

SAFETY DATA SHEET

This Safety Data Sheet (SDS) is for welding consumables and related products and may be used to comply with OSHA's Hazard Communication standard, 29 CFR 1910.1200, and Superfund Amendments and Reauthorization Act (SARA) of 1986 Public Law 99-499 and Canadian Workplace Hazardous Materials Information System (WHMIS) per Health Canada administrative policy. The OSHA standard must be consulted for specific requirements. This Safety Data Sheet complies with ISO 11014-1 and ANSI Z400.1. This document is translated in several languages and is available on our website at www.weldingmaterialsales.com, from your sales representative or by calling customer service at 1 (630) 232-6421.

SECTION 1 – IDENTIFICATION

Manufacturer/Supplier

Name: WELDING MATERIAL SALES, INC.
Address: 1340 REED ROAD GENEVA, IL 60134
Website: www.weldingmaterialsales.com

Telephone No: +1 (630) 232-6421
Emergency No: +1 (800) 424-9300

Products Type: CARBON STEEL FLUX CORED ARC WELDING ELECTRODES

Trade Name: E71T-1/1M-PLUS, E71T-1C/1M 9C/9M-BD727, E70T-4, E71T-11, E71T-GS

AWS Specification: A5.20

Recommended Use: TUBULAR ARC WELDING ELECTRODES

Restrictions on Use: Use only as indicated for welding operations.

SECTION 2 – IDENTIFICATION OF HAZARDS

HAZARD CLASSIFICATION – The products described in Section 1 are not classified as hazardous according to applicable GHS hazard classification criteria as required and defined in OSHA Hazard Communication Standard (29 CFR Part 1910.1200).

LABEL ELEMENTS: **Hazard Symbol** – No symbol required

Hazard Statement – Not applicable

Signal Word – No signal word required

Precautionary Statement – Not Applicable

HAZARDS NOT OTHERWISE CLASSIFIED

WARNING! - Avoid breathing welding fumes and gases, they may be dangerous to your health. Always use adequate ventilation. Always use appropriate personal protective equipment.

PRIMARY ROUTES OF ENTRY: Respiratory System, Eyes and/or Skin.

ARC RAYS: The welding arc can injure eyes and burn skin.

ELECTRIC SHOCK: Arc welding and associated processes can kill. See Section 8.

FUMES AND GASES: Can be dangerous to your health.

Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedures and electrodes used. Most fume ingredients are present as complex oxides and compounds and not as pure metals. When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 3. Decomposition products of normal operation include those originating from the volatilization, reaction or oxidation, plus those from the base metal and coating, etc., of the materials shown in Section 3 of this Safety Data Sheet. Monitor for the component materials identified in the list in Section 3.

Fumes from the use of this product may contain complex oxides or compounds of the following elements and molecules: amorphous silica fume, antimony trioxide, barium, calcium oxide, chromium, cobalt, copper, fluorspar or fluorides, lithium, manganese, nickel, silica and strontium. Other reasonably expected constituents of the fume would also include complex oxides of iron, titanium, silicon and molybdenum. Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating or galvanizing), the number of welders and the volume of the work area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities). One recommended way to determine the composition and quantity of fumes and gases to which workers are exposed is to take an air sample inside the welder's helmet if worn or in the worker's breathing zone. See ANSI/AWS F1.1 and F1.3, available from the "American Welding Society", 8669 NW 36 Street, # 130, Miami, Florida 33166-6672, Phone: 800-443-9353 or 305-443-9353.

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SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENTS

IMPORTANT - This section covers the hazardous materials from which this product is manufactured. This data has been classified according to the criteria of the Globally Harmonized System of Classification and Labeling of Chemicals (GHS) as required and defined in OSHA Hazard Communication Standard (29 CFR Part 1910.1200). The fumes and gases produced during welding with normal use of this product are addressed in Section 8.

