDR).

Reproductive Toxicity

None expected

Specific Target Organ Toxicity-Single Exposure

Copper	A few studies have shown copper to cause metal fume fever, a condition characterized by chills, fever, muscular pain, nausea, and vomiting but these are limited in number and details. Studies have reported upper respiratory tract irritation, metallic taste sensation and nausea.
Nickel	One study showed severe lung and kidney damage following exposure to extremely high levels of nickel powder.

Specific Target Organ Toxicity-Repeated Exposure

Aluminum There is some evidence that aluminum may accumulate in the body with long-term exposure. Lung changes have been reported in workers exposed to high levels of aluminum dust. Some studies have indicated that there may be subtle neurological effects following long –term exposure to aluminum.

Cobalt Animal studies have shown respiratory effects following inhalation exposure (lung edema, decreased pulmonary function). Transient myocardial changes have also been reported. Studies have shown asthma and pulmonary function changes in workers in the cemented tungsten carbine industry and cobalt is thought to play a significant role in these effects although it is not the only substance these workers were exposed to.

Iron Prolonged exposure may lead result in iron deposits in the lung, a condition known as siderosis

Manganese Inflammatory changes in the lung were found in monkeys exposed to manganese dioxide via inhalation for 10 months. At high exposure levels (greater than 5 mg/m3), manganism (chronic manganese poisoning) has been reported in workers. Symptoms of manganism include sleepiness, weakness in the legs, a mask-like facial appearance, emotional disturbances and a spastic gait. High levels of pneumonia have also been reported in workers inhaling large amounts of manganese dust and fume. In some studies, manganese has been associated with longer reaction times, hand steadiness and eye-hand coordination. Effects appear to be more pronounced with exposures to respirable sized particles.

Nickel (elemental and nickel oxide

Animal studies have shown lung changes and inflammation.

Aspiration Hazard

Based on the physical form, the product is not expected to be an aspiration hazard.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity Eco toxicity is expected to be minimal since the casting is a solid with low water solubility.

Persistence and Degradation Not applicable

Bioaccumulation Not applicable

Mobility in Soil Not applicable

Environmental Fate Not applicable

SECTION 13: DISPOSAL INFORMATION

This product is not considered to be hazardous waste according to US RCRA and Canadian regulations. Recover or recycle if possible. Dispose of according to federal, state and local regulations. Dust collected from casting processing operations (e.g. machining, grinding, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting) may be classified as a hazardous waste. Consult federal, state and local regulations.

SECTION 14: TRANSPORTATION INFORMATION

U.S. Department of Transportation (DOT) Product is not regulated

International Maritime Dangerous Goods (IMDG) Product is not regulated

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Product is not regulated

International Civil Aviation Org. / International Air Transport Assoc. (ICAO/IATA)

Product is not regulated

SECTION 15: REGULATORY INFORMATION

If this product is reformulated or further processed, the regulatory status of the components listed in the composition section of this sheet may be altered. The following regulatory information may not be complete and should not be relied upon as the sole source of information regarding regulatory responsibilities.

Occupational Health and Safety Administration

This product is an article as sold. Dust or fumes generated by machining, grinding, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting of the casting may produce airborne contaminants that are regulated by OSHA.

TSCA Chemical Inventories

This product is an article as defined by TSCA regulations, and is exempt from TSCA Inventory listing requirements

Other Regulatory Information

Chemical	CAS #	EINECS	CERCLA RQ (lbs)	Section 313	NPRI Threshold Category	California Prop 65
Aluminum (fume or dust)	7429-90-5	231-072-3		313	1A	
Cobalt	7440-48-4	231-158-0		313	1A	Carcinogen
Copper	7440-50-8	231-159-6	5,000	313	1A	
Iron	7439-89-6	231-096-4				
Manganese	7439-96-5	231-105-1		313	1A	
Nickel	7440-02-0	231-111-4	100	313	1A	Carcinogen

CAS- Chemical Abstract Service- Registry Number

EINECS - European Inventory of Existing Commercial Chemical Substances

CERCLA RQ (reportable quantity) - if a value is listed then releases of particles, ≤ 100 µm in size, to the environment may require reporting under CERCLA Sections 102-103 (40 CFR Part 302)

Section 313 - if '313' is listed then may be subject to the reporting requirements found under EPCRA Section 313 (40 CFR Part 372)

NPRI (National Pollutant Release Inventory) Threshold Category - if 1A or 1B is listed, may be subject to reporting under the Canadian Environmental Protection Act, 1999

California Prop 65 - if listed WARNING: This product contains chemicals known to the State of California to cause cancer.

These products are not believed to contain any substances that meet the notification requirements found under EPCRA Sections 302 or 304 (40 CFR Part 355) nor subject to the accidental release prevention requirements under CAA 112(r) (40 CFR Part 68).

SECTION 16: OTHER INFORMATION

This MSDS is intended to be used as a guide to the appropriate handling, storage, and use of this product by an adequately trained person. AMPCO METAL S.A. is not responsible for the misuse, mishandling or improper storage of this material by the user. This product is exempt from classification according to the OSHA Hazard Communication Standard (CFR 1910.1200) since it is an article as sold and under normal conditions of use.

Dust or fumes generated by machining, grinding, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting of the casting can produce airborne contaminants that are hazardous. Consult the Safety Data Sheet (SDS) for this product for further information.

WARNING: This product contains chemical(s) known to the State of California to cause cancer.