

# SAFETY DATA SHEET

#### 1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Fleetweld® 37-RSP

Product Size: 1/8 in.

Other means of identification

SDS number: 200000000601

Recommended use and restriction on use

Recommended use: SMAW (Shielded Metal Arc Welding)

Restrictions on use: Not known. Read this SDS before using this product.

#### Manufacturer/Importer/Supplier/Distributor Information

#### Manufacturer/Supplier:

The Lincoln Electric Company 22801 Saint Clair Avenue Cleveland, Ohio 44117 USA Phone: +1 (216) 481-8100

The Lincoln Electric Company of Canada LP 179 Wicksteed Avenue Toronto, Ontario M4G 2B9 CANADA

Phone: +1 (416) 421-2600

Safety Data Sheet Questions: SDS@lincolnelectric.com

Arc Welding Safety Information: www.lincolnelectric.com/safety

# 24-Hour Emergency Response Telephone Numbers:

AreaTelephoneUSA/Canada/Mexico+1 (888) 609-1762Americas/Europe+1 (216) 383-8962Asia Pacific+1 (216) 383-8966Middle East/Africa+1 (216) 383-8969

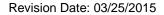
3E Company Access Code: 333988

#### 2. HAZARDS IDENTIFICATION

Classified according to the criteria of the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), OSHA Hazard Communication Standard (29 CFR 1910.1200) and the Canadian Controlled Products Regulations.

#### **Hazard Classification**

SDS\_North America - 200000000601





Not classified as hazardous according to applicable GHS hazard classification criteria.

#### **Label Elements**

Hazard Symbol: No symbol

Signal Word: No signal word.

Hazard Statement Not applicable

Precautionary Statement Not applicable

# Other hazards which do not result in GHS classification:

Electrical Shock can kill. If welding must be performed in damp locations or with wet clothing, on metal structures or when in cramped positions such as sitting, kneeling or lying, or if there is a high risk of unavoidable or accidental contact with work piece, use the following equipment: Semiautomatic DC Welder, DC Manual (Stick) Welder, or AC Welder with Reduced Voltage Control.

Arc rays can injure eyes and burn skin. Welding arc and sparks can ignite combustibles and flammable materials. Overexposure to welding fumes and gases can be hazardous. Read and understand the manufacturer's instructions, Safety Data Sheets and the precautionary labels before using this product. Refer to Section 8.

# Substance(s) formed under the conditions of use:

The welding fume produced from this welding electrode may contain the following constituent(s) and/or their complex metallic oxides as well as solid particles or other constituents from the consumables, base metal, or base metal coating not listed below:

Chemical Identity	CAS-No.
Carbon dioxide	124-38-9
Carbon monoxide	630-08-0
Nitrogen dioxide	10102-44-0
Ozone	10028-15-6
Manganese	7439-96-5





# 3. COMPOSITION / INFORMATION ON INGREDIENTS

**Reportable Hazardous Ingredients** 

Chemical Identity	CAS number	Content in percent (%)*	
Iron	7439-89-6	60 - 100%	
Titanium dioxide	13463-67-7	10 - 30%	
Mica	12001-26-2	1 - 5%	
Potassium silicate	1312-76-1	1 - 5%	
Manganese	7439-96-5	1 - 5%	
Calcium oxide	1305-78-8	0.5 - 5%	
Quartz	14808-60-7	0.1 - 1%	
Iron oxide	1309-37-1	0.1 - 1%	
Magnesium oxide	1309-48-4	0.1 - 1%	
Feldspar	68476-25-5	0.1 - 1%	
Hydroxyethyl cellulose	9004-62-0	0.1 - 1%	
Zircon	14940-68-2	0.1 - 1%	
Aluminum oxide	1344-28-1	0.1 - 1%	

<sup>\*</sup> All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

#### **Composition Comments:**

The term "Hazardous Ingredients" should be interpreted as a term defined in Hazard Communication standards and does not necessarily imply the existence of a welding hazard. The product may contain additional non-hazardous ingredients or may form additional compounds under the condition of use. Refer to Sections 2 and 8 for more information.

#### 4. FIRST AID MEASURES

**Ingestion:** Unlikely due to form of product, except for granular materials. Avoid hand,

clothing, food, and drink contact with metal fume or powder which can cause ingestion of particulate during hand to mouth activities such as drinking, eating, smoking, etc. If ingested, do not induce vomiting. Contact a poison control center. Unless the poison control center advises

otherwise, wash out mouth thoroughly with water. If symptoms develop,

seek medical attention at once.

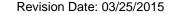
Inhalation: Move to fresh air if breathing is difficult. If breathing has stopped, perform

artificial respiration and obtain medical assistance at once.

**Skin Contact:** Remove contaminated clothing and wash the skin thoroughly with soap and

water. For reddened or blistered skin, or thermal burns, obtain medical

assistance at once.





Eye contact: Dust or fume from this product should be flushed from the eyes with

copious amounts of clean, tepid water until 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.

#### Most important symptoms/effects, acute and delayed

Symptoms: Short-term (acute) overexposure to welding fumes may result in discomfort

such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems

(e.g. asthma, emphysema).

Long-term (chronic) overexposure to welding fumes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other

pulmonary effects. Refer to Section 11 for more information.

Hazards: Welding hazards are complex and may include physical and health hazards

such as but not limited to electric shock, physical strains, radiation burns (eye flash), thermal burns due to hot metal or spatter and potential health effects of overexposure to welding fume or dust. Refer to Section 11 for

more information.