INGREDIENT	CAS NO.	EINECS ^r	GROUP AND %WEIGHT				GHS Classification(s)	GHS HAZARD STATEMENTS (See Section 16 for Complete Phrases)
			A	B	C	D		
ALUMINUM	7429-90-5	231-072-3	<2	<5	<3 ⁽¹⁾	---	Powder (pyrophoric): - Pyr. Sol. 1 ⁽²⁾ - Water-react. 2 ⁽³⁾ Powder (Stabilized): - Flam. Sol. 1 ⁽⁴⁾ - Water-react. 2 ⁽³⁾	H250 H261 H228 H261
ALUMINUM OXIDE	1344-28-1	215-691-6	---	---	<3	---	NONE	
ANTIMONY TRIOXIDE	1309-64-4	215-175-0	---	---	<1 ⁽⁵⁾	---	- Carc. 2 ⁽⁶⁾	H351
BARIUM CMPDS (as Ba)	7440-39-3	231-149-1	---	---	<2 ⁽⁷⁾	---	NONE	
BARIUM FLOURIDE	7787-32-8	232-108-0	---	<12 ⁽⁸⁾	<12 ⁽⁹⁾	---	NONE	
CALCIUM CARBONATE	1317-65-3	215-279-6	---	<2 ⁽¹⁰⁾	---	---	NONE	
CERIUM OXIDE	1306-38-3	215-150-4	---	---	<2 ⁽¹¹⁾	---	NONE	
CHROMIUM (metal)	7440-47-3	231-157-5	---	---	<3	5-20	NONE	
COBALT	7440-48-4	231-158-0	---	---	<1 ⁽¹²⁾	---	- Resp. Sens. 1 ⁽¹³⁾ - Skin Sens. 1 ⁽¹⁴⁾ - Aquatic Chronic 4	H334 H317 H413
COPPER	7440-50-8	231-159-6	<1 ⁽¹⁵⁾	---	<2 ⁽¹⁵⁾	<1 ⁽¹⁵⁾	NONE	
FLUORSPAR	7789-75-5	232-188-7	<5 ⁽¹⁶⁾	<10	<5	---	NONE	
IRON	7439-89-6	231-096-4	75-98	75-95	75-98	75-95	NONE	
IRON OXIDE	1309-37-1	215-168-2	---	---	<12	---	NONE	
LITHIUM CARBONATE	554-13-2	209-062-5	---	---	<2	---	- EUH014 ⁽¹⁷⁾ - Skin Corr. 1B ⁽¹⁸⁾	EUH014 H314
LITHIUM FLUORIDE	7789-24-4	232-152-0	---	<2 ⁽¹⁹⁾	<2 ⁽¹⁹⁾	---	- EUH014 ⁽¹⁷⁾ - Skin Corr. 1B ⁽¹⁸⁾	EUH014 H314
LITHIUM OXIDE	12057-24-8	235-019-5	---	---	<2	---	- EUH014 ⁽¹⁷⁾ - Skin Corr. 1B ⁽¹⁸⁾	EUH014 H314
MAGNESIUM	7439-95-4	231-104-6	---	<3	<2	---	Powder (pyrophoric): - Pyr. Sol. 1 ⁽²⁾ - Water-react. 1 ⁽³⁾ Powder or turnings: - Flam. Sol. 1 ⁽⁴⁾ - Self-heat. 1 ⁽²⁰⁾ - Water-react. 2 ⁽³⁾	H250 H260 H228 H252 H261
MAGNESIUM OXIDE	1309-48-4	215-171-9	---	<3	<2	---	NONE	
MANGANESE	7439-96-5	231-105-1	<5	<2	<4	<2	- Acute Tox. 4 (Inhalation) ⁽²¹⁾ - Acute Tox. 4 (Oral) ⁽²¹⁾ - STOT RE 1 ⁽²²⁾	H332 H302 H372
MANGANESE OXIDE	1344-43-0	215-171-9	---	---	<2	---	NONE	
MOLYBDENUM	7439-98-7	231-107-2	<1	---	<2	<2	- STOT RE 2 ⁽²²⁾ - Eye Irrit. 2 ⁽²³⁾ - STOT SE 3 ⁽²⁴⁾	H373 H319 H335

