



Material Safety Data Sheet

Carbon Arc electrodes (Please ensure the correct person receives this MSDS)

1. Product and company identification

Product name	: Carbon Arc electrodes
Trade name	: Graphite, copper electrodes.
Material uses	: Arc metal removal.
Supplier	: Astaras Welding Accessotires 6901 Bryan Dairy Rd. Unit #160 Largo, FL 33777 Tel : (727) 546-9600 Fax : (727) 546-9699
Manufacturer	: Shandong Weldstone Tungsten Industry Co., LTD. 188 Zhoulong Rd Zhoucun District, Zibo City Shandong Province, PR China 255300 Tel : 865336824658 Fax : 865336823685
MSDS authored by	: KMK Regulatory Services inc.
In case of emergency	: CHEMTREC, U.S. : 1-800-424-9300 International: +1-703-527-3887
Product type	: Solid.

2. Hazards identification

Emergency overview

Color	: Black.
Physical state	: Solid. [Rod.]
Odor	: Odorless.
Signal word	: WARNING!
Hazard statements	: MAY CAUSE RESPIRATORY TRACT AND EYE IRRITATION. CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE. CANCER HAZARD - CONTAINS MATERIAL WHICH CAN CAUSE CANCER.
Precautions	: Avoid exposure - obtain special instructions before use. Do not breathe dust. Do not get on skin or clothing. Avoid contact with eyes. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.
OSHA/HCS status	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Routes of entry	: Dermal contact. Eye contact. Inhalation. Ingestion.
<u>Potential acute health effects</u>	
Inhalation	: May cause respiratory tract irritation.
Ingestion	: No known significant effects or critical hazards.
Skin	: No known significant effects or critical hazards.
Eyes	: Dust particules or fumes may cause eye irritation.
<u>Potential chronic health effects</u>	
Chronic effects	: Contains material that can cause target organ damage.
Carcinogenicity	: Contains material which can cause cancer. Risk of cancer depends on duration and level of exposure.
Mutagenicity	: No known significant effects or critical hazards.
Teratogenicity	: No known significant effects or critical hazards.
Developmental effects	: No known significant effects or critical hazards.
Fertility effects	: No known significant effects or critical hazards.
<u>Target organs</u>	: Contains material which causes damage to the following organs: kidneys, lungs, liver, cardiovascular system, upper respiratory tract, skin, eye, lens or cornea.

2. Hazards identification

Over-exposure signs/symptoms

- Inhalation** : Adverse symptoms may include the following:
respiratory tract irritation
coughing
- Ingestion** : No specific data.
- Skin** : No specific data.
- Eyes** : Adverse symptoms may include the following:
irritation
watering
redness
- Medical conditions aggravated by over-exposure** : Repeated or prolonged exposure to the substance can produce target organs damage. Prolonged or repeated contact may cause eye irritation.

See toxicological information (section 11)

3. Composition/information on ingredients

United States

Name	CAS number	%
Graphite	7782-42-5	30 - 60
Carbon	7440-44-0	30 - 60
Copper	7440-50-8	10 - 30
Quartz	14808-60-7	0.5 - 1

Canada

Name	CAS number	%
Graphite	7782-42-5	30 - 60
Carbon	7440-44-0	30 - 60
Copper	7440-50-8	10 - 30
Quartz	14808-60-7	0.5 - 1

Mexico

Name	CAS number	UN number	%	IDLH	Classification			
					H	F	R	Special
Graphite	7782-42-5	Not regulated.	30 - 60	1250 mg/m ³	0	1	0	
Carbon	7440-44-0	UN1361	30 - 60	-	1	1	0	
Copper	7440-50-8	Not regulated.	10 - 30	100 mg/m ³	1	0	0	
Quartz	14808-60-7	Not regulated.	0.5 - 1	50 mg/m ³	2	0	0	

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4. First aid measures

- Eye contact** : Immediately flush eyes with plenty of water for at least 20 minutes, occasionally lifting the upper and lower eyelids. Get medical attention.
- Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 20 minutes. Get medical attention.
- Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Get medical attention.
- Ingestion** : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.
- Notes to physician** : No specific treatment. Treat symptomatically.

