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Safety Data Sheet

1.Supplier and product

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Product and Codes: AWS A5.8 RBCuZn-A RBCuZn-B RBCuZn-C RBCuZn-D HS221
Flux Coated Brazing Rods

Product Use(s): For welding(Brazing) consumables and related products

2.Hazards identification

2.1 Classification of the mixture:
The product is placed on the market in solid form
2.1.1 Classification in accordance with GHS-US

Acute Tox. 4 (Oral)	H302
Carc.1A	H350
Aquatic Acute 1	H400

2.2 Label elements:

Danger

Hazard statements (GH5-US):

H317	May cause an allergic skin reaction
H319	Causes serious eye irritation
H351	Suspected of causing cancer
H335	May cause respiratory irritation
H372	Cause damage to respiratory system, eyes, brain and nervous system through prolonged or repeated exposure

Precautionary statements:

P201	Obtain special instructions before use
P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P264	Wash thoroughly after handling
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in well-ventilated area.
P272	Contaminated work clothing should not be allowed out of the workplace.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P281	Use personal protective equipment as required.
P302+P352	IF ON SKIN: Wash with plenty of soap and water
P304+P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

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P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
P337+P313 If eye irritation persists: Get medical advice/attention.
P308+P313 If exposed or concerned: Get medical advice/attention.
P312 Call a POISON CENTER or doctor/physician if you feel unwell.
P314 Get medical advice/attention if you feel unwell.
P363 Wash contaminated clothing before reuse.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up
P501 Dispose of contents and container in accordance with local regional/national international regulations.
2.3 Other hazards: No additional information available
2.4 Unknown acute toxicity (GHS-US): No data available.

3. Composition/information on ingredients
3.1 Substances: No data available
Full text of H-phrases: see section 16
3.2 Mixtures: The mixture contains dangerous substances:

Substance Name		CAS No.	% Percent	GHS-Su Classification
Copper	Cu	7440-50-8	46-62	Flam Sol. 1 H228, Aquatic Acute 1 H400
Zinc	Zn	7440-66-6	38-50	Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Inhalation), H332 Repr. IA, H360 STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1 H410
Nickel	Ni	7440-02-0	7-13	Skin Sens 1 H317, Carc. 2 H351, STOT RE 1 H372
Manganese	Mn	7439-96-5	1.5	Not classified
Iron	Fe	7439-89-6	1	Acute Tox. 4 (Oral) H302
Silicon	Si	7440-21-3	0.04-0.5	Not classified
Boric acid	H3BO3	10043-35-3	NE	Repr. 1B, H360
Borax	B4Na2O7	1303-96-4	NE	Repr. 1B, H360
Methaaylate compound		NE	NE	Not classified

4. First aid measures
4.1 Description of first aid measures:
First-aid measures after inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen and get medical attention.
First-aid measures after skin contact: Flush with water for at least 15 minutes. Seek medical attention if irritation develops or persists. First-aid measures after eye contact: Immediately flush eyes with water and continue washing for at least 15 minutes. Obtain medical attention if discomfort persists.
First-aid measures after ingestion: Do NOT induce vomiting. Get immediate medical attention.
4.2 Most important symptoms and effects, both acute and delayed:
Symptoms/injuries after inhalation: Short-term (acute) overexposure to the gases, fumes, and dusts may include irritation of the eyes, lungs, nose, and throat. Some toxic gases associated with welding may cause pulmonary edema, asphyxiation, and death.
Acute overexposure may include signs and symptoms such as watery eyes, nose and throat irritation, headache, dizziness, difficulty in breathing, frequent coughing, or chest pain. The presence of chromium/chromate in fume can cause irritation of

nasal membranes and skin. The presence of nickel compounds in fume can cause metallic taste, nausea, tightness of chest, fever, and allergic reaction. Excessive inhalation or ingestion of manganese can produce manganese poisoning. Overexposure to manganese compounds may affect the central nervous system, symptoms of which are languor, sleepiness, muscular weakness, emotional disturbances, and spastic gait resembling
Parkinsonism. These symptoms can become progressive and permanent if not treated. Excessive inhalation of fumes may cause "Metal Fume
Fever" with Flu-like symptoms such as chills, fever, body aches, vomiting, sweating, etc.

Symptoms/injuries after skin contact: Dusts may cause irritation.
Symptoms/injuries after eye contact: Causes eye irritation.
Symptoms/injuries after ingestion: Not an anticipated route of exposure during normal product handling. May be harmful if ingested.

4.3 Indication of any immediate medical attention and special treatment needed: No data available.

5. Firefighting measures
5.1 Extinguishing media:
Suitable extinguishing media: Use extinguishing media appropriate for surrounding fire.
Unsuitable extinguishing media: No data available.

