NATIONAL STANDARD

A HEICO WIRE GROUP COMPANY

Material Safety Data Sheet

Updated –November 2008

Section 1 - Product Identification

Product Name: STANDARD-ARC™ WELDING WIRE

This MSDS covers all STANDARD-ARC™ welding products manufactured by National Standard t the following locations:

1631 Lake Street		3602 North Perkins Road
Niles, MI 49120	and	Stillwater, OK 74075
(269) 683-8100		(405) 377-5050

Section 1-A - Trade Name and Nominal Composition

All materials listed have a Wt. % of 1% or Greater. Copper-coated product.

Product Name	Si	Mn	Fe
STANDARD-ARC™	1.0	1.7	97.3

Section 2 - Hazardous Ingredients

IMPORTANT

This section covers the materials contained in the product as shipped.
The fumes and gases produced during welding are covered in Section 10.

Ingredient	CAS No.	PEL [1]	TLV [2]	REL [3]	STEL [4]	IDLH [5]
Manganese (Mn)	7439-96-5	(C)5.0 [6]	0.2	1.0	3.0	500
Copper (Cu)	7440-50-8	0.1	0.2	0.1		100
Silicon (Si)	7440-21-3	15.0	10.0	10.0		
Iron (Fe)	7439-89-6	10.0	10.0	5.0		2500

Note: All values are in mg/m^3

Section 3 - Hazard ID and Emergency Overview

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.

EXPOSURE LIMITS: The ACGIH recommended exposure limit for total welding fumes is $5mg/m^3$. OSHA requires employers to ensure exposures below individual constituent PEL's (See Section 3). Determine actual exposure by industrial hygiene monitoring.

Section 4 - First Aid Measures

EMERGENCY AND FIRST AID: Remove from exposure and obtain prompt medical attention. If victim is unconscious, administer oxygen. If not breathing, resuscitate immediately. If flu-like symptoms (cough, muscle pain, fever, chills, insomnia, or mental confusion) develop after use, obtain medical help immediately.

Section 5 - Fire and Explosion Hazard Data

Flammability: 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.

Section 6 - Spill or Leak Procedure
Spill of Leak Procedure: Not Applicable

Section 7 - Handling and Storage
Precautions: None.

Section 8 - Exposure Controls & Personal
Read and understand the manufacturer's instructions and the precautionary label on this product. See American National Standard Z49.1:1999, *Safety in Welding, Cutting and Allied Processes* published by the American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33126 (www.aws.org); 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).

VENTILATION: Use enough ventilation and/or local exhaust to keep fumes and gasses from you breathing zone and below all published exposure limits (See Section 10). To avoid exposure to metal fumes additional ventilation may be needed when welding on coated metals, such as painted, galvanized, or plated parts. Proper use of an appropriate respirator may be necessary when welding in a confined space, or if ventilation is inadequate. Train the welder to keep his head out of the fumes.

RESPIRATORY PROTECTION: Use air-purifying fume respirator or air-supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below PEL, TLV, REL and STEL levels.

EYE PROTECTION: Wear welding helmet or use face shield with filter lens, Shade No. 10 or darker. Provide protective screens or flash goggles if necessary to shield others.

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, and shoulder protection as well as dark, substantial clothing. Train the welder not to touch live electrical parts and to insulate himself from work and ground.

Section 9 - Physical and Chemical Properties
Welding wire is a solid metal, shaped as wire of various diameters, which may be gray or copper colored.
Density: 489.6 lbs/ft^3 **Melting Point:** 2700 ^oF

Section 10 - Stability & Reactivity Information
Materials to Avoid: Avoid contact with mineral acids and oxidizing agents which may generate hydrogen gas.

Stability Condition to Avoid: None

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.

The following exposure limits apply to those fumes and gases which may be found in the welding environment:

Ingredient	CAS No.	PEL [1]	TLV [2]	REL [3]	STEL [4]	IDLH [5]
Carbon Monoxide (CO)	630-08-0	55	28.6	40		1200
Copper (Cu)	7440-50-8	0.1	0.2	0.1		100
Fluorides (F)		2.5	2.5			
Iron Oxide Fume (as Fe_2O_3)	1309-37-1	10.0	5.0	5.0		2500
Manganese Fume (Mn)	7439-96-5	(C) 5.0 [6]	0.2	1.0	3.0	500
Nitrogen Dioxides (as NO_2)	10102-44-0	(C) 9.0 [6]	5.6	1.8		37.6
Ozone (O_3)	10028-15-6	0.2	0.4	(C) 0.2 [6]		9.8
Phosgene[3] ($COCl_2$)	75-44-5	0.4	0.4	0.4	0.8	8.1

Note: All values are in mg/m^3.

Section 11 - Toxicological Information

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).

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

Section 12 - Ecological Information

Ecological Information: Not Applicable

Section 13 - Disposal Considerations

Waste Disposal 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 - MSDS Transportation Information

Proper Shipping Name: Not regulated by DOT, IMO, or IATA.

Section 15 - Regulatory Information

SARA Title III Information: 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 1A.

TSCA: All materials contained within this product are on the TSCA Inventory List.

Clean Air Act: Large users or facilities subject to Title V requirements may need to add their welding fume emissions to their annual emissions inventory, using the material percentages listed in Section 1A.

Section 16 - Other Information

MSDS NOTES:

(1) Permissible Exposure Limit (PEL) - 8-hour TWA exposure as defined by OSHA (29CFR1910).
(2) Threshold Limit Value (TLV) - 8-hour TWA as defined by American Conference of Governmental Industrial Hygienists (ACGIH).
(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.

Approved By: Brian J. McGuire, Corporate EH&S Manager **Date:** November 21, 2008

This data is believed to be accurate and was obtained from recognized technical sources, but cannot be warranted as to its accuracy or sufficiency. See www.heicowiregroup.com for the most recent MSDS.