5. Fire-fighting measures

- Flammability of the product** : No specific fire or explosion hazard.
- Extinguishing media**
- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
Welding arcs and sparks can ignite combustibles. Refer to ANSI Z49.1 "SAFETY IN WELDING AND CUTTING" published by the American Welding Society for fire prevention and protection information during welding.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
metal oxide/oxides
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

- Personal precautions** : Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).
- Environmental precautions** : Water polluting material. May be harmful to the environment if released in large quantities. Hazardous to aquatic environment. May cause long-term adverse effects in the aquatic environment. Prevent leaking substances from running into the aquatic environment or the sewage system.
- Methods for cleaning up**
- Small spill** : Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor. Note: see section 1 for emergency contact information and section 13 for waste disposal.

7. Handling and storage

- Handling** : Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not get in eyes or on skin or clothing. Do not ingest. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Storage** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8. Exposure controls/personal protection

United States

Ingredient	Exposure limits
Graphite	ACGIH TLV (United States, 1/2008). TWA: 2 mg/m ³ 8 hour(s). Form: Dust NIOSH REL (United States, 6/2008). TWA: 2.5 mg/m ³ 10 hour(s). Form: Respirable fraction OSHA PEL Z3 (United States, 9/2005). TWA: 15 mppcf 8 hour(s).
Carbon	ACGIH (United States). TWA: 10 mg/m ³ 8 hour(s). Form: Nuisance particulates.
Copper	OSHA PEL (United States, 11/2006). TWA: 1 mg/m ³ 8 hour(s). Form: Dusts and Mists TWA: 0.1 mg/m ³ 8 hour(s). Form: Fume NIOSH REL (United States, 6/2008). TWA: 1 mg/m ³ 10 hour(s). Form: Dusts and Mists ACGIH TLV (United States, 1/2008). TWA: 0.2 mg/m ³ 8 hour(s). Form: Fume TWA: 1 mg/m ³ , (as Cu) 8 hour(s).
Silica, Crystalline - Quartz	OSHA PEL Z3 (United States, 9/2005). TWA: 10 mg/m ³ 8 hour(s). Form: Respirable TWA: 250 mppcf 8 hour(s). Form: Respirable TWA: 30 mg/m ³ 8 hour(s). Form: Total dust ACGIH TLV (United States, 1/2008). TWA: 0.025 mg/m ³ 8 hour(s). Form: Respirable fraction NIOSH REL (United States, 6/2008). TWA: 0.05 mg/m ³ 10 hour(s). Form: Respirable dust

Canada

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredient	List name	ppm	mg/m ³	Other	ppm	mg/m ³	Other	ppm	mg/m ³	Other	Notations
Copper	US ACGIH 1/2008	-	0.2	-	-	-	-	-	-	-	[a]
Copper, Cu	AB 6/2008	-	1	-	-	-	-	-	-	-	[b]
	BC 6/2008	-	0.2	-	-	-	-	-	-	-	[a]
	ON 6/2008	-	1	-	-	-	-	-	-	-	[b]
	QC 6/2008	-	0.2	-	-	-	-	-	-	-	[a]
Copper, as Cu	QC 6/2008	-	1	-	-	-	-	-	-	-	[b]
		-	0.2	-	-	-	-	-	-	-	[3] [a]
Silica, Crystalline - Quartz	US ACGIH 1/2008	-	0.025	-	-	-	-	-	-	-	[b]
	AB 6/2008	-	0.1	-	-	-	-	-	-	-	[a]
	BC 6/2008	-	0.025	-	-	-	-	-	-	-	[c]
	QC 6/2008	-	0.1	-	-	-	-	-	-	-	[d]
Graphite	US ACGIH 1/2008	-	2	-	-	-	-	-	-	-	[e]
	AB 6/2008	-	2	-	-	-	-	-	-	-	[f]
	BC 6/2008	-	2	-	-	-	-	-	-	-	[g]
	ON 6/2008	-	2	-	-	-	-	-	-	-	
	QC 6/2008	-	2	-	-	-	-	-	-	-	[h]
Carbon		-	2	-	-	-	-	-	-	-	[h]

[3]Skin sensitization

Form: [a]Fume [b]Dusts and mists [c]Respirable fraction [d]Respirable particulate [e]Respirable [f]Respirable dust [g]Dust [h]Respirable dust.

Mexico

Ingredient	Exposure limits
Graphite	NOM-010-STPS (Mexico, 9/2000). LMPE-PPT: 2 mg/m ³ 8 hour(s).
Carbon	NOM-010-STPS (Mexico, 9/2000). LMPE-PPT: 2 mg/m ³ 8 hour(s). Form: powder LMPE-PPT: 10 mg/m ³ 8 hour(s).
Copper	NOM-010-STPS (Mexico, 9/2000). Notes: as Cu LMPE-PPT: 0.2 mg/m ³ , (as Cu) 8 hour(s). Form: smoke LMPE-CT: 2 mg/m ³ , (as Cu) 15 minute(s). Form: smoke LMPE-PPT: 1 mg/m ³ , (as Cu) 8 hour(s). Form: powder and fog LMPE-CT: 2 mg/m ³ , (as Cu) 15 minute(s). Form: powder and fog

8. Exposure controls/personal protection

Silica, Crystalline - Quartz

NOM-010-STPS (Mexico, 9/2000).
LMPE-PPT: 0.1 mg/m³ 8 hour(s).

Consult local authorities for acceptable exposure limits.

- Recommended monitoring procedures** : Personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.
- Engineering measures** : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits.
- Hygiene measures** : Ensure that eyewash stations and safety showers are close to the workstation location. Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period.
- Personal protection**
- Respiratory** : Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Recommended: Use appropriate NIOSH approved dust respirator if PEL/TLV may be exceeded.
- Hands** : Use gloves appropriate for work or task being performed. Recommended: Natural rubber (latex).
- Eyes** : Safety eyewear should be used when there is a likelihood of exposure. Recommended: Safety glasses with side shields.
- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Recommended: Lab coat.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9. Physical and chemical properties

- Physical state** : Solid. [Rod.]
- Color** : Black.
- Odor** : Odorless.
- Melting/freezing point** : Weighted average: 1112.71°C (2034.9°F)
- Solubility** : Insoluble in the following materials: cold water and hot water.

10. Stability and reactivity

- Chemical stability** : The product is stable.
- Conditions to avoid** : Avoid exposure - obtain special instructions before use.
- Materials to avoid** : Incompatible with some strong acids.
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.
- Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.
- Hazardous polymerization** : Under normal conditions of storage and use, hazardous polymerization will not occur.

11. Toxicological information

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Carbon	LD50 Oral	Rat	>5 g/kg	-

Chronic toxicity

Carcinogenicity

Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
Silica, Crystalline - Quartz	A2	1	-	+	Proven.	-

12. Ecological information

Environmental effects : Very toxic to aquatic organisms. Water polluting material. May be harmful to the environment if released in large quantities.

Aquatic ecotoxicity

Product/ingredient name	Test	Result	Species	Exposure
Copper	-	Acute EC50 0.017 to 0.026 mg/L	Daphnia	48 hours
	-	Acute LC50 0.052 mg/L	Fish	96 hours
	-	Acute LC50 57 to 64 ug/L	Crustaceans	48 hours

Other adverse effects : No known significant effects or critical hazards.

13. Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. This material and its container must be disposed of in a safe way. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Empty containers or liners may retain some product residues. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14. Transport information

DOT/TDG/MXT/IMDG/IATA : Not regulated.