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INGREDIENT	CAS NO.	EINECS ^f	GROUP AND %WEIGHT				GHS Classification(s)	GHS HAZARD STATEMENTS (See Section 16 for Complete Phrases)
			A	B	C	D		
NICKEL	7440-02-0	231-111-4	---	---	<4	<1	Powder/Element: - Carc. 2 ⁽⁶⁾ - Skin Sens. 1 ⁽¹⁴⁾ - STOT RE 1 ⁽²²⁾ - Aquatic Chronic 3	H351 H317 H372 H412
SILICA	14808-60-7	238-878-4	<2	<2	<2	---	- STOT RE 2 ⁽²²⁾ - Carc. 2 ⁽⁶⁾ - Acute Tox. 4 (Inhalation) ⁽²¹⁾	H373 H351 H332
(Amorphous Silica Fume)	69012-64-2	273-761-1	---	---	---	---	NONE	
SILICON	7440-21-3	231-130-8	<4	<2 ⁽²⁵⁾	<4	<2	NONE	
STRONTIUM FLUORIDE	7783-48-4	232-000-3	---	<2 ⁽²⁶⁾	---	---	NONE	
TITANIUM	7440-32-6	231-142-3	---	<2	<2	<2	NONE	
TITANIUM DIOXIDE	13463-67-7	236-675-5	<10	<4 ⁽²⁵⁾	<10	<2	- Carc. 2 ⁽⁶⁾	H351
ZINC	7440-66-6	231-175-3	<1 ⁽²⁷⁾	---	---	---	Powder (pyrophoric): - Pyr. Sol. 1 ⁽²⁾ - Water-react. 1 ⁽³⁾	H250 H260
ZIRCONIUM	7440-67-7	231-176-9	---	---	<1	---	- Pyr. Sol. 1 ⁽²⁾ - Water-react. 1 ⁽³⁾	H250 H260
HEXAVALENT CHROMIUM [CHROMIUM (VI) TRIOXIDE] (Fume constituent)	1333-82-0	215-607-8	Varies	Varies	Varies	Varies	- Ox. Sol. 1 ⁽²⁸⁾ - Carc. 1A ⁽⁶⁾ - Muta. 1B ⁽²⁹⁾ - Repr. Tox 2 ⁽³⁰⁾ - Acute Tox. 2 (Inhalation) ⁽²¹⁾ - Acute Tox. 3 (Skin & Oral) ⁽²¹⁾ - STOT RE 1 ⁽²²⁾ - Skin Corr. 1A ⁽¹⁸⁾ - Skin Sens. 1 ⁽¹⁴⁾ - Resp. Sens. 1 ⁽¹³⁾ - Aquatic Acute 1 - Aquatic Chronic 1	H271 H350 H340 H361f H330 H311, H301 H372 H314 H317 H334, H317 H400 H410

--- Dashes indicate the ingredient is not present within the group of products Γ – European Inventory of Existing Commercial Chemical Substance Number (1) Present only in FABCO ELEMENT 70C, 70M and 71M; FABCO XTREME 71, 120, B2, B3; FABSHIELD 3Ni1, 71K6, 71K6-NP, 71T8, 81N1, 81N1+, 81N2, 91T8, OFFSHORE 71Ni X80, X90, X100, XLNT-6 (2) Pyrophoric solid (Cat. 1) (3) Substance or mixture which in contact with water emits flammable gases (Cat. 1, 2 and 3) (4) Flammable solid (Cat. 1 and 2) (5) Present only in FABCOR 90, CVN, EDGE, EDGE D2, EDGE MC, EDGE Ni1, ELEMENT 70C6; MATRIX; METAL-COR MAXIM; METALLOY VANTAGE, VANTAGE CVN, VANTAGE D2, VANTAGE Ni1 (6) Carcinogenicity (Cat. 1A, 1B and 2) (7) Present only in FABCO ELEMENT 70T LF; FABCO XTREME 120, B2, B3; FABSHIELD XLNT-6 (8) Present only in FABSHIELD 21B, 23; TM 121, 123; SELF-SHIELD 11, 11GS (9) Present only in FABCO XTREME 71, 120, B2, B3; FABSHIELD 3Ni1, 71K6, 71K6-NP, 71T8, 81N1, 81N1+, 81N2, 91T8, XLNT-6, X80, X90, X100; FABSHIELD OFFSHORE 71Ni (10) Present only in FABSHIELD 21B, 0.030" and 0.035" 23, 7027; SELF-SHIELD 11, 0.030" and 0.035" 11GS; SPEED-SHIELD 11, 0.030" and 0.035" GS; TM 121, 0.030" and 0.035" 123 (11) Present only in FABSHIELD 71K6, 71K6-NP, 71T8, 81N1, 81N1+, 81N2, 91T8, OFFSHORE 71Ni, XLNT-6, X80, X90, X100 (12) Present only in FABSHIELD 71K6, 81N1, 81N2, X80, X90, X100 (13) Respiratory sensitization (Cat. 1, Sub-cat. 1A and 1B) (14) Skin sensitization (Cat. 1, Sub-cat. 1A and 1B) (15) Present only in ELEMENT 71T1C, 81Ni2C; FABCO 105D2, 110K3-M; FABCOR F6W; GALVACOR; METALLOY WS; TM-81W, 811W; SubCOR WS; all MEGAFIL and SubCOR SL products (16) Present only in FABCO 85, 105D2; METALLOY EM13K-S; SPEED-ALLOY 105D2; TM 55, 75, 95D2, 105D2; SubCOR EM13K-S, EM13K-S MOD (17) See EUH-Statements in Section 16 (18) Skin corrosion/irritation (Cat. 1, 1A, 1B, 1C and 2) (19) Present only in FABCO 70XHP, 101M, 712M, 750M, 812 Ni1M; ELEMENT 71T1C, 71T1M, 71Ni1C, 71Ni1M, 81K2C, 81K2M, 81Ni2C; FABSHIELD 3Ni1, 7027, 71K6, 71K6-NP, 71T8, 81N1, 81N2, 91T8, OFFSHORE 71Ni, X80, X90, X100 (20) Self-heating substance or mixture (Cat. 1 and 2) (21) Acute toxicity (Cat. 1, 2, 3 and 4) (22) Specific target organ toxicity (STOT) – repeated exposure (Cat. 1 and 2) (23) Serious eye damage/eye irritation (Cat. 1 and 2) (24) Specific target organ toxicity (STOT) – single exposure ((Cat. 1, 2) and Cat. 3 for narcotic effects and respiratory tract irritation, only) (25) Present only in FABSHIELD 55 (26) Present only in FABSHIELD 0.045" – 3/32" 21B; TM 121 (27) Present only in FabCOR F6LS (28) Oxidizing solid (Cat. 1, 2 and 3) (29) Germ cell mutagenicity (Cat. 1A, 1B and 2) (30) Reproductive toxicity (Cat. 1A, 1B and 2)