5.2 Special hazards arising from the substance or mixture: Fire may produce irritating or poisonous gases.
Fire hazard: Not flammable
Explosion hazard: None known
5.3 Advice for firefighters: In the event of fire, wear self-contained breathing apparatus and full protective gear.

6. Accidental release measures
6.1 Personal precautions, protective equipment and emergency procedures:
For non-emergency personnel: Wear appropriate personal protective equipment as specified in Section 8. Ensure adequate ventilation.
For emergency responders: No data available.
6.2 Environmental precautions: Avoid release into the environment. Avoid dispersal of spilled material and contact with soil, ground and surface water drains and sewers.
6.3 Methods and material for containment and cleaning up: Take up mechanically. Collect the material in labeled containers and dispose of
according to local and regional authority requirements.
6.4 Reference to other sections: See Section 7 for information of safe handling. See Section 8 for information on personal protection equipment. See Section 13 for disposal information.

7. Handling and storage
7.1 Precautions and safe handling: Welding may produce dust, fumes and gases hazardous to health. Avoid breathing dust, fumes and gases. Use adequate ventilation. Keep away from sources of ignition. Avoid contact with skin, eyes and clothing. Do not eat, drink and smoke in work areas.
7.2 Conditions for safe storage, including and incompatibilities: Store in cool, dry and well-ventilated place. Keep away from incompatible
materials. Keep away from heat and open flame.
7.3 Specific end use(s): For welding consumables and related products.

8. Exposure controls/personal protection.
8.1 Control parameters: Exposure limits were not established for these product

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Copper	(CAS No) 7440-50-8	
USA ACGIH	ACGIH (TWA) (mg/m3)	1 mg/m3
USA OSHA	OSHA PEL (TWA) (mg/m3)	1 mg/m3
Zinc	(CAS No) 7440-66-6	
USA ACGIH	ACGIH (TWA) (mg/m3)	5 mg/m3
USA OSHA	OSHA PEL (TWA) (mg/m3)	5 mg/m3
Nickel	(CAS No) 7440-02-0	
USA ACGIH	ACGIH (TWA) (mg/m3)	1.5 mg/m3
USA OSHA	OSHA PEL (TWA) (mg/m3)	1 mg/m3
Manganese	(CAS No) 7439-96-5	
USA ACGIH	ACGIH (TWA) (mg/m3)	0.1 mg/m3
USA OSHA	OSHA PEL (Ceiling) (mg/m3)	5 mg/m3
Iron	(CAS No) 7439-89-6	
USA ACGIH	ACGIH (TWA) (mg/m3)	2 mg/m3
USA OSHA	OSHA PEL (TWA) (mg/m3)	2 mg/m3
Silicon	(CAS No) 7440-21-3	
USA OSHA	OSHA PEL (TWA) (mg/m3)	5 mg/m3
Boric acid	(CAS No) 10043-35-3	
USA ACGIH	ACGIH (TWA) (mg/m3)	15 mg/m3
USA OSHA	OSHA PEL (TWA) (mg/m3)	10 mg/m3
Borax	(CAS No) 1303-96-4	
USA ACGIH	ACGIH (TWA) (mg/m3)	10 mg/m3
USA OSHA	OSHA PEL (TWA) (mg/m3)	1 mg/m3

8.2 Exposure controls:

Appropriate engineering controls: local exhaust and general ventilation must be adequate to meet exposure standards. Hand protection: Wear welding gloves.

Eye protection: Wear helmet or face shield with filter lens of appropriate shade number. See ANSI/ASC Z49.1 Section 4.2. Provide protective screens and flash goggles, if necessary, to shield others.

Skin and body protection: Wear head and body protection, which help to prevent injury from radiation, sparks, flame and electr ical shock.

See ANSI Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may in clude arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Train the employee not to touch live electrical parts and to insulate him/herself from work and ground. Welders should not wear short sleeve shirts or short pants.

Respiratory protection: If exposure limits are exceeded or irritation is experienced, NIOSH approved respiratory protection should be worm.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties:

Physical state:	- Solid
Appearances:	- Rods
Color:	- Silver or grayish silver coating
Odor:	- No data available
Odor threshold:	- No data available
pH:	- No data available
Relative evaporation rate (butyl acetate = l):	- No data available
Melting point:	- 1680 F (916 C)

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Freezing point:	- No data available
Initial boiling point and boiling range:	- No data available
Flash point:	- No data available
Self ignition temperature:	- No data available
Decomposition temperature:	- No data available
Flammability (solid, gas):	- No data available
Vapour pressure:	" No data available
Relative vapour density at 20· C:	- No data available
Relative density:	- No data available
Solubility(ies)	- No data available
Log Pow:	- No data available
Log Kow:	- No data available
Viscosity, kinematic:	- No data available
Viscosity, dynamic:	- No data available
Explosive properties:	- No data available
Oxidizing properties:	- No data available
Explosive limits:	- No data available

