

# SAFETY DATA SHEET (SDS) SDS #500

# 1. IDENTIFICATION

Product Type:	Carbon steel and low alloy steel electrodes for arc welding
Product Names:	E8018-B2, E9018-B3, E8018-C1, E8018-C2, E8018-C3, E10018-D2, E9018M, E11018M, E12018M, E7010-P1, E8010-P1, ER70S-3, ER70S-6, ER70S-7, E70C-6M, ER70S6 (Copper free)
Specifications:	AWS A5.5, A5.18, A5.28
Product Intended/Recommended Use:	Arc welding
Manufacturer:	TECHNIWELD USA 6205 BOAT ROCK BLVD ATLANTA, GA 30336 Tel: 404-699-9900 Fax: 404-699-7800 Email: sales@twusa.com
Emergency Telephone Number:	800-424-9300

# 2. HAZARD IDENTIFICATION

**Hazard Classification:** Not classified as hazardous according to the applicable Globally Harmonized System of Classification and Labelling of Chemicals (GHS) and OSHA Hazard Communication Standard (29 CFR 1910.1200) criteria.

# Label Elements:

Hazard Symbol – None Signal Word – None Hazard Statement – Not Applicable Precautionary Statement – Not Applicable

**Other Hazards:** This product presents no hazards in its intrinsic form. However, several hazards are generated during welding operations that can be harmful.

ELECTRICITY- Electric shock can kill.

HEAT- Molten metal and weld spatter can burn skin and start fires.

RADIATION- Arc rays can injure eyes and burn skin.

FUMES AND GASES - Fumes and gases generated during welding can be dangerous to your health. See Section

11.

# 3. COMPOSITION/INFORMATION ON INGREDIENTS

Common Name	Weight %
Iron	70-98
Manganese	0-4
Silicon	0-3
Silica	0-3
Aluminum	0-5
Aluminum Oxide	0-1
Chromium	0-10.0
Nickel	0-3
Niobium	0-0.3
Magnesium and compounds	0-3
Molybdenum	0-1.2
Titanium	0-0.5
Titanium Dioxide	0-10
Vanadium	0-0.3
Barium Compounds	0-10
Lithium Compounds (as Li)	0-9
Iron Oxide	0-12
Zirconium and Compounds (as Zr)	0-1
Fluorides	0-12
Graphite	0-0.5
Copper	0-0.8

# 4. FIRST AID MEASURES

**Inhalation** - If breathing has stopped, immediately seek medical assistance. Begin performing cardio pulmonary resuscitation (CPR) if you are trained to do so. If breathing is difficult, move to area with fresh air and seek medical attention immediately.

**Skin contact** - For skin burns due to arc radiation flush with cold water. If burn and irritation persists seek medical attention. In case of skin contact with fume or dust, wash affected areas with soap and water. Thoroughly clean shoes and wash clothing. Seek medical attention if irritation develops and persists.

**Eye contact -** In case of radiation burns due to arc flash move to a dark room and seek medical attention. To remove fume or dust flush with plenty of lukewarm water. Seek medical attention if irritation develops. In case of foreign metallic or slag material lodged in the eye, seek medical attention to remove it. Do not rub or agitate the eyes.

**Ingestion** – Although unlikely due to product form, immediately seek medical attention if wire pieces or metal powders from inside the wire are ingested. Do not induce vomiting unless directed to do so by medical personnel.

**Electric Shock** - Disconnect power. Use non-conductive material to pull victim from contact with live wires. If no detectible pulse, seek medical attention immediately and begin cardio pulmonary resuscitation (CPR) if you are trained to do so.

#### **Most Serious Symptoms:**

**Short Term Exposure** – Acute overexposure to welding fumes may result in discomfort such as irritation of the respiratory system, metal fume fever, nausea, and may aggravate pre-existing respiratory conditions.

**Long Term Exposure** – Chronic overexposure to welding fume may lead to iron deposits in the lungs (siderosis) and reduced pulmonary function. Manganese overexposure can lead to irreversible damage to the central nervous system resulting in impaired speech and movement. Chronic overexposure to nickel fumes and hexavalent chromium can cause cancer. Some of the products contain silica quartz, but not in an inhalable fraction. Silica quartz is a listed carcinogen.