SECTION 4 – FIRST AID MEASURES

INGESTION: Not an expected route of exposure. Do not eat, drink, or smoke while welding; wash hands thoroughly before performing these activities. If symptoms develop, seek medical attention at once.

INHALATION during welding: If breathing is difficult, provide fresh air and contact physician. If breathing has stopped, perform artificial respiration and obtain medical assistance at once.

SKIN CONTACT during welding: Remove contaminated clothing and wash the skin thoroughly with soap and water. If symptoms develop, seek medical attention at once.

EYE CONTACT during welding: Dust or fume from this product should be flushed from the eyes with copious amounts of clean, tepid water until victim is transported to an emergency medical facility. Do not allow victim to rub or keep eyes tightly closed. Obtain medical assistance at once.

Arc rays can injure eyes. If exposed to arc rays, move victim to dark room, remove contact lenses as necessary for treatment, cover eyes with a padded dressing and rest. Obtain medical assistance if symptoms persist.

Section 11 of this SDS covers the acute effects of overexposure to the various ingredients within the welding consumable. Section 8 of this SDS lists the exposure limits and covers methods for protecting yourself and your co-workers.

SECTION 5 – FIRE-FIGHTING MEASURES

Fire Hazards: Welding consumables applicable to this sheet as shipped are nonreactive, nonflammable, non-explosive and essentially nonhazardous until welded.

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Welding arcs and sparks can ignite combustibles and flammable products. If there are flammable materials, including fuel or hydraulic lines, in the work area and the worker cannot move the work or the flammable material, a fire-resistant shield such as a piece of sheet metal or fire resistant blanket should be placed over the flammable material. If welding work is conducted within 35 feet or so of flammable materials, station a responsible person in the work zone to act as fire watcher to observe where sparks are flying and to grab an extinguisher or sound the alarm if needed.

Unused welding consumables may remain hot for a period of time after completion of a welding process. See American National Standard Institute (ANSI) Z49.1 for further general safety information on the use and handling of welding consumables and associated procedures.

Suitable Extinguishing Media: This product is essentially nonflammable until welded; therefore, use a suitable extinguishing agent for a surrounding fire.

Unsuitable Extinguishing Media: None known.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

In the case of a release of solid welding consumable products, solid objects can be picked up and placed into a disposal container. If airborne dust and/or fume is present, use adequate engineering controls and, if needed, personal protection to prevent overexposure. Refer to recommendations in Section 8. Wear proper personal protective equipment while handling. Do not discard as general trash.

SECTION 7 - HANDLING AND STORAGE

HANDLING: No specific requirements in the form supplied. Handle with care to avoid cuts. Wear gloves when handling welding consumables. Avoid exposure to dust. Do not ingest. Some individuals can develop an allergic reaction to certain materials. Retain all warning and product labels.

STORAGE: Keep separate from acids and strong bases to prevent possible chemical reactions.

SECTION 8 - EXPOSURE CONTROLS AND PERSONAL PROTECTION

Read and understand the instructions and the labels on the packaging. Welding fumes do not have a specific OSHA PEL (Permissible Exposure Limit) or ACGIH TLV (Threshold Limit Value). The OSHA PEL for Particulate – Not Otherwise Regulated (PNOR) is 5 mg/m³ – Respirable Fraction, 15 mg/m³ – Total Dust. The ACGIH TLV for Particles – Not Otherwise Specified (PNOS) is 3 mg/m³ – Respirable Particles, 10 mg/m³ – Inhalable Particles. The individual complex compounds within the fume may have a lower OSHA PEL or ACGIH TLV than the OSHA PNOR and ACGIH PNOS. An Industrial Hygienist, the OSHA PELs for Air Contaminants (29 CFR 1910.1000), and the ACGIH TLVs should be consulted to determine the specific fume constituents present and their respective exposure limits. All exposure limits are in milligrams per cubic meter (mg/m³).

INGREDIENT	CAS	EINECS	OSHA PEL	ACGIH TLV
ALUMINUM###	7429-90-5	231-072-3	5 R* (Dust), 15	1 R* {A4} 5 (Welding fumes, as Al)
ALUMINUM OXIDE##	1344-28-1	215-691-6	5 R*	1 R* {A4} 10 (as Al, Tot particulate)
ANTIMONY TRIOXIDE	1309-64-4	215-175-0	0.5 (as Sb)	0.5 (as Sb) {A2}
BARIUM CMPDS (as Ba)	7440-39-3	231-149-1	0.5 (as Ba)	0.5 (as Ba) {A4}
BARIUM FLOURIDE#	7787-32-8	232-108-0	0.5 (as Ba)	0.5 (as Ba) {A4}
CALCIUM CARBONATE	1317-65-3	215-279-6	5 R*, 5 (as CaO)	3 R*, 2 (as CaO)
CERIUM OXIDE	1306-38-3	215-150-4	5 R*, 15 (Dust)	3 R*, 10
CHROMIUM#	7440-47-3	231-157-5	1 (Metal) 0.5 (Cr II & Cr III Cpnds) 0.005 (Cr VI Cpnds Calif. OSHA PEL)	0.5 (Metal) {A4} 0.5 (Cr III Cpnds) {A4} 0.05 (Cr VI Sol Cpnds) {A1}
COBALT (Metal, dust and fume, as Co)	7440-48-4	231-158-0	0.1 (Dust and Fume)	0.01 (Cr VI Insol Cpnds) {A1} 0.02 {A3}
COPPER	7440-50-8	231-159-6	0.1 (Fume), 1 (Dust)	0.2 (Fume), 1 (Dust)
FLUORSPAR	7789-75-5	232-188-7	2.5 (as F)	2.5 (as F) {A4}
IRON+	7439-89-6	231-096-4	5 R*	5 R* (Fe ₂ O ₃) {A4}
IRON OXIDE	1309-37-1	215-168-2	10 (Oxide Fume)	5 R* (Fe ₂ O ₃) {A4}
LITHIUM CARBONATE	554-13-2	209-062-5	5 R*, 15 (Dust)	3 R*, 10 (Dust)
LITHIUM FLUORIDE	7789-24-4	232-152-0	2.5 (as F)	2.5 (as F) {A4}
LITHIUM OXIDE	12057-24-8	235-019-5	1 ■ ■	3 R*, 10 (Dust)
MAGNESIUM+	7439-95-4	231-104-6	5 R*	3 R*
MAGNESIUM OXIDE	1309-48-4	215-171-9	15 (Fume, Total Part)	10 I* {A4}
MANGANESE#	7439-96-5	231-105-1	5 CL ** (Fume) 1, 3 STEL*** ■	0.1 I* {A4} ◆ 0.02 R* ◆◆
MANGANESE OXIDE	1344-43-0	215-171-9	5 CL ** (Fume) 1, 3 STEL*** ■	0.1 I* {A4} ◆ 0.02 R* ◆◆
MOLYBDENUM	7439-98-7	231-107-2	5 R*	3 R*, 10 I* (Ele and Insol) 0.5 R* (Sol Cpnds) {A3}
NICKEL#	7440-02-0	231-111-4	1 (Metal) 1 (Sol Cpnds) 1 (Insol Cpnds)	1.5 I* (Ele) {A5} 0.1 I* (Sol Cpnds) {A4} 0.2 I* (Insol Cpnds) {A1}
SILICA++ (Amorphous Silica Fume)	14808-60-7 69012-64-2	238-878-4 273-761-1	0.1 R* 0.8	0.025 R* {A2} 3 R*
SILICON+	7440-21-3	231-130-8	5 R*	3 R*
STRONTIUM FLUORIDE	7783-48-4	232-000-3	2.5 (as F)	2.5 (as F) {A4}
TITANIUM+	7440-32-6	231-142-3	5 R*	3 R*
TITANIUM DIOXIDE	13463-67-7	236-675-5	15 (Dust)	10 {A4}
ZINC	7440-66-6	231-175-3	Not established	Not established
ZIRCONIUM	7440-67-7	231-176-9	5 (Zr Cpnds) 5, 10 STEL***■(Zr Cpnds)	5, 10 STEL*** (Zr Cpnds) {A4}

