Wisconsin Wire Works, Inc.
319 Universal Street • P.O. Box 385 • Wales, WI 53183

Safety Data Sheet

OSHA HazCom Standard 29 CFR
1910.1200 GHS Rev 03
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1 – Identification

Copper & Brass Welding Alloys

Welding Alloys

CDA	Trade Name	AWS Specification	AWS Classification	DIN Classification
C18900	WWW Copp Weld	A5.7	ERCu	Not Available
C51000	WWW Phos A Weld	A5.7	ERCuSn-A	SG-CuSn6
C52100	WWW Phos C Weld	A5.7	ERCuSn-C	Not Available
C61000	WWW A1 Bronze Weld	A5.7	ERCuAL-A1	SG-CuAl8
C61800	WWW A2 Bronze Weld	A5.7	ERCuAl-A2	SG-CuAl10Fe
C62400	WWW A3 Bronze Weld	A5.7	ERCuAl-A3	Not Available
C63280	WWW Nickel Bronze Weld	A5.7	ERCuNiAl	SG-CuAl8Ni6
C63380	WWW Mang-Nickel Bronze Weld	A5.7	ERCuMnNiAl	SG-CuMn13Al7
C65600	WWW Sil Weld	A5.7	ERCuSi-A	SG-CuSi3
C70600	WWW Copp Nickel Weld 90/10	A5.7	Not Available	SG-CuNi10Fe
C71500	WWW Copp Nickel Weld 70/30	A5.7	ERCuNi	SG-CuNi30Fe

Brazing Alloys

CDA	Trade Name	AWS Specification	AWS Classification	DIN Classification
C10200	WWW Copp Spray	A5.8	RBCu-3	Not Available
C47000	WWW Naval Brass	A5.8	RBCuZn-A	Not Available
C68000	WWW Low Fuming Nickel Bronze	A5.8	RBCuZn-B	Not Available
C68100	WWW Low Fuming Bronze	A5.8	RBCcZn-C	Not Available
C77300	WWW Nickel Silver	A5.8	RBCuZn-D	Not Available

Recommended Use

- GMAW, GTAW, Brazing, Arc Spray

Emergency Phone Number

- 1-262-968-6982

2 – Hazard Identification

Classification of the Chemical in Accordance with Paragraph (d) of Std. 1910.1200

- All classifications of Hazardous Materials are in accordance of Globally Harmonized System of Classifications(GHS) and Occupational Safety, and Health Administrations(OSHA) Classifications in how it relates to Std. 1910.1200

Signal Word, hazardous statement, symbol and precautionary statement

- Carcinogen
- Mutagenicity
- Reproductive Toxicity
- Respiratory Sensitizer
- Target Organ Toxicity
- Aspiration Toxicity

- Irritant (Skin and Eye)
- Skin Sensitizer
- Acute Toxicity (Harmful)
- Narcotic Effects
- Respiratory Tract Irritant
- Hazardous to Ozone Layer

- <u>Precautionary statement</u>
    - Keep your head out of the fumes. Use enough ventilation and/or exhaust at the arc to keep fumes and gases from your “Breathing Zone”, and the general area. Wear correct eye, ear, and body protection. Do not touch live electrical parts. Welding, brazing, spraying, grinding, machining or cutting this product may cause hazardous fumes and/or dust which can cause chills (Metal Fume Fever) by overexposure. Excessive exposure may cause lung damage, systemic poisoning of flu like symptoms, Use NIOSH respirator if concentrations exceed the LV limit or maintain concentrations below the TLV limit by general ventilation of local exhaust.