#### **Refer to Section 11 for more information.**

#### 5. FIRE FIGHTING MEASURES

General - Products are non-flammable as shipped. Welding arcs and spatter can ignite nearby combustible materials.

Suitable Extinguishing Media- Use methods and materials appropriate for the combustible material.

Specific Hazards Arising from the Chemical - Welding arcs and spatter can ignite nearby combustible materials.

**General Firefighting Procedures**- Keep people away. Isolate fire and deny entry to the area by any non-essential personnel. Fight fire from protected location or safe distance.

**Special Actions for Firefighters-** Firefighters should be equipped with self-contained breathing apparatus to protect against potentially toxic and hazardous fumes. Toxic and irritating fumes and gases may be given off during burning or thermal decomposition.

# 6. ACCIDENTAL RELEASE MEASURES

#### Personal Precautions, Protective Equipment and Emergency Procedures:

**For Non-Emergency Personnel** – Isolate the area and keep non-essential people away. Do not touch or walk through spilled material. Allow the molten metallic material to solidify and cool before disposal. If molten metal spills out of the weldment, turn off the power. Contain the flow using sand or submerged arc flux. If airborne dust and or fumes are present, wear appropriate personal protective equipment (PPE) to avoid overexposure.

**For Emergency Personnel** – Wear appropriate personal protective equipment (PPE), including clothes, gloves and breathing protection. Evacuate non-essential personnel.

Environmental Precautions: Keep material out of waterways and drains.

Methods and Materials for Containment and Cleaning Up: Isolate and clean up spills immediately. Avoid generating dust or airborne particles during clean up. Dispose of solidified mass per Federal, State and Local regulations.

# 7. HANDLING AND STORAGE

**Precautions for Safe Handling:** Wear safety glasses and gloves to avoid cuts and abrasion when handling welding consumables and their packaging. Do not eat drink or smoke in areas where these products are being used.

**Conditions for Safe Storage, Including Any Incompatibilities:** Store in a cool, dry area in the original packaging. Keep products away from heat, flame and moisture.

# 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Appropriate Engineering Controls**: Provide adequate ventilation and/or local exhaust at the weld station to keep fumes and gases away from the welder. Train welders and welding operators to keep their head out of the fumes. See ANSI Z49.1 "Safety in Welding, Cutting, and Allied Processes" for recommendations of safe work practices.

#### **Personal Protective Equipment:**

**Eye/Face Protection** – Wear safety glasses or goggles with appropriate side shields. Wear a helmet or face shield with an appropriate filter lens. Use protective screens to shield others in the work area.

**Skin/Body Protection** – Wear hand, head and body protection including welder's gloves, protective face shield and long sleeved protective clothing.

**Respiratory Protection** – Use NIOSH approved fume respirator or air supplied respirator when where ventilation is inadequate, welding in confined spaces or where required to by OSHA regulations. Fume sampling per AWS F1.1 "*Method for Sampling Airborne Particulates Generated by Welding and Allied Processes*" may be required. Other appropriate standards that may be considered include, but are not limited to, AWS F1.2 "*Laboratory Method for Measuring Fume Generation Rate and Total Fume Emission of Welding and Allied Processes*" and AWS F3.2 "*Ventilation Guide for Weld Fume*". For actual weld fume and particulate analysis, refer to the appropriate analytical methods recommended by NIOSH or OSHA, and consult an industrial hygiene professional.

Common Name	CAS Number	Form	Exposure Limit	Source
Aluminum Metal	7429-90-5	Total Dust	15 mg/m <sup>3</sup>	USA. OSHA PELs
		Total Dust	10 mg/m <sup>3</sup>	USA. California OSHA PELs
		Respirable	5 mg/m <sup>3</sup>	USA. OSHA PELs
		Respirable	1 mg/m <sup>3</sup>	USA. ACGIH TLVs
Aluminum Oxide	1344-28-1	Total Dust	15 mg/m <sup>3</sup>	USA. OSHA PELs
		Respirable	5 mg/m <sup>3</sup>	USA. OSHA PELs
		Respirable	1 mg/m <sup>3</sup>	USA. ACGIH TLVs
Barium	7440-39-3	Soluble Compounds	0.5 mg/m <sup>3</sup>	USA. OSHA PELs
Compounds				
		Soluble Compounds	$0.5 \text{ mg/m}^3$	USA. ACGIH TLVs
Calcium	1317-65-3	Total Dust	15 mg/m <sup>3</sup>	USA. OSHA PELs
Carbonate				
		Total Dust	10 mg/m³	USA. California OSHA PELs
		Respirable	5 mg/m <sup>3</sup>	USA. OSHA PELs
Chromium	7440-47-3	Metal	1 mg/m <sup>3</sup>	USA. OSHA PELs
		Metal	$0.5 \text{ mg/m}^3$	USA. ACGIH TLVs
		Cr II compounds	$0.5 \text{ mg/m}^3$	USA. OSHA PELs
		Cr III Compounds, Inorganic	0.5 mg/m <sup>3</sup>	USA. OSHA PELs
		Cr III Compounds, Inorganic	$0.5 \text{ mg/m}^3$	USA. ACGIH TLVs
	18540-29-9	Cr VI Compounds	0.1 mg/m <sup>3</sup>	USA. OSHA PELs Ceiling
		Cr VI Compounds, Soluble	0.005 mg/m <sup>3</sup>	USA. OSHA PELs

# Control Parameters:

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		Insoluble compounds	10 mg/m <sup>3</sup>	USA. ACGIH TLVs
		(Inhalable)		
Nickel	7440-02-0	Metal	1 mg/m <sup>3</sup>	USA. OSHA PELs
		Metal (Inhalable)	$1.5 \text{ mg/m}^3$	USA. ACGIH TLVs
		Metal	0.015 mg/m <sup>3</sup>	USA. NIOSH RELs
		Soluble Compounds	1 mg/m <sup>3</sup>	USA. OSHA PELs
		Soluble Compounds	$0.1 \text{ mg/m}^3$	USA. ACGIH TLVs
		(Inorganic)		
		Insoluble Compounds	1 mg/m <sup>3</sup>	USA. OSHA PELs
		Insoluble Compounds	$0.2 \text{ mg/m}^3$	USA. ACGIH TLVs
		(Inorganic)		
Potassium Silicate	1312-76-1	Total	10 mg/m <sup>3</sup>	USA. ACGIH TLVs
Sodium Silicate	1344-09-8	Total	10 mg/m <sup>3</sup>	USA. ACGIH TLVs
Silicon	7440-21-3	Total Dust	15 mg/m <sup>3</sup>	USA. OSHA PELs
		Total Dust	10 mg/m <sup>3</sup>	USA. California OSHA PELs
		Respirable	5 mg/m <sup>3</sup>	USA. OSHA PELs
Silica (Quartz)	14808-60-7	Respirable	$0.1 \text{ mg/m}^3$	USA. OSHA PELs
		Respirable	0.025 mg/m <sup>3</sup>	USA. ACGIH TLVs
		Total Dust	$0.3 \text{ mg/m}^3$	USA. OSHA PELs
Titanium Dioxide	13463-67-7	Total Dust	15 mg/m <sup>3</sup>	USA. OSHA PELs
		Total Dust	10 mg/m <sup>3</sup>	USA. ACGIH TLVs
Tungsten	7440-33-7	Insoluble	$5.0 \text{ mg/m}^3$	USA. ACGIH TLVs
		Insoluble	10.0 mg/m <sup>3</sup>	USA. ACGIH TLVs Ceiling
		Soluble	1.0 mg/m <sup>3</sup>	USA. ACGIH TLVs
		Soluble	3.0 mg/m <sup>3</sup>	USA. ACGIH TLVs Ceiling
Vanadium	7440-62-2	Oxide Dust	0.5 mg/m <sup>3</sup>	USA. OSHA PELs Ceiling
		Oxide Dust (Inhalable)	0.05 mg/m <sup>3</sup>	USA. ACGIH TLVs & California OSHA PELs
_		Oxide Fume	0.1 mg/m <sup>3</sup>	USA. OSHA PELs Ceiling
		Oxide Fume (Inhalable)	0.05 mg/m <sup>3</sup>	USA. ACGIH TLVs & California OSHA PELs
Zirconium &	7440-67-7	Metal	5 mg/m <sup>3</sup>	USA. ACGIH TLVs
Zr Compounds			_	
		Metal	10 mg/m <sup>3</sup>	USA. ACGIH TLVs Ceiling
		Compound	5 mg/m <sup>3</sup>	USA. OSHA PELs
		Compound	5 mg/m <sup>3</sup>	USA. ACGIH TLVs
		Compound	$10 \text{ mg/m}^3$	USA. ACGIH TLVs Ceiling