R* - Respirable Fraction I* - Inhalable Fraction ** - Ceiling Limit *** - Short Term Exposure Limit + - As a nuisance particulate covered under "Particulates Not Otherwise Regulated" by OSHA or "Particulates Not Otherwise Specified" by ACGIH ++ - Crystalline silica is bound within the product as it exists in the package. However, research indicates silica is present in welding fume in the amorphous (noncrystalline) form #- Reportable material under Section 313 of SARA ## - Reportable material under Section 313 of SARA only in fibrous form ### - Reportable material under Section 313 of SARA as dust or fume ■ - NIOSH REL TWA and STEL ■■ - AIHA Ceiling Limit of 1 mg/m³ ◆ - Limit of 0.1 mg/m³ is for Inhalable Mn in 20153 by ACGIH ◆◆ - Limit of 0.02 mg/m³ is for Respirable Mn in 2015 by ACGIH Ele - Element Sol - Soluble Insol - Insoluble Inorg - Inorganic Cpnds - Compounds NOS - Not Otherwise Specified {A1} - Confirmed Human Carcinogen per ACGIH {A2} - Suspected Human Carcinogen per ACGIH {A3} - Confirmed Animal Carcinogen with Unknown Relevance to Humans per ACGIH {A4} - Not Classifiable as a Human Carcinogen per ACGIH {A5} - Not Suspected as a Human Carcinogen per ACGIH (noncrystalline form) EINECS - European Inventory of Existing Commercial Chemical Substance Number OSHA - U.S. Occupational Safety and Health Administration ACGIH - American Conference of Governmental Industrial Hygienists

VENTILATION: Use enough ventilation or local exhaust at the arc or both to keep the fumes and gases below the PEL/TLV in the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes.

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incidence of lung and nasal cancers. **Silica (Amorphous)** - Research indicates that silica is present in welding fume in the amorphous form. Long term overexposure may cause pneumoconiosis. Noncrystalline forms of silica (amorphous silica) are considered to have little fibrotic potential. **Strontium Compounds** - Strontium at high doses is known to concentrate in bone. Major signs of chronic toxicity, which involve the skeleton, have been labeled as "strontium rickets". **Titanium Dioxide** - Pulmonary irritation and slight fibrosis. **Zinc** - damage the pancreas and disturb the protein metabolism, and cause arteriosclerosis. **Zirconium** - May cause pulmonary fibrosis and pneumoconiosis.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Persons with pre-existing impaired lung functions (asthma-like conditions). Persons with a pacemaker should not go near welding and cutting operations until they have consulted their doctor and obtained information from the manufacturer of the device. Respirators are to be worn only after being medically cleared by your company-designated physician.

EMERGENCY AND FIRST AID PROCEDURES: Call for medical aid. Employ first aid techniques recommended by the American Red Cross. If irritation or flash burns develop after exposure, consult a physician.