Hazards not otherwise Classified

- No known hazards

Element	CAS Number	Hazard(s)
Aluminum	**7429-90-5**	metal dust and respirable fraction
Copper	**7440-50-8**	Eye, Upper Respiratory tract irritation; dermatitils; rare interstitial lung disease; pulmonary fibrosis; ingestion - nausea, vomiting, diarrhea; ingestion of large dose - liver damage, acute renal failure, death.
Iron Oxide Fumes	**1332-37-2**	Pulmonary Siderosis
Manganese fumes	**7439-96-5**	Metal Fume Fever*
Nickel	**7440-02-0**	Lung sinus cancers; Sensitization dermatitis, allergic skin rash
Silicon Fumes	**7440-21-3**	Nusiance Particulate-Accumulation in lungs
Tin	**7440-31-5**	Eye, Nose, Throat, and skin Irritation
Zinc	**1314-13-5**	Metal Fume Fever*
		*Metal Fume Fever is a temporary affliction with symptoms including: chills, fever, upset stomach, vomiting, dryness of the throat, cough, weakness, and achiness

3 – Composition/Information on Ingredients

Welding Alloys											
CDA	Trade Name	Cu	Al	Fe	Zn	Ph	P	Sn	Si	Ni	Ti
C18900	WWW Copp Weld	98% Min.	0.01% Max	-	-	0.02% Max	0.15% Max	-	-	-	-
C51000	WWW Phos A Weld	Remainder	0.01% Max	-	-	0.02% Max	0.01% - 0.35%	4% - 6%	-	-	-
C52100	WWW Phos C Weld	Remainder	0.01% Max	0.1% Max	0.2% Max	0.02% Max	0.1% - 0.35%	7% - 9%	-	-	-
C61000	WWW A1 Bronze Weld	Remainder	6% - 8.5%		0.2% Max	0.02% Max	-	-	-	-	-
C61800	WWW A2 Bronze Weld	Remainder	8.5% - 11%	0.5% - 1.5%	0.02 Max	0.02% Max	-	-	-	-	-
C62400	WWW A3 Bronze Weld	Remainder	10% - 11.5%	2% - 4.5%	0.1% Max	0.02% Max	-	-	-	-	-
C63280	WWW Nickel Bronze Weld	Remainder	8.5% - 9.5%	3% - 5%	0.1% Max	0.02% Max	-	-	0.1% Max	4% - 5.5%	-
C63380	WWW Mang-Nickel Bronze Weld	Remainder	7% - 8.5%	2% - 4%	0.15% Max	0.02% Max	-	-	0.1% Max	1.5% - 3%	-
C65600	WWW Sil Weld	Remainder	0.01% Max	0.5% Max	1% Max	0.02% Max	-	1% Max	2.8% - 4%	-	-
C70600	WWW Copp Nickel Weld 90/10	Remainder	-	1% - 2%	-	0.02% Max	0.02% Max	-	0.2% Max	9% - 11%	-
C71500	WWW Copp Nickel Weld 70/30	Remainder	-	0.4% - 0.75%	-	0.02% Max	-	-	0.25% Max	29% - 32%*	0.2% - 0.5%
Brazing Alloys											
CDA	Trade Name										
C10200	WWW Copp Spray	99.95% Min.	-	-	-	-	-	-	-	-	-
C47000	WWW Naval Brass	57% - 61%	0.001% Max	-	Remainder	0.05% Max	-	0.25% - 1%	-	-	-
C68000	WWW Low Fuming Nickel Bronze	56% - 60%	0.01% Max	0.25% - 1.2%	Remainder	0.05% Max	-	0.8% - 1.1%	-	0.2% - 0.8%	-
C68100	WWW Low Fuming Bronze	56% - 60%	0.1% Max	0.25% - 1.2%	Remainder	0.05% Max	-	0.8% - 1.1%	0.04% - 0.15%		-
C77300	WWW Nickel Silver	46% - 50%	0.01% Max	-	Remainder	0.05% Max	0.25% Max	-	0.04% - 0.25%	9% - 11%	-
	*Nickel with Cobalt										
	all values are nominal values and ranges, not actuals										

Element	CAS#	RETCS	
Copper	7440-50-8	GL 5325000	STOT SE 3, H335; Aquatic Chronic 4, H413
Aluminum	7429-90-5	BD 0330000	Sol. 2, H228;
Nickel	7440-02-0	-	Carc. 2, H351; STOT RE 1, H372; Skin Sens. 1, H317
Iron	7439-89-6	NO 4565500	Sol. 2, H228; (Irritant) Skin Irrit. 2, H315; STOT SE 3, H335; Eye Irrit. 2B, H320; Combustible Dust
Manganese	7439-96-5	OO 9275000	Pyr. Sol. 1, H250; Water-react. 1, H260
Silicon	7440-21-3	-	Flam. Sol. 2, H228; Acute Tox. 4, H302; Eye Irrit. 2B, H320
Zinc	7440-66-6	-	Aquatic Acute 1, H400; Aquatic Chronic 1, H410, Skin Irrit. 2, H315; Eye Irrit. 2B, H320; Combustible Dust
Cobalt	7440-48-4	GF 8750000	Resp. Sens. 1, H334; Carc. 2, H351; Skin Sens. 1, H317; Aquatic Chronic 4, H413; Combustible Dust
Titanium	7440-32-6	XR 1700000	Skin Sens. 1, H317; Eye Irrit. 2B, H320
Lead	7439-92-1	OF 7525000	Acute Tox. 1, H300; Carc. 2, H351; Repr. 1A, H360; STOT RE 2, H37

4 – First Aid

General Guidelines

- Know how to get help, and know where the First Aid kits
- Make sure the area is safe for you
- Use personal protective equipment (gloves, masks, et.)
- Position the person appropriately if their airway needs to be opened or CPR is needed
- Do not move a person who may have suffered a neck or back injury

Inhalation

- Move person to an area of clean air, or supply clean air to them. If requited, provided an artificial respirator. In case of unconsciousness, place patient on side before transporting.

Skin

- Immediately wash with water and soap, then rinse thoroughly. Apply burn spray if required.

Eye

- Do not rub eyes. Immediately flush eyes under for at least 15 minutes. Use an eye washing station if available.

Ingestion

- Not really Applicable

Most Important Symptoms and effects, both acute and delayed

- Acute overexposure to welding fumes may result in discomfort such as metal fume fever (dizziness, nausea, or dryness or irritation of nose, throat, or eyes). May aggravate pre-existing respiratory problems.
- Chronic overexposure to welding fumes can lead to siderosis (Iron deposits in the lung), central nervous system effects, bronchitis and other pulmonary effects.
- Welding Hazards are complex and may include physical and health hazards such as, but not limited to, electric shock, physical strains, radiation burns (eye flash), thermal burns due to hot metal or spatter and potential health effects of overexposure to welding fume or dust.

5 – Fire-fighting measures

Suitable (and unsuitable) extinguishing media

- In shipped form use the appropriate extinguishing media for the surrounding area
- For metal fires, use the appropriate media.

Special Hazards

- The Process of welding can result in sparks that may or may not, cause an ignition of combustibles or flammables. Remove ignitable materials from the area.

Special protective equipment and precautions

- Standard fire-fighting gear is required

6 – Accidental release measures

Personal precautions, protective equipment, and emergency procedures

- Allow for adequate ventilation and use proper shielding and clothing, see section 8.

Methods and materials for containment and clean up.

- Clean up mechanically; never allow waste to enter sewage or other water systems

7 – Handling and storage

Precautions of safe handling

- Handle with care. Ensure good ventilation/exhaust at the work station

Conditions for safe storage

- Store away from acids, bases and Strong Oxidizing Agents.
- Store in a dry location in compliance with local, reginal, and national regulations