# Exposure Limits – Canada

Common Name	CAS Number	Form	Exposure Limit	Source
Calcium	1317-65-3	Total Dust	$10 \text{ mg/m}^3$	Canada. Alberta OEL TWA
Carbonate				
		Total Dust	20 mg/m <sup>3</sup>	Canada. British Columbia OEL TWA
				STEL
		Total Dust	10 mg/m <sup>3</sup>	Canada. British Columbia OEL TWA
		Respirable	$3 \text{ mg/m}^3$	Canada. British Columbia OEL TWA

		Total Dust	10 mg/m <sup>3</sup>	Canada. Saskatchewan OEL for 8hr
				ACL
		Total Dust	20 mg/m³	Canada. Saskatchewan OEL for 15min
				ACL
		Total Dust	$10 \text{ mg/m}^3$	Canada. Quebec OEL TWA
Manganese & Mn	7439-96-5	As Mn	$0.2 \text{ mg/m}^3$	Canada Alberta OEL TWA
Compounds	7433 30 3	/ (5 IVIII	0.2 116/11	
		As Mn	0.2 mg/m <sup>3</sup>	Canada. British Columbia OEL TWA
		As Mn (Inhalable)	0.1 mg/m³	Canada. Manitoba OEL TWA
		As Mn (Respirable)	0.02 mg/m <sup>3</sup>	Canada. Manitoba OEL TWA
		As Mn	0.2 mg/m <sup>3</sup>	Canada. New Brunswick OEL TWA
		As Mn	$0.1 \text{ mg/m}^3$	Canada. Newfoundland & Labrador OEL TWA
		As Mn	$0.1 \text{ mg/m}^3$	Canada. Nova Scotia OEL TWA
		As Mn	1 mg/m <sup>3</sup>	Canada. Nunavut OEL TWA
		As Mn	3 mg/m <sup>3</sup>	Canada. Nunavut OEL STEL
		As Mn	$5 \text{ mg/m}^3$	Canada. Nunavut OEL Ceiling
		As Mn	1 mg/m <sup>3</sup>	Canada. Northwest Territories OEL TWA
		As Mn	3 mg/m <sup>3</sup>	Canada. Northwest Territories OEL STEL
		As Mn	5 mg/m <sup>3</sup>	Canada. Northwest Territories OEL Ceiling
		As Mn	0.2 mg/m <sup>3</sup>	Canada. Ontario OEL TWA
		As Mn	0.2 mg/m <sup>3</sup>	Canada. Prince Edward Island OEL TWA
		As Mn	0.2 mg/m <sup>3</sup>	Canada. Quebec OEL TWA
		As Mn	$0.2 \text{ mg/m}^3$	Canada. Saskatchewan OEL TWA
		As Mn	$0.6 \text{ mg/m}^3$	Canada. Saskatchewan OEL STEL
		As Mn	5 mg/m <sup>3</sup>	Canada. Yukon OEL Ceiling
Silicon	7440-21-3	Total Dust	10 mg/m <sup>3</sup>	Canada. British Columbia OEL TWA
		Total Dust	3 mg/m <sup>3</sup>	Canada. New Brunswick OEL TWA
		Total Dust	10 mg/m <sup>3</sup>	Canada. Nunavut OEL TWA
		Total Dust	10 mg/m <sup>3</sup>	Canada. Northwest Territories OEL TWA
		Total Dust	10 mg/m <sup>3</sup>	Canada. Ontario OEL TWA
		Total Dust	10 mg/m <sup>3</sup>	Canada. Quebec OEL TWA
		Total Dust	10 mg/m <sup>3</sup>	Canada. Saskatchewan OEL TWA
		Total Dust	$20 \text{ mg/m}^3$	Canada. Saskatchewan OEL STEL
		Total Dust	10 mg/m <sup>3</sup>	Canada. Yukon OEL TWA
		Total Dust	20 mg/m <sup>3</sup>	Canada. Yukon OEL STEL
Silica (Quartz)	14808-60-7	Respirable Fraction	0.025 mg/m <sup>3</sup>	Canada. Alberta OEL TWA
		<b>Respirable Fraction</b>	0.025 mg/m <sup>3</sup>	Canada. British Columbia OEL TWA
		Respirable Fraction	0.025 mg/m <sup>3</sup>	Canada. Manitoba OEL TWA
		Respirable Fraction	$0.1 \text{ mg/m}^3$	Canada. Ontario OEL TWA
		Respirable Fraction	0.05 mg/m <sup>3</sup>	Canada. Quebec OEL TWA
		Respirable Fraction	0.1 mg/m <sup>3</sup>	Canada. Saskatchewan OEL TWA
Titanium Dioxide	13463-67-7	Total Dust	10 mg/m <sup>3</sup>	Canada. Alberta OEL TWA
		Dust (Respirable)	$3 \text{ mg/m}^3$	Canada. British Columbia OEL TWA