CARCINOGENICITY: Chromium VI compounds, nickel compounds and silica (crystalline quartz) are classified as IARC^E Group 1 and NTP^Z Group K carcinogens. Titanium dioxide, nickel metal/alloys, welding fumes, antimony trioxide and cobalt are classified as IARC Group 2B carcinogens.

CALIFORNIA PROPOSITION 65: WARNING: These products contain or produce a chemical known to the State of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code Section 25249.5 et seq.)

INGREDIENT	CAS	IARC ^E	NTP ^Z	OSHA ^H	65 ^Θ
ALUMINUM	7429-90-5	---	---	---	---
ALUMINUM OXIDE	1344-28-1	---	---	---	---
ANTIMONY TRIOXIDE	1309-64-4	2B	---	---	X
BIARIUM CMPDS (as Ba)	7440-39-3	---	---	---	---
BARIUM FLOURIDE	7787-32-8	---	---	---	---
CALCIUM CARBONATE	1317-65-3	---	---	---	---
CERIUM OXIDE	1306-38-3	---	---	---	---
CHROMIUM	7440-47-3	1 ^{2Σ} , 3 ^Σ	K ^{2Σ}	X ^{2Σ}	X ^{2Σ}
COBALT	7440-48-4	2B	---	X	X
COPPER	7440-50-8	---	---	---	---
FLUORSPAR	7789-75-5	---	---	---	---
IRON	7439-89-6	---	---	---	---
IRON OXIDE	1309-37-1	3	---	---	---
LITHIUM CARBONATE	554-13-2	---	---	---	X
LITHIUM FLUORIDE	7789-24-4	---	---	---	---
LITHIUM OXIDE	12057-24-8	---	---	---	---
MAGNESIUM	7439-95-4	---	---	---	---
MAGNESIUM OXIDE	1309-48-4	---	---	---	---
MANGANESE	7439-96-5	---	---	---	---
MANGANESE OXIDE	1344-43-0	---	---	---	---
MOLYBDENUM	7439-98-7	---	---	---	---
NICKEL	7440-02-0	2B ^β , 1 ^{ββ}	S ^β , K ^{ββ}	---	X ^β , X ^{ββ}
SILICA	14808-60-7	1 ^ψ	K	---	X
(Amorphous Silica Fume)	69012-64-2	3	---	---	---
SILICON	7440-21-3	---	---	---	---
STRONTIUM FLUORIDE	7783-48-4	---	---	---	---
TITANIUM	7440-32-6	---	---	---	---
TITANIUM DIOXIDE	13463-67-7	2B	---	---	X
Welding Fumes	---	2B	---	---	---
ZINC	7440-66-6	---	---	---	---
ZIRCONIUM	7440-67-7	---	---	---	---

E – International Agency for Research on Cancer (1 – Carcinogenic to Humans, 2A – Probably Carcinogenic to Humans, 2B – Possibly Carcinogenic to Humans, 3 – Not Classifiable as to its Carcinogenicity to Humans, 4 Probably Not Carcinogenic to Humans) Z – US National Toxicology Program (K – Known Carcinogen, S – Suspected Carcinogen) H – OSHA Designated Carcinogen List Θ – California Proposition 65 (X – On Proposition 65 list) --- Dashes indicate the ingredient is not listed with the IARC, NTP, OSHA or 65 Σ – Chromium Metal and Chromium III Compounds ΣΣ – Chromium VI β – Nickel metal and alloys ββ – Nickel compounds ψ – Silica Crystalline α-Quartz --- Dashes indicate the ingredient is not listed with the IARC, NTP, OSHA or Proposition 65

SECTION 12 – ECOLOGICAL INFORMATION

Welding processes can release fumes directly to the environment. Welding wire can degrade if left outside and unprotected. Residues from welding consumables and processes could degrade and accumulate in the soil and groundwater.

SECTION 13 – DISPOSAL CONSIDERATIONS

Use recycling procedures if available. Discard any product, residue, packaging, disposable container or liner in an environmentally acceptable manner, in full compliance with federal, state and local regulations.

SECTION 14 – TRANSPORT INFORMATION

No international regulations or restrictions are applicable. No special precautions are necessary.

SECTION 15 – REGULATORY INFORMATION

Read and understand the manufacturer's instructions, your employer's safety practices and the health and safety instructions on the label and the safety data sheet. Observe all local and federal rules and regulations. Take all necessary precautions to protect yourself and others.