#### Indication of immediate medical attention and special treatment needed

**Treatment:** Treat symptomatically.

#### 5. FIRE-FIGHTING MEASURES

General Fire Hazards: As shipped, this product is nonflammable. However, welding arc and

sparks can ignite combustibles and flammable products. Read and understand American National Standard Z49.1, "Safety In Welding, Cutting and Allied Processes" and National Fire Protection Association NFPA 51B, "Standard for Fire Prevention During Welding, Cutting and Other Hot Work"

before using this product.

#### Suitable (and unsuitable) extinguishing media

Suitable extinguishing

media:

As shipped, the product will not burn. In case of fire in the surroundings:

use appropriate extinguishing agent.

Unsuitable extinguishing

media:

None known.

Specific hazards arising from

the chemical:

Welding arc and sparks can ignite combustibles and flammable products.

#### Special protective equipment and precautions for firefighters





Special fire fighting

procedures:

Use standard firefighting procedures and consider the hazards of other

involved materials.

Special protective equipment

for fire-fighters:

Selection of respiratory protection for fire fighting: follow the general fire precautions indicated in the workplace. Self-contained breathing apparatus

and full protective clothing must be worn in case of fire.

## 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures 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.

Methods and material for containment and cleaning up

Clean up spills immediately, observing precautions in the personal protective equipment in Section 8. Avoid generating dust. Prevent product from entering any drains, sewers or water sources. Refer to Section 13 for

proper disposal.

Environmental Precautions: Avoid release to the environment. Prevent further leakage or spillage if safe

to do so

#### 7. HANDLING AND STORAGE

Precautions for safe handling:

Keep formation of airborne dusts to a minimum. Provide appropriate

exhaust ventilation at places where dust is formed.

Read and understand the manufacturer's instruction and the precautionary

label on the product. Refer to Lincoln Safety Publications at

www.lincolnelectric.com/safety. See American National Standard Z49.1,

"Safety In Welding, Cutting and Allied Processes" published by the

American Welding Society, http://pubs.aws.org and OSHA Publication 2206

(29CFR1910), U.S. Government Printing Office, www.gpo.gov.

Conditions for safe storage, including any incompatibilities:

Store in closed original container in a dry place. Store away from incompatible materials. Store in accordance with local/regional/national

regulations.

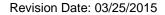


# 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

## **Control Parameters**

**Occupational Exposure Limits: US** 

Chemical Identity	nical Identity Type Exposure Limit Values		Source
Iron	TWA	10 mg/m3	US. ACGIH Threshold Limit Values
Titanium dioxide	TWA	10 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
Titanium dioxide - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Mica - Respirable fraction.	TWA	3 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
Mica	TWA	20 millions of particles per cubic foot of air	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
Mica - Respirable.	REL	3 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Potassium silicate	TWA	10 mg/m3	US. ACGIH Threshold Limit Values
Manganese - Fume as Mn	Ceiling	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	1 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	STEL	3 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Manganese - Inhalable fraction as Mn	TWA	0.1 mg/m3	US. ACGIH Threshold Limit Values (03 2014)
Manganese - Respirable fraction as Mn	TWA	0.02 mg/m3	US. ACGIH Threshold Limit Values (03 2014)
Calcium oxide	TWA	2 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	2 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Quartz - Respirable fraction.	TWA	0.025 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
Quartz - Respirable.	TWA	2.4 millions of particles per cubic foot of air	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
	TWA	0.1 mg/m3	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
Quartz - Total dust.	TWA	0.3 mg/m3	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
Quartz - Respirable dust.	REL	0.05 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Iron oxide - Respirable fraction.	TWA	5 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
Iron oxide - Fume.	PEL	10 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Iron oxide - Dust and fume as Fe	REL	5 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Magnesium oxide - Inhalable fraction.	TWA	10 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
Magnesium oxide - Total particulate.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)





Feldspar	TWA	10 mg/m3	US. ACGIH Threshold Limit Values
Hydroxyethyl cellulose	TWA	10 mg/m3	US. ACGIH Threshold Limit Values
Zircon - as Zr	STEL	10 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
	TWA	5 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	5 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	STEL	10 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Aluminum oxide - Respirable fraction.	TWA	1 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Aluminum oxide - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)

**Occupational Exposure Limits: CANADA** 

Chemical Identity	Туре	Exposure Limit Values	Source
Titanium dioxide	TWA	10 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
Titanium dioxide - Total dust.	TWA	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Titanium dioxide - Respirable fraction.	TWA	3 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Titanium dioxide	TWA	10 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	TWAEV	10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	20 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Titanium dioxide - Total dust.	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Mica - Respirable.	TWA	3 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	3 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Mica - Respirable fraction.	TWA	3 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)



	T T		(02.2044)
		2 mg/m2	(03 2011) Canada. Ontario OELs. (Control of
	TWAEV	3 mg/m3	Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	3 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	6 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Mica - Respirable dust.	TWA	3 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - as Mn	TWA	0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	0.2 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWAEV	0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	0.2 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	0.6 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Manganese - Fume as Mn	TWA	1 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Dust as Mn	TWA	5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Fume as Mn	STEL	3 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Respirable fraction as Mn	TWA	0.02 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Manganese - Inhalable fraction as Mn	TWA	0.1 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Quartz - Respirable particles.	TWA	0.025 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
Quartz - Respirable fraction.	TWA	0.025 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.025 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
Quartz - Respirable.	TWAEV	0.10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Quartz - Respirable fraction.	8 HR ACL	0.05 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Quartz - Respirable dust.	TWA	0.1 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the





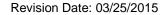
Work Environment) (12 2008)

**Occupational Exposure Limits: MEXICO** 

Chemical Identity	Туре	Exposure Limit Values	Source
Titanium dioxide - as Ti	CTT	20 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CPT	10 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Mica	CPT	3 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Manganese - as Mn	CPