American Wire Research Inc.

Date:	2016/08/29	SDS No.:	M0054 AWR-SDS-CS-GMAW-1-B1
Product Type:	Carbon Steel Electrodes for Gas Shielded Arc Welding		
Supersedes:	AWR-SDS-CS-GMAW-1-B		

SAFETY DATA SHEETS

Conforms to Hazard Communication Standard, 29 CFR 1910.1200 Appendix D

SECTION 1: IDENTIFICATION

Identification of the substance or preparation

Product Type: Carbon Steel Electrodes for Gas Shielded Arc Welding

This SDSs covers all carbon steel welding electrodes products manufactured by KuangTai Metal at the following location:

Company/undertaking identification

Manufacturer/Supplier: Kuang Tai Metal Ind. Co., Ltd
Address: No. 20, Gongye Road, Erzhen, Guantian District,
Tainan City 72042, Taiwan, R.O.C
Tel: +886-6-6987615 Fax:+886-6-6988792

Product name and nominal composition

Product Name	Classification		Si	Mn	Mo	Cu	Ti	Fe	Others
AW-51/AW-51Z	AWS A5.18 ER70S-G	JIS Z3312 YGW15	1.0	1.6	--	0.5	0.3	bal	--
AWT-52	AWS A5.18 ER70S-2	JIS Z3312 W49A3U2	0.8	1.4	--	0.5	0.15	bal	--
AW-53/AW-53Z	AWS A5.18 ER70S-3	JIS Z3312 YGW16	0.8	1.4	--	0.5	--	bal	--
AW-54/AW-54Z	AWS A5.18 ER70S-4	JIS Z3312 YGW12	0.9	1.5	--	0.5	--	bal	--
AW-55/AW-55Z	AWS A5.28 ER80S-G	JIS Z3312 YGW18	1.1	2.6	0.4	0.5	0.3	bal	--
AW-56/AW-56Z	AWS A5.18 ER70S-6	JIS Z3312 YGW12	1.0	1.8	--	0.5	--	bal	--
AW-58/AW-58Z	AWS A5.18 ER70S-G	JIS Z3312 YGW11	1.1	1.9	--	0.5	0.3	bal	--
AW-59/AW-59Z	AWS A5.28 ER80S-G	JIS Z3312 YGW19	1.0	2.0	0.4	0.5	0.3	bal	--
AW-60/AW-60Z	AWS A5.28 ER80S-G	JIS Z3312 G59JA1UC3MIT	1.0	2.5	0.4	0.5	0.3	bal	--
AW-70/AW-70Z	AWS A5.18 ER70S-6	JIS Z3312 YGW12	1.0	1.8	--	0.5	--	bal	--
AW-80SB2/AWT-80SB2	AWS A5.28 ER80S-B2	JIS Z3317 W55-1CM	0.7	0.7	0.6	0.4	--	bal	
AW-90SB3/AWT-90SB3	AWS A5.28 ER90S-B3	JIS Z3317 W62-2C1M	0.7	0.7	1.2	0.4	--	bal	
AW-80SB6/AWT-80SB6	AWS A5.28 ER80S-B6	JIS Z3317 G55A-5CM	0.7	0.7	0.6	0.4	--	bal	
AW-80SB8/AWT-80SB8	AWS A5.28 ER80S-B8	JIS Z3317 G55A-9C1M	0.5	0.7	1.2	0.4	--	bal	
AW-90SB9/AWT-90SB9	AWS A5.28 ER90S-B9	JIS Z3317 G62A-9C1MV	0.5	1.2	1.2	0.2	--	bal	
AMC-70M/70C	AWS A5.18 E70C-6M/6C	JIS Z313 YFW-A502M	0.6	1.5	0.3	0.5	--	bal	

Notes: All materials listed in Wt. %

SECTION 2: HAZARDS IDENTIFICATION

The term 'hazardous' in 'Hazardous Materials' should be interpreted as a term required and defined in the Hazards Communication Standard and does not necessarily imply the existence of any hazard.

Emergency overview: These products consist of solid wire , which are odorless and may be copper coated. There are no immediate health hazards associated with the wire form of this product. These products are not reactive. If involved in a fire, these products may generate irritating iron fumes and a variety of metal oxides. Emergency responders must wear personal protective equipment suitable for the situation to which they are responding.

Warning: Protect yourself and others. Read and understand this information.When this product is used for it's intended purpose fumes and gases produced as a byproduct can be hazardous to your health. Aggravation of pre-existing respiratory or allergic conditions may occur in some workers. Arc Rays can injure eyes and burn skin. Electric

shock can kill.
Short-term exposure: Metallic taste; nausea; tightness of chest; fever; irritation of eyes, nose, throat and skin; loss of consciousness/death due to welding gases or lack of oxygen.
Long-term exposure: Adverse effects may result from long-term exposure to welding fume, gases, or dusts. These effects may include skin sensitization, neurological damage, and respiratory disease such as bronchial asthma, lung fibrosis or pneumoconiosis. Chromium and nickel, and their compounds, are on the International Agency for Research on Cancer (IARC) and the National Toxicology Program (NTP) lists as posing a carcinogenic risk to humans.
This section covers the materials from which this product is manufactured. The fumes and gases produced during welding with
the normal use of this product are covered by Section 10; see it for industrial hygiene information.
CAS Number shown is representative for the ingredients listed.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients:	CAS No.	TLV[1]	PEL[2]	REL[3]	STEL[4]	IDLH[5]
Silicon	7440-21-3	10.0	15.0	NE	NE	NE
Manganese	7439-96-5	0.2	1.0[6]	1.0	3.0	500
Molybdenum	7439-98-7	5.0	10.0	NE	NE	1000
Copper Dust (as Cu)	7440-50-8	0.2	1.0	1.0	NE	100
Titanium	7440-32-6	NE	NE	NE	NE	NE
Iron	7439-89-6	10.0	10.0	5.0	NE	2500

Notes: All values are in mg/m^3
SDS Notes [1] to [6] see section 16
NE = Not Established.

SECTION 4: FIRST-AID MEASURES

Turn off power and remove from exposure and obtain prompt medical attention. If victim is unconscious, administer oxygen. If not breathing, employ CPR (Cardiopulmonary Resuscitation) techniques immediately. If flu-like symptoms (cough, muscle pain, fever, chills, insomnia, or mental confusion) develop after use, obtain medical help immediately.

SECTION 5 : FIRE-FIGHTING MEASURES

This material is not flammable. However, welding arc and sparks can ignite combustibles.
National Fire Protection Association (NFPA) Rating: Health -2 Flammability -0 Reactivity -0
Note: The NFPA Health rating is based on the fumes generated during normal use.
Welding arc and sparks can ignite combustibles and flammable products. See Z49.1 referenced in Section 8

SECTION 6 : ACCIDENTAL RELEASE MEASURES

Spill of Leak Procedure: These products are solid metal wire, with no spill or leak hazards.

SECTION 7 : HANDLING AND STORAGE

Precautions: None

SECTION 8 : EXPOSURE CONTROLS/PERSONAL PROTECTION

Read and understand the manufacturer's instruction and the precautionary label on the product. See American National Standard Z49.1, 'Safety In Welding, Cutting and Allied Processes' published by the American Welding Society, 550 N.W. LeJeune Road, Miami, FL, 33126 (www.aws.org); and OSHA Safety and Health Standards, available from the U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954. (www.osha.gov). for more details on many of the following
Ventilation: Use enough ventilation, local exhaust at the arc, or both to keep the fumes and gases from the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes. Keep exposure as low as possible.
Respiratory Protection: Use respirable fume respirator or air supplied respirator when welding in confined space or general work area when local exhaust or ventilation does not keep exposure below TLV.
Eye Protection: Wear helmet or use face shield with filter lens shade number 12* or darker. Shield others by providing screens and flash goggles. (*) No specific recommendation for submerged arc.
Protective Clothing: Wear hand, head, and body protection which help to prevent injury from radiation, sparks and electrical shock. See ANSI-Z49.1.
At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Train the welder not to permit electrically live parts or electrodes to contact skin . . . or clothing or gloves if they are wet. Insulate from work and ground.
Disposal Information: Discard any product, residue, disposable container, or liner as ordinary waste in an environmentally acceptable manner according to Federal, State and Local Regulations unless otherwise noted.

SECTION 9 : PHYSICAL AND CHEMICAL PROPERTIES

Welding wire is a solid metal, shaped as wire of various diameters.
The following information is for the product:
Apperance and color: These products consist of solid wire , which are odorless and may be copper coated.
How to detect this substance(warning properties): The appearance is a distinctive characteristic of these products.
The following information is for elemental iron:
Odor threshold: Not applicable.
pH: Not applicable.
Melting point: 1535ºC (2795ºF).
Boiling point: 3000ºC (5432ºF).
Evaporation rate(nBuAc = 1): Not applicable.
Vapor pressure, mmHg @ 20ºC: Not applicable.
Relative vapor density(air = 1): Not applicable.
Specific gravity(water = 1): 7.86 .
Solubility in water: Insoluble.
Coefficient of oil/water distribution9partition cofficient): Not applicable.

SECTION 10 : STABILITY AND REACTIVITY

Stability Condition to Avoid: None
Materials to avoid : Avoid contact with mineral acids and oxidizing agents which may generate hydrogen gas
Hazardous Polymerization: Will Not Occur
Hazardous decomposition products : Welders are exposed to a range of fumes and gases. Fume particles contain a wide variety of oxides and salts of metals and other compounds, which are produced mainly from electrodes, filler wire and flux materials. Fumes from the welding of stainless steel and other alloys contain nickel compounds and chromium [VI] and [III]. Ozone is formed during most electric arc welding, and exposures can be high in comparison to the exposure limit, particularly during metal inert gas welding of aluminum. Oxides of nitrogen are found during manual metal arc welding and particularly during gas welding. Welders who weld painted mild steel can also be exposed to a range of organic compounds produced by pyrolysis.

Welding Fume and Gases By-product Exposure Limits						
Ingredients:	CAS No.	TLV[1]	PEL[2]	REL[3]	STEL[4]	IDLH[5]
Carbon Monoxide (CO)	630-08-0	28.6	55	40		1200
Chromium (Cr II and Cr III)	7440-47-3	0.5	0.5	0.5		25
Cobalt Fume (Co)	7440-48-4		0.1	0.05		20
Copper Fume (as CuO & Cu)	1317-38-0	0.2	0.1	0.1		100
Fluorides (F)		2.5	2.5			
Hexavalent Chromium1 (Cr VI)	1333-82-0	0.5	0.005	0.5		25
Iron Oxide Fume (as Fe2O3)	1309-37-1	5.0	10.0	5		2500
Manganese Fume (Mn)	7439-96-5	0.2	(C)5.0[6]	1	3.0	500
Molybdenum (Soluble) (Mo)	7439-98-7	10.0	5.0			1000
Nickel Metal (Ni)	7440-02-0	1.5	1.0	0.015		10
Nitrogen Dioxides (as NO2)	10102-44-0	5.6	(C)9.0[6]	1.8		37.6
Ozone (O3)	10028-15-6	0.4	0.2	(C)0.2[6]		9.8
Phosgene3 (COCl2)	75-44-5	0.4	0.4	0.4	0.8	8.1

Notes: All values are in mg/m^3

SECTION 11 : TOXICOLOGICAL INFORMATION

There is limited evidence in humans for the carcinogenicity of welding fumes and gases. IARC identifies Welding Fumes as a possible carcinogenic to humans (Group 2B). Nickel (Ni) and Cobalt (Co) are listed as Group 2B possible human carcinogen. Hexavalent Chromium (Cr VI) is a listed as a Class 1 human carcinogen by IARC.

- Canadian WHMIS Class D, Division 2B (Toxic).

SECTION 12 : ECOLOGICAL INFORMATION (NON-MANDATORY)

Ecological Information: Not Applicable

SECTION 13 : DISPOSAL CONSIDERATIONS (NON-MANDATORY)

Waste isposal Methods: Prevent waste from contaminating surrounding environment. Discard any product, residue, disposable container, or liner in an environmentally acceptable manor, in full compliance with federal state and local regulations.

SECTION 14 : TRANSPORT INFORMATION (NON-MANDATORY)

Proper Shipping Name: Not regulated by DOT, IMO, IATA or RID/ADR

SECTION 15 : REGULATORY INFORMATION (NON-MANDATORY)

SARA Title III: Not Applicable.However, large users may need to calculate and add their welding fume emissions to their inventory of the toxic emissions, using the material percentages listed in Section 1.
TSCA: All material contained within this product are on the TCSA Inventory List.
California Proposition 65 Warning: This product, when used for welding or cutting, produces fumes or gases which contain chemicals known to the state of California to cause cancer (California Health & Safety Code § 25249.6).
LABELING (Precautionary Statements):
WARNING: PROTECT yourself and others. Read and understand this information.
FUMES AND GASES can be hazardous to your health.
ARC RAYS can injure eyes and burn skin.
ELECTRIC SHOCK can KILL.

- Before use, read and understand the manufacturer's instructions, Material Safety Data Sheets (MSDSs), and your employer's safety practices.
- Keep your head out of the fumes.
- Use enough ventilation, exhaust at the arc, or both, 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

SECTION 16 : OTHER INFORMATION

SDS NOTES:

(1) Threshold Limit Value (TLV) -8-hour TWA as defined by American Conference of Governmental Industrial Hygienists (ACGIH).
(2) Permissible Exposure Limit (PEL) -8-hour TWA exposure as defined by OSHA (29CFR1910)
(3) Recommended Exposure Limit (REL) -8-hour TWA as defined by National Institute of Occupational Safety & Health (NIOSH)
(4) Short Term Exposure Limit (STEL) -15 minute TWA exposure as defined by OSHA (29CFR1910.1200) or certain state regulations
(5) Immediately Dangerous to Life & Health (IDLH) – As defined by OSHA and NIOSH.
(6) Ceiling Value (C) -Exposure which shall not be exceeded at any time during the working day.