8 – Exposure controls/personal protection

Material	CAS #	value	REL mg/m3		PEL mg/m3		TLV mg/m3	
			Fume	Dust	Fume	Dust	Fume	Dust
Copper	7440-50-8	Long term	0.1	1	0.1	1	0.2	1
			Respirable	Total Dust	Respirable	Total Dust	Respirable	Total Dust
Aluminum	7429-90-5	long term	5	10	5	15	1	-
			Respirable	Total Dust	Respirable	Total Dust	Respirable	Total Dust
Silicon	7440-21-3	Long Term	5	10	5	15	Withdrawn	
			Respirable	Fume	Respirable	Fume	Respirable	Fume
Manganese	7439-96-5	Long term	X	1	X	X	0.02	0.1
		Short Term	X	3	X	X	X	X
		Ceiling Limit	X	X	X	5	X	X
			Fume	Dust	Fume	Dust	Fume	Dust
Zinc	7440-66-6	Long Term	5	5	5	10	5	5
Tin	7440-31-5	As Metal	2		2		2	
Nickel	7440-02-0	As Dust	0.015		1		1.5	
Lead	7439-92-1	As Metal	0.05		0.05		0.05	
			Fume	Dust	Fume	Dust	Fume	Dust
Cobalt	7440-48-4	Long Term	0.5	0.5	0.1	0.1	0.02	0.02
Iron	7439-89-6	Oxide	5		10		5	

Appropriate Engineering Controls

- As packaged, no special engineering controls required. While in processing, proper ventilation is required.

Individual protection measures, such as personal protective equipment

- As packaged, no additional protective measures required. When welding, brazing, spraying, grinding, and any other alteration to the original product, requires proper gloves, boots, clothing, eyes, ears, and face protection.

9 – Physical and Chemical Properties

Appearance

- Physical State
    - Solid as packaged
- Color
    - Red, Gold, Silver – Grade Specific

Odor

- Odorless
- No odor threshold

PH

- Not Applicable

Melting point

- Nominal Range (1650 Deg. F – 1980 Deg. F) Grade Specific

Initial boiling point and boiling range

- Not Applicable

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 Determined

Solubility

- Not Applicable

Partition coefficient

- Not Applicable

Auto-ignite temperature

- This product does not self-ignite

Decomposition temperature

- Not Applicable

Viscosity

- Not Applicable

10 – Stability and Reactivity

Reactivity

- This product is non-reactive

Chemical stability

- This product is stable under normal conditions

Possibility of hazardous reactions

- None

Conditions to avoid

- None known conditions exist

Incompatible materials

- Oxidizing Agents

Hazardous decomposition products

- Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the processes and procedures followed, and the welding consumables used. Other conditions that also influence the composition and quantity of fumes and gases to which workers may be exposed include: coatings on the metal being welded, the number of welders in operation and the volume of the work area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, and the presence of contaminants in the atmosphere. When the electrode is consumed, the fume and gas decomposition products generated are varying in percentage. Fume and gas decomposition, and not the ingredients within the electrode, are what is important.

11 – Toxicological Information

Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact)

- Acute Inhalation
    - Welding Fumes may result in discomfort, such as dizziness, nausea, dryness, or irritation of the throat, nose, and/or eyes.
    - Aluminum oxide may cause irritation of the respiratory system
    - Copper may cause capillary damage, headache, cold sweat, weak pulse, and kidney and liver damage, and central nervous system excitation.
    - Manganese may cause "metal fume fever" (section 2 on more information on metal fume fever)
    - Nickel may cause a metallic taste, nausea, tightness in chest, fever, and allergic reactions.
- Chronic Inhalation
    - Welding fumes in excess levels may cause bronchial asthma, lung fibrosis, pneumoconiosis, or siderosis. Overexposure to air contaminants may lead to their accumulation in the lungs, a condition which may be seen as dense area's on the chest x-rays.