Total Dust	10 mg/m <sup>3</sup>	Canada. British Columbia OEL TWA
Total Dust	10 mg/m <sup>3</sup>	Canada. Manitoba OEL TWA
Total Dust	10 mg/m <sup>3</sup>	Canada. Ontario OEL TWA
Total Dust	10 mg/m <sup>3</sup>	Canada. Quebec OEL TWA
Total Dust	10 mg/m <sup>3</sup>	Canada. Saskatchewan OEL TWA
Total Dust	20 mg/m <sup>3</sup>	Canada. Saskatchewan OEL STEL

Exposure Limits – Mexico

Common Name	CAS Number	Form	Exposure Limit	Source
Calcium Carbonate	1317-65-3	Total Dust	20 mg/m <sup>3</sup>	Mexico. OEL CTT
		Total Dust	10 mg/m <sup>3</sup>	Mexico. OEL CPT
Manganese & Mn Compounds	7439-96-5	As Mn	0.2 mg/m <sup>3</sup>	Mexico. OEL CPT
		As Mn Fume 1.0 mg/		Mexico. OEL CPT
	As Mn Fume		3.0 mg/m <sup>3</sup>	Mexico. OEL CTT
Silicon	7440-21-3	Total Dust	10 mg/m <sup>3</sup>	Mexico. OEL CPT
		Total Dust	20 mg/m <sup>3</sup>	Mexico. OEL CTT
Silica	69012-46-2	Fume	10 mg/m <sup>3</sup>	Mexico. OEL CPT
		Fume (Respirable)	3 mg/m <sup>3</sup>	Mexico. OEL CPT
Silica (Quartz)	14808-60-7	Respirable Fraction	0.1 mg/m <sup>3</sup>	Mexico. OEL CPT
Titanium Dioxide	13463-67-7	Total Dust	20 mg/m <sup>3</sup>	Mexico. OEL CTT
		Total Dust	10 mg/m <sup>3</sup>	Mexico. OEL CPT

# 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Solid or tubular wire
Color:	Various
Odor:	None
Odor threshold:	Not Applicable
pH:	Not Applicable
Melting point	>2000F (1100C)
Initial Boiling Point & Range:	Data Not Available
Flash point	Data Not Available
Evaporation rate	Data Not Available
Flammability	Data Not Available
Upper flammability/explosive limit:	Data Not Available
Lower flammability/explosive limit:	Data Not Available
Vapor pressure	Not Applicable
Vapor density:	Not Applicable
Relative density	0.2-0.3 lbs/in <sup>3</sup>
Solubility in water	Data Not Available
Solubility (other)	Data Not Available
Partition coefficient	Data Not Available
Auto-ignition temperature	Data Not Available
Decomposition temperature:	Data Not Available
Viscosity :	Data Not Available

# **10. STABILITY AND REACTIVITY**

Reactivity – This product is not reactive under normal conditions as shipped.

Chemical stability – This product is chemically stable under normal conditions as shipped.

**Possibility of hazardous reactions** – Polymerization reactions will not occur.

Conditions to avoid – Protect product from moisture and contamination.

Incompatible materials – Data not available

**Hazardous decomposition products** – Welding electrodes and wires emit fumes and gases when used under normal conditions. These fumes and gases produced during welding operations cannot be easily classified, and will differ in quantity and form from those ingredients listed in Section 3 of this SDS. The composition and quantity of these fumes and gases are directly dependent upon the metal being welded, any material coatings (such as primer or galvanizing), the welding process, the welding consumables and the welding procedures. Other conditions which also influence the composition and quantity of the fumes and gases produced include the number of welders in the work area, the volume of the work area, the quality and amount of ventilation or exhaust, and the proximity of the welder's head to the fume plume.

Decomposition products of welding consumables under normal operation include oxides of elements present in the welding consumable and base material. Manganese compounds may be present in the fume from manganese bearing electrodes. Hexavalent chromium may be present in the fume from electrodes containing chromium. Nickel compounds may be present in the fume from nickel bearing electrodes. Fluoride containing consumables may generate gaseous and particulate fluoride. Gases such as carbon monoxide, carbon dioxide, ozone and nitrogen oxides may also be produced in the arc area.

# 11. TOXICOLOGICAL INFORMATION

# Information on likely routes of exposure:

Oral – Unknown health effects, but this exposure is unlikely to occur.

Inhalation – Inhalation of welding fumes may lead to acute and/or chronic health hazards (see table below).

Skin – Arc rays can burn the skin. Weld fume deposited on the skin may cause irritation (see table below).

Eye – Arc rays can injure the eyes. Weld fume contact with the eyes may cause irritation (see table below).

# Information on toxicological effects:

The acute and chronic effects of compounds which may be exposed to the welder are listed in the table below. Also listed are the available measured values of toxicity for that substance and whether is it classified as carcinogenic.

Substance	Short-Term Exposure Effects	Long Term Exposure Effects	Toxicity Measure	Carcinogenicity
Aluminium	May cause eye & respiratory	May cause effects on central	LC50 (Rat, Oral	Not classifiable
Oxide	irritation.	nervous system.	Exposure)	
			>5,000 mg/kg	
Barium	May cause irritation to the	May cause baratosis (deposits of	LD50 (Rat, Oral	Not classifiable
Compounds	nose, throat, and respiratory	barium in lungs). Baratosis is	Exposure)	
	tract.	benign & does not progress to	= 418 mg/kg	
		fibrosis.		
Chromium as	May cause eye, skin &	May cause chronic bronchitis,	LC50 (Rat,14 day	Not classifiable
Cr+3	respiratory irritation.	sinusitus, rhinitus and ashtma.	Oral Exposure)	
			>5,000 mg/kg	

Chromium as	May cause evel skip &	May cause lung, pasal and sinus	LC50 (Pat Oral	
Crit	way cause eye, skill &	way cause lung, hasar and sinus		
C(+0	respiratory initiation.	cancer, ulceration and	Exposure)	
		perforation of the hasal septum	= 29 mg/kg	USHA
Calcalt	Name and a second second second	and skin rash.	1050 (Dat. 20 min	Not also if also
Cobalt	ivity cause respiratory	May cause chronic irritation,	LC50 (Rat, 30 min	Not classifiable
Compounds	irritation and cardiovascular	diminished pulmonary function,	Inhalation Exposure)	
	inflammation.	asthma and fibrosis.	= 165mg/m <sup>-</sup>	
	Short-Term	Long Term		
Substance	Exposure Effects	Exposure Effects	Toxicity Measure	Carcinogenicity
Copper Oxide	May cause metal fume fever	Prolonged contact may cause	LD50 (Rat, Oral	Not classifiable
	with upper respiratory	skin sensitization.	Exposure)	
	irritation, chills, and aching		= 470mg/kg	
	muscles.			
Fluorides	May cause eye, skin &	May cause serious bone erosion	LD50 (Rat, Oral	Not classifiable
	respiratory irritation.	and mottling of teeth (fluorosis).	Exposure)	
			= 31 mg/kg	
Iron Oxide	May cause respiratory	May cause siderosis (deposits of	LD50 (Rat, Oral	Not classifiable
	irritation.	iron in lungs). Siderosis is benign	Exposure)	
		and does not progress to fibrosis.	> 10,000 mg/kg	
Lithium	May cause eye & skin	May adversely affect the central	LC50 (Rat, 4 hour	Not classifiable
Compounds	irritation.	nervous system & kidneys, and	Inhalation Exposure)	
		may be a reproductive toxin.	> 2.17 mg/L	
Magnesium	May cause eye & respiratory	May cause decreased lung	LD50 (Rat, Oral	Not classifiable
Oxide	irritation.	function.	Exposure)	
			= 3870 mg/kg	
Manganese	May cause respiratory	May cause brain and central	LD50 (Rat, 4 hour	Not classifiable
Oxide	irritation, metal fume fever	nervous system effects resulting	Inhalation Exposure)	
	with chills, fever, upset	in arm and leg tremors, slurred	= 19 mg mg/kg	
	stomach, body ache,	speech and poor coordination.		
	vomiting.			-
Molybdenum	May cause eye & respiratory	Not found.	Not found	Not classifiable
	irritation.			
Nickel Oxide	May cause respiratory	Prolonged exposure may lead to	LD50 (Rat,	IARC-1
	irritant, inhalation of fumes	asthma. Nickel refinery workers	Inhalation Exposure)	NTP-known
	may cause pneumonitus.	showed a higher incidence of	> 5,000 mg/kg	
		lung and nasal cancers.		
Niobium	May cause respiratory	Not found.	Not found	Not classifiable
Cilian	Irritation.	Counte like a silies is a los soor	Not forward	
Silica	initiation	crystalline sliica is a known	Not tound	
	initation.	also result in silicosis		NTP-KNOWN
Titanium	May cause respiratory	May be carcinogenic.	LD50 (Rat, Oral	IARC-2B
Dioxide	irritation.		Exposure)	
			> 10 g/kg	
Tungsten	May cause respiratory	Not found.	Not found	Not found
Vanadium Ouid		Evpoqueo to high concentrations	IDED (Bat Oral	Not classificable
variaulum Oxide	rocpiratony invitation	of fumo may load to observe	EDSU (Kat, Ural	NOT CLASSIFIADIE
	respiratory initiation.	nasal hyperplasia	=10  mg/kg	
Zirconium Ovida	May cause ove & respiratory	May cause decreased lung	-IU IIIg/ Kg	Not classifiable
	iviay cause eye & respiratory	function		NUT CIASSILIADIE
Carbon Diovide	At low levels may cause	Long term exposure may affect	LC50 (Human	Not classifiable
	headache dizziness loss of	the body's metabolism	Inhalation Exposure)	
	coordination nausea At		=100 000 nnm/min	
	soor annation, nausea. At	l	100,000 ppm/mm	l

	high levels can cause coma and possibly death.			
Carbon Monoxide	May cause effects on the blood, resulting in carboxyhaemoglobinemia and cardiac disorders. High levels may result in death.	May have effects on the cardiovascular system and central nervous system. May cause toxicity to human reproduction or development.	LC50 (Rat, 4 hour Inhalation Exposure) =1807 ppm	Not classifiable
Substance	Short-Term Exposure Effects	Long Term Exposure Effects	Toxicity Measure	Carcinogenicity
Ozone	May cause eye and respiratory tract Irritation. Inhalation may cause lung oedema. May cause effects on the central nervous system, resulting in headache and impaired performance.	May cause decreased lung function.	LC50 (Rat, 3 hour Inhalation Exposure) =4.5 mg/m3	Not classifiable
Nitric Oxide	May cause respiratory irritation. Inhalation may cause lung oedema. Exposure far above the OEL may result in death.	May cause decreased lung function.	LC50 (Rat, Inhalation Exposure) =160 mg/m <sup>3</sup>	Not classifiable
Nitrogen Dioxide	Corrosive to the skin and respiratory tract. Inhalation may cause lung oedema. Exposure far above the OEL may result in death.	May cause effects on the immune system and lungs, resulting in decrease in resistance to infection.	LC50 (Rat, 4 hour Inhalation Exposure) =88 ppm	Not classifiable

Other information on toxicological effects:

Germ cell mutagenicity – Not classified Reproductive toxicity – Not classified Specific target organ toxicity (Single exposure) – Not classified Specific target organ toxicity (Repeated exposure) – Not classified Aspiration hazard – Not classified

# **12. ECOLOGICAL INFORMATION**

Toxicity:	Not classified
Persistence and degradability:	No information available
Bioaccumulative potential:	No information available
Mobility in soil:	No information available
Other adverse effects:	Unknown

# 13. DISPOSAL CONSIDERATIONS

Discard any product, residue, waste or packaging in an environmentally acceptable manner in compliance with federal, State, or local laws. Do not dispose of any waste, remaining product or by-product in the sewer.

14. TRANSPORT INFORMATION			
UN Number:	Not regulated		
UN Proper Shipping Name:	Not regulated		

Not regulated Not regulated Not regulated Not regulated

#### **15. REGULATORY INFORMATION**

#### **U.S. Federal Regulations**:

Emergency Planning & Community Right-To-Know Act (EPCRA) of 1986

Section 313 Hazardous Chemicals:

Aluminum, Aluminum Oxide, Barium and Barium Compounds, Chromium, Copper, Lithium Carbonate, Manganese, Nickel, Silicon & Silica, Iron & Iron Oxide, Magnesium, Zirconium and Vanadium.

Superfund Amendments and Reauthorization Act of 1986 (SARA): Hazard categories – Acute (Immediate) and Chronic (Delayed)

Toxic Substances Control Act (TSCA) Inventory: Iron – Listed Silicon – Listed

# U.S. State Laws:

California Proposition 65:

Titanium Dioxide - Carcinogenic

Silica (Quartz) - Carcinogenic

**Warning:** These products contain chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

New Jersey Community Worker and Right-to-Know Act Titanium Dioxide – Listed Manganese – Listed

Massachusetts Right-to-Know Act Substance List Titanium Dioxide – Listed Manganese – Listed Silica (Quartz) – Listed Pennsylvania Right-to-Know Act Hazardous Substances List Titanium Dioxide – Listed

Manganese – Listed

Rhode Island Right-to-Know Act Substance List Manganese – Listed

Minnesota Right-to-Know Act Hazardous Substances List Titanium Dioxide – Listed Manganese – Listed Silica (Quartz) – Listed

# **Canadian Regulations:**

This product is classified according to the requirements of the Canadian Controlled Products Regulations Section 33, and this SDS contains all required information.

For E8018-B2, E9018-B3, E8018-C1, E8018-C2, E8018-C3, E10018-D2, E9018M, E11018M, E12018M, E7010-P1, E8010-P1 WARNING: This product can expose you to chemicals, including titanium dioxide, which are known to the state of California to cause cancer, and to carbon monoxide, which is known to the state of California to cause birth defects or other reproductive harm. For more information, go to www.P65WARNINGS.ca.gov.

For ER70S-3, ER70S-6, ER70S-7, E70C-6M, ER70S6-CF WARNING: This product can expose you to chemicals, including carbon monoxide, which is known to the state of California to cause birth defects or reproductive harm. For more information, go to www.P65WARNINGS.ca.gov.

#### **16. OTHER INFORMATION**

**DISCLAIMER:** Users should take all standard and reasonable precautions when using this product for its intended use. The manufacturer does not recommend this product for any uses other than that described. The manufacturer makes no claims and provides no warranty for non-standard use.

NFPA 704:	HEALTH:	2	FLAMMABILITY:	0	<b>REACTIVITY:</b>	0
HMIS:	HEALTH:	2	FLAMMABILITY:	0	PHYSICAL HAZARD:	0

#### **SDS** Revisions

Preparation date:	8/18/2018	Revision date:	Revision	
			number:	

**Note:** Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, the manufacturer makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will the manufacturer be responsible for damages of any nature whatsoever resulting from the use of, misuse or reliance upon information. No representations or warranties, either express or implied, or merchantability, fitness for a particular purpose or any other nature are made hereunder with respect to information or the product to which information refers. Regulatory requirements are subject to change and may differ from one location to another. It is the buyer's responsibility to ensure its activities comply with federal, State, Provincial, and local laws and regulations.