United States EPA Toxic Substance Control Act: All constituents of these products are on the TSCA inventory list or are excluded from listing.

CERCLA/SARA TITLE III: Reportable Quantities (RQs) and/or Threshold Planning Quantities (TPQs):

SAFETY DATA SHEET

Ingredient name

Products on this SDS are a solid solution in the form of a solid article.

Spills or releases resulting in the loss of any ingredient at or above its RQ require immediate notification to the National Response Center and to your Local Emergency Planning Committee.

Section 311 Hazard Class

As shipped: Immediate

RQ(lb)

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TPQ (lb)

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In use: Immediate delayed

EPCRA/SARA TITLE III 313 TOXIC CHEMICALS: The following metallic components are listed as SARA 313 "Toxic Chemicals" and potentially subject to annual SARA 312 reporting: Aluminum, Antimony Trioxide, Barium Compounds, Barium Fluoride, Chromium, Cobalt, Copper, Lithium Carbonate, Manganese, Manganese Oxide, Nickel and Zinc. See Section 3 for weight percentage.

CANADIAN WHMIS CLASSIFICATION: Class D; Division 2, Subdivision A

CANADIAN CONTROLLED PRODUCTS REGULATION: This product has been classified in accordance with the hazard criteria of the CPR and the SDS contains all of the information required by the CPR.

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA): All constituents of these products are on the Domestic Substance List (DSL).

SECTION 16 – OTHER INFORMATION

The following Hazard Statements, provided in the OSHA Hazard Communication Standard (29 CFR Part 1910.1200) correspond to the columns labeled 'GHS Hazard Statements' within Section 3 of this safety data sheet. Take appropriate precautions and protective measures to eliminate or limit the associated hazard.

H228: Flammable solid
 H250: Catches fire spontaneously if exposed to air
 H252: Self-heating in large quantities; may catch fire
 H260: In contact with water releases flammable gases which may ignite spontaneously
 H261: In contact with water releases flammable gases
 H271: May cause fire or explosion; strong oxidizer
 H301: Toxic if swallowed
 H302: Harmful if swallowed
 H311: Toxic in contact with skin
 H314: Causes severe skin burns and eye damage
 H317: May cause an allergic skin reaction
 H319: Causes serious eye irritation
 H330: Fatal if inhaled
 H332: Harmful if inhaled
 H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled
 H335: May cause respiratory irritation
 H340: May cause genetic defects
 H350: May cause cancer
 H351: Suspected of causing cancer
 H361f: 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.
 H410: Very toxic to aquatic life with long lasting effects
 H412: Harmful to aquatic life with long lasting effects.

The following Supplemental Hazard Information (EUH-Statement) pertaining to Section 3 is also taken from the OSHA Hazard Communication Standard (29 CFR Part 1910.1200):

EUH014 - Reacts violently with water

For additional information please refer to the following sources:

USA: **American National Standard Institute (ANSI) Z49.1** "Safety in Welding and Cutting", **ANSI/American Welding Society (AWS) F1.5** "Methods for Sampling and Analyzing Gases from Welding and Allied Processes", **ANSI/AWS F1.1** "Method for Sampling Airborne Particles Generated by Welding and Allied Processes", **AWSF3.2M/F3.2** "Ventilation Guide for Weld Fume", American Welding Society, 8669 NW 36 Street, # 130, Miami, Florida 33166-6672, Phone: 800-443-9353 or 305-443-9353. Safety and Health Fact Sheets available from AWS at www.aws.org.

OSHA Publication 2206 (29 C.F.R. 1910), U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954.

Threshold Limit Values and Biological Exposure Indices, American Conference of Governmental Industrial Hygienists (ACGIH), 6500 Glenway Ave., Cincinnati, Ohio 45211, USA.

NFPA 51B "Standard for Fire Prevention During Welding, Cutting and Other Hot Work" published by the National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169.

Canada: **CSA Standard CAN/CSA-W117.2-01** "Safety in Welding, Cutting and Allied Processes".

Welding Material Sales, Inc. strongly recommends the users of this product study this SDS, the product label information and become aware of all hazards associated with welding. Welding Material Sales, Inc. believes this data to be accurate and to reflect qualified expert opinion regarding current research. However, Welding Material Sales, Inc. cannot make any expressed or implied warranty as to this information.