9.2 Other information: No additional information available.

10. Stability and reactivity

10.1 Reactivity: No additional information available.
10.2 Chemical stability: The product is stable under normal conditions. When using it may produce dangerous fumes and gases.
10.3 Possibility of hazardous reactions: Will not occur.
10.4 Conditions to avoid: None
10.5 Incompatible materials: None
10.6 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 process, procedure and welding consumables used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coating on the metal being welded (i.e. paint,
painting, galvanizing), the number of welders, the volume of the work area, the quality and the amount of ventilation, the position of the welders head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from the cleaning and degreasing activities).
When an electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed
in Section 3. Fume and gas decomposition, and not the ingredients in the electrode, are important. The concentration of a given fume or gas component may decrease or increase by many times the original concentration. Also, new compounds not in the electrodes may form. Decomposition products of normal operation include those originating from the volatilization, reaction or oxidation of the materials shown in Section 3, plus those from the base metal coating, etc., as noted above. Reasonable expected fume constituents of this product would include: Complex oxides of iron, manganese, silicon, chromium, nickel, columbium, molybdenum, copper, carbon dioxide, carbon monoxide, ozone and
nitrogen Oxides. Some products will also contain antimony, barium, molybdenum, aluminum, columbium, magnesium, strontium, tungsten, and or zirconium. Fume limit for chromium, nickel and or manganese may be reached before limit of 5 mg/m3 of general welding fumes is reached.

Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc. Determine the composition and quantity of fumes and gases to which workers are exposed by taking an air sample from inside the welder's helmet if worn or in the worker's breathing zone. Improve ventilation if exposures are not below limits. See ANSI/AWS Fl.!, Fl.3 and Fl.5,
available from the American Welding Society, 550 N.W. Lejeune Road, Miami, FL 33126.

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11. Toxicological information

11.1 Information on toxicological effects: Acute toxicity: Harmful if swallowed

Substance name	CAS number	LD5O oral rat (mg/kg)	ATE (oral) (mg/kg)	
Copper	7440-50-8	>2000 mg/kg	>2000 mg/kg	
Zinc	7440-66-6		124 mg/kg	
Nickel	7440-02-0	> 9000 mg/kg		
Manganese	7439-96-5		9,000,000 mg/kg	
Iron	7439-89-6	984 mg/kg	984,000 mg/kg	bodyweight
Silicon	7440-21-3	>3160 mg/kg		
Boric acid	10043-35-3	>2660 mg/kg	>53 mg/kg	
Borax	1303-96-4	>2660 mg/kg	>10000 mg/kg	

Skin corrosion/irritation: Not classified
Serious eye damage/irritation: Not classified
Respiratory or skin sensitization: May cause an allergic skin reaction
Germ cell mutagenicity: Not classified
Carcinogenicity: May cause cancer
Reproductive toxicity: Not classified
Specific target organ toxicity (both exposures): Not classified
Aspiration hazard: Not classified

12. Ecological information

12.1 Toxicity: Ecology - general: Very toxic to aquatic life.

Copper (CAS No) 7440-50-8	
LC50 fishes 1	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 - 0.0535 mg/l (Exposure time: 72 h - species: Pseudokirchneriella subcapitata[static])
LC50 fish 2	< 0.3 mg/l (Exposure time: 96 h - species: Pimephales promelas ([static])
EC50 other aquatic organisms 2	0.031 - 0.054 mg/l (Exposure time: 96 h - species: Pseudokirchneriella subcapitata[static])
Zinc (CAS No) 7440-66-6	
LC50 fishes 1	2.16 - 3.05 mg/l (Exposure time: 96 h - species: Pimephales promelas [flow-through])
EC50 Daphnia 1	0.139 - 0.908 mg/l (Exposure time: 48 h - species: Daphnia magna [static])
LC50 fish 2	0.211 - 0.269 mg/l (Exposure time: 96 h - species: Pimephales promelas ([semi-static])
EC50 other aquatic organisms 2	0.09 - 0.125 mg/l (Exposure time: 72 h - species: Pseudokirchneriella subcapitata[static])
Nickel (CAS No) 7440-02-0	
LC50 fishes 1	1.3 mg/l - (Exposure time: 96 h - species: Cyprinus carpio)