15. Regulatory information

United States

HCS Classification : Carcinogen
Target organ effects

U.S. Federal regulations : **United States inventory (TSCA 8b)**: All components are listed or exempted.
SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: Graphite; Carbon; Copper; Silica, Crystalline - Quartz
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Graphite: Immediate (acute) health hazard; Carbon: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard; Copper: Immediate (acute) health hazard; Silica, Crystalline - Quartz: Immediate (acute) health hazard, Delayed (chronic) health hazard

Clean Water Act (CWA) 307: Copper

Clean Water Act (CWA) 311: No products were found.

15 . Regulatory information

- Clean Air Act (CAA) 112 accidental release prevention:** No products were found.
Clean Air Act (CAA) 112 regulated flammable substances: No products were found.
Clean Air Act (CAA) 112 regulated toxic substances: No products were found.
- Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs)** : Not listed
- Clean Air Act Section 602 Class I Substances** : Not listed
- Clean Air Act Section 602 Class II Substances** : Not listed
- DEA List I Chemicals (Precursor Chemicals)** : Not listed
- DEA List II Chemicals (Essential Chemicals)** : Not listed

SARA 313

	<u>Product name</u>	<u>CAS number</u>	<u>Concentration</u>
Form R - Reporting requirements	: Copper	7440-50-8	10 - 30
Supplier notification	: Copper	7440-50-8	10 - 30

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

- State regulations** : Pennsylvania RTK Hazardous Substances: Graphite, natural.: (generic environmental hazard); Copper: (environmental hazard, generic environmental hazard)
 Massachusetts Substances: Graphite, natural.; Copper
 New Jersey: Silica crystalline, quartz; Copper

California Prop. 65

WARNING: This product contains a chemical or chemicals known to the state of California to cause cancer.

<u>Ingredient name</u>	<u>Cancer</u>	<u>Reproductive</u>	<u>No significant risk level</u>	<u>Maximum acceptable dosage level</u>
Silica, Crystalline - Quartz	Yes.	No.	No.	No.

Canada

- WHMIS (Canada)** : Class D-2A: Material causing other toxic effects (Very toxic).
- Canadian lists** : **CEPA Toxic substances:** None of the components are listed.
Canadian ARET: None of the components are listed.
Canadian NPRI: The following components are listed: Copper
Alberta Designated Substances: None of the components are listed.
Ontario Designated Substances: None of the components are listed.
Quebec Designated Substances: None of the components are listed.
- Canada inventory** : All components are listed or exempted.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Mexico

Classification :



International regulations

15 . Regulatory information

- International lists** : **Australia inventory (AICS):** All components are listed or exempted.
China inventory (IECSC): All components are listed or exempted.
Japan inventory: Not determined.
Korea inventory: All components are listed or exempted.
New Zealand Inventory of Chemicals (NZIoC): All components are listed or exempted.
Philippines inventory (PICCS): All components are listed or exempted.
- Chemical Weapons Convention List Schedule I Chemicals** : Not listed
- Chemical Weapons Convention List Schedule II Chemicals** : Not listed
- Chemical Weapons Convention List Schedule III Chemicals** : Not listed

16 . Other information

United States

- Label requirements** : MAY CAUSE RESPIRATORY TRACT AND EYE IRRITATION. CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE. CANCER HAZARD - CONTAINS MATERIAL WHICH CAN CAUSE CANCER.

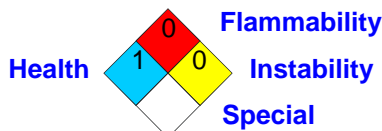
Hazardous Material Information System (U.S.A.) :

Health	*	1
Flammability		0
Physical hazards		0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.) :



Canada

- WHMIS (Canada)** :
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- Date of issue** : 05/15/2009
Date of previous issue : 12/31/2006
Version : 2

16 . Other information

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.