    - Aluminum oxide may cause pulmonary fibrosis and emphysema
    - Copper may cause hepatic cirrhosis, brain damage and demyelination, kidney defects, and copper deposition in the cornea.
    - Manganese may cause “manganism”. Symptoms include languor, sleepiness, muscular weakness, emotional disturbances, spastic gait, and tremors.
    - Nickel may cause lung fibrosis or pneumoconiosis.
- Ingestion
    - Highly unlikely route of exposure
- Skin
    - Irritant to skin and mucous membranes
- Eye
    - Irritating effect

Acute Toxicity

CAS #	Common Name		amount
7429-90-5	Aluminum	Oarl - LD50	>5000mg/kg (rat)
7429-90-5	Aluminum	Inhalative LC50/4 h	888 mg/l (rat)
7439-89-6	Iron	Oral - LD50	7500 mg/kg (rat)
7439-96-5	Manganese	Oral - LD50	9000 mg/kg (rat)
7440-21-3	Silicon	Oral - LD50	3160 mg/kg (rat)
7440-48-4	Cobalt	Oral - LD50	6170 mg/kg (rat)

Carcinogenic

CAS #	Common Name	IARC
7440-48-4	Cobalt	2B - Possibly carcinogenic to humans
7439-92-1	Lead	2B - Possibly carcinogenic to humans
7440-02-0	Nickel	1 - Carcinogenic to humans

12 – Ecological Information

Exotoxicity

- Aquatic

CAS #	Common Name	Aquatic Toxicity
7440-50-8	Copper	0.04 - 0.05 mg/l
7440-02-0	Nickel	1 mg/l
7439-96-5	Manganese	40 mg/l

- Terrestrial
    - None

Persistence and degradability

- No further relevant information

Bioaccumulative potential

- No further relevant information

Mobility in soil

- No further relevant information

Other adverse effects

- None known at the time

13 – Disposal Considerations

Waste treatment methods

- Minimization of waste is optimal. But when waste is accumulated, Disposal is best done through recycling in an environmental manner that is compliant with federal, state, provincial, and local requirements.

14 – Transport Information

UN Number

- Not regulated

UN proper shipping name

- Not regulated

Transport Hazard class

- Not regulated

Packaging group

- Not regulated

Environmental Hazards

- None

Transport in bulk

- Not applicable

Special precautions

- None

15 – Regulatory Information

Safety, health, and environmental regulations

- SARA (Superfund Amendments and Reauthorization)
    - Section 313 (Specific toxic chemical listings
        - 7440-50-8 – Copper
        - 7429-90-5 – Aluminum
        - 7440-02-0 – Nickel
        - 7439-96-5 – Manganese
        - 7440-66-6 – Zinc
        - 7439-92-1 – Lead
        - 7723-14-0 – Phosphorus
    - Section 355 (Extremely hazardous substances)
        - 7723-14-0 – Phosphorus

    - TSCA (Toxic substances control act
- California proposition 65
- Chemicals known to cause cancer
    - 7440-02-0 – Nickel
    - 7440-48-4 – Cobalt
    - 7439-92-1 – Lead
- Chemicals known to cause reproductive toxicity
    - 7439-92-1 – Lead
- Chemicals known to cause developmental toxicity
    - 7439-92-1 – Lead
- EPA
    - 7440-50-8 – Copper
    - 7429-90-5 – Aluminum
    - 7440-02-0 – Nickel
    - 7439-96-5 – Manganese
    - 7440-66-6 – Zinc
    - 7439-92-1 – Lead
    - 7723-14-0 – Phosphorus

16 – Other Information

Abbreviations and Acronyms

- Carc. 2 – Carcinogenicity, Hazard Category 2
- CAS – Chemical Abstracts Service
- Flam. Sol. 1 – Flammable Solids, Hazard Category 1
- Flam. Sol. 2 – Flammable Solids, Hazard Category 2
- LC50 – Lethal concentration, 50 percent
- LD50 – Lethal dose, 50 percent
- Pyr. Sol. 1 – Pyrophoric Solids, Hazard Category 1
- Repr. 1A – Reproductive toxicity, Hazard Category 1A
- Repr. 1B – Reproductive toxicity, Hazard Category 1B
- STOT SE 3 – Specific target organ toxicity, Single exposure, Hazard Category 3
- STOT SE 2 – Specific target organ toxicity, Repeat exposure, Hazard Category 2
- STOT SE 1 – Specific target organ toxicity, Repeat exposure, Hazard Category 1