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EC50 Daphnia 1	1 mg/l (Exposure time: 48 h - species: Daphnia magna [static])
Manganese (CAS No) 7439-96-5	
LC50 fishes 1	0.12 mg/l (Exposure time: 96 h - species: Oncorhynchus mykiss [semi-static])
EC50 other aquatic organisms 1	0.1 mg/l (Exposure time: 96 h - species: Ctenopharynhodon idella[static])
Iron (CAS No) 7439-89-6	
LC50 fishes 1	0.56 mg/l (Exposure time: 96 h - species: Cyprinus carpio [semi-static])
Silicon (CAS No) 7440-21-3	
BCF fish 1	(no bioaccumulation expected)
Boric acid (CAS No) 10043-35-3	
LC50 fishes 1	279 mg/l - (Exposure time: 96 h - species: Ptychocheilus lucius)
EC50 Daphnia 1	133 mg/l (Exposure time: 48 h - species: Daphnia magna [static])
Borax (CAS No) 1303-96-4	
LC50 fishes 1	178 mg/l - (Exposure time: 96 h - species: Carassius auratus)
EC50 Daphnia 1	1085 mg/l (Exposure time: 48 h - species: Daphnia magna [static])

12.2 Persistence and degradability: No additional information available.
12.3 Bioaccumulative potential: No additional information available.
12.4 Mobility in soil: No additional information available.
12.5 Other adverse effects: No additional information available.

13. Disposal considerations

13.1 Waste treatment methods: Dispose of in accordance with local and national regulations.
Waste disposal recommendations: Dispose of contents/container in accordance with local/regional/national/international regulations.

14. Transport information

In accordance with DOT I ADR I RID I ADNR I IMDG I ICAO I lATA
14.1 UN Number: Not a dangerous good in sense of transport regulations
14.2 UN proper shipping name: Not applicable

15. Regulatory information

Copper (CAS No) 7440-50-8
Listed on the United States TSCA (Toxic Substances Control Act) Inventory
Listed on SARA Section 313 (Specific toxic chemical listings)
SARA Section 313 - Emission Reporting 1.0%
Zinc (CAS No) 7440-66-6
Listed on the United States TSCA (Toxic Substances Control Act) Inventory
Listed on SARA Section 313 (Specific toxic chemical listings)
SARA Section 313 - Emission Reporting 1.0% (dust or fume only)

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Nickel (CAS No) 7440-02-0
Listed on the United States TSCA (Toxic Substances Control Act) Inventory
Listed on SARA Section 313 (Specific toxic chemical listings)
SARA Section 313 - Emission Reporting 0.1%
Manganese (CAS No) 7439-21-3
Listed on the United States TSCA (Toxic Substances Control Act) Inventory
Listed on SARA Section 313 (Specific toxic chemical listings)
SARA Section 313 - Emission Reporting 1.0% (dust or fume only)
Iron (CAS No) 7439-89-6
Listed on the United States TSCA (Toxic Substances Control Act) Inventory
Silicon (CAS No) 7440-21-3
Listed on the United States TSCA (Toxic Substances Control Act) Inventory
Boric acid (CAS No) 10043-35-3
Listed on the United States TSCA (Toxic Substances Control Act) Inventory
Borax (CAS No) 1303-96-4
Listed on the United States TSCA (Toxic Substances Control Act) Inventory

16. Other information including information on preparation and revision of the SDS

H228	Flammable solid
H261	In contact with water releases flammable gas
H301	Toxic if swallowed
H302	Harmful if swallowed
H302	Harmful if swallowed
H314	Causes severe skin burns and eye damage
H315	Causes skin irritation
H317	May cause an allergic skin reaction
H318	Causes serious eye damage
H319	Causes serious eye irritation
H322	Harmful if inhaled
H330	Fatal if inhaled
H334	May cause allergy or asthma symptoms or breathing dfficulties if inhaled.
H335	May cause respiratory irritation
H336	May cause drowiness or dizziness
H350	May cause cancer
H351	Suspected of causing cancer
H360	May damage fertility or the unborn child
H361	Suspected of damaging fertility or the unborn child
H372	Causes damage to organs through prolonged or repeated exposure
H373	May cause damage to organs through prolonged or repeated exposure.
H400	Very toxic to aquatic life

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Acute Tox. 2 (Inhalation)	Acute toxicty (inhal.), Category 2
Acute Tox. 3 (Oral)	Acute toxicty (oral), Category 3
Acute Tox. 4 (Oral)	Acute toxicty (oral), Category 4
Acute Tox. 4 (Oral)	Acute toxicty (oral), Category 4
Aquatic Acute 1	Hazardous to the aquatic environment - Acute Hazard, Category 1
Aquatic Acute 1	Hazardous to the aquatic environment - Acute Hazard, Category 1
Carc. 1A	Carcinogenicity, Category 1A
Carc. 1A	Carcinogenicity, Category 1A
Eye Irrit. 2A	Serious eye deamage/eye irritation Category 2A

Disclaimer

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