Date of Issue: August 4, 2015

SAFETY DATA SHEET

Conforms to Hazard Communication Standard, 29 CFR 1910.1200 Appendix D

SECTION 1 - IDENTIFICATION

Identification of the substance or preparation
Product Type: Carbon Steel and Low Alloy Steel Welding Wires or Rods
This SDS covers all Executive brand carbon steel and low alloy steel welding electrode or rods products supplied by:

Company/undertaking identification
Supplier: Exocor
Address: 271 Ridley Road, St. Catharines, Ontario L2S 0B3, Canada
Tel: 888-317-2209 Fax: 855-317-2209

SECTION 1-A - PRODUCT NAME AND NOMINAL COMPOSITION

All materials 1isted have a Wt. % of 1% or greater except for Ni & Cr which are listed at 0.1% or greater

Classification		Mn	Mo	Ni	Cr	Cu	Ti	Fe	Others
AWS A5.18 ER70S-3	JIS Z3312 YGWl6	1.4				0.5	--	bal	
AWS A5.18 ER70S-6	JIS Z3312 YGW12	1.8				0.5	--	bal	
AWS A5. l 8 ER70S-2	JIS Z3316 W49A3U2	1.4				0.5	0.15	bal	Zr: 0.12 A1: 0.15
AWS A5.28 ER80S-B2	JIS Z3317 W55-1CM	0.7	0.6	0.2	1.5	0.4	--	bal	
AWS A5.28 ER90S-B3	JIS Z3317 W62-2C1M	0.7	1.2	0.2	2.7	0.4	--	bal	
AWS A5.28 ER80S-B6	JIS Z3317 G55A-5CM JIS Z3317 W55-5CM	0.7	0.6	0.5	6.0	0.4	--	bal	
AWS A5.28 ER80S-B8	JIS Z3317 G55A-9C1M JIS Z3317 W55-9C1M	0.7	1.2	0.5	10	0.4	--	bal	
AWS A5.28 ER90S-B9	JIS Z3317 G62A-9C1MV JIS Z3317 W62-9C1MV	1.2	1.2	0.8	10	0.2	--	bal	V: 0.3
AWS A5.28 ER80S-Ni1	JIS Z3312 G55A4 N2 JIS Z3316 W55A4 N2	1.3	0.3	1.1	0. 1	0.4	--	bal	
AWS A5.28 ER80S-Ni2	JIS Z3312 G55P6 A N5 JIS Z3316 W55P6 N5	1.3	0.3	2.7	--	0.4	--	bal	
AWS A5.28 ER80S-D2	JIS Z3312 G55A3 A 4M3l JIS Z3316 W55A3 4M3l	2.1	0.6	0.1	--	0.5	--	bal	
AWS A5.23 EB3		0.5	0.1		2.4				
AWS A5.23 EB2		0.7	0.5		1.1				
AWS A5.23 EB6		0.5	0.5	0.2	4.9	0.1			
AWS A5.23 EB8		0.5	0.8	0.1	8.4	0.1			
AWS A5.23 EB9		0.4	0.9	0.5	9.0	0. 1			

SECTION 2 - HAZARDS INGREDIENT

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.

Ingredients:	CAS No.	TLV [1]	PEL [2]	REL [3]	STEL [4]	IDLH [5]
Chromium	7440-47-3	0.5	1.0	0.5		25
Nickel	7440-02-0	1.5	1.0	0.015		10
Molybdenum	7439-98-7	5.0	10.0			1000
Manganese	7439-96-5	0.2	1.0	1.0	3.0	500
Iron	7439-89-6	10.0	10.0	5.0		2500
Copper Dust(as Cu)	7440-50-8	0.2	1.0	1.0		100

Note: All values are mg/m^3

SECTION 3 - HAZARD IDENTIFICATION AND EMERGENCY OVERVIEW

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.

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/m3. OSHA requires employers to ensure exposures below individual constituent PEL's (See Section 10). Determine actual exposure by industrial hygiene monitoring.

SECTION 4 – FIRST AID MEASURES

Tum 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 AND EXPLOSION HAZARD DATA

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.l referenced in Section 8

SECTION 6 - SPILL OR LEAK PROCEDURE

Spill or Leak Procedure: Not Applicable

SECTION 7 - HANDLING AND STORAGE

Precautions: None

SECTION 8 – EXPOSURE CONTROL AND PERSONAL PROTECTION

Read and understand the manufacturer's instruction and the precautionary label on the product. See American National Standard Z49.l, '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.l.

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. No other physical properties apply.

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 pa1licles 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 Chromium 1 (Cr VI)	1333-82-0	0.5	0.005	0.5		25
Iron Oxide Fume (as Fe203)	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 N02)	10102-44-0	5.6	(C)9.0[6]	1.8		37.6
Ozone (03)	10028-15-6	0.4	0.2	(C)0.2[6]		9.8
Phosgene3 (COC12)	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

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 listed as a Class 1 human carcinogen by IARC.

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

SECTION 12 - ECOLOGICAL INFORMATION

Ecological Information: Not Applicable

SECTION 13 - DISPOSAL CONSIDERATION

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

SECTION 14 - TRANSPORTATION INFORMATION

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

SECTION 15 - REGULATORY INFORMATION

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-A.
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).

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.

This data is believed to be accurate and was obtained from recognized technical sources, but cannot be warranted as to its accuracy or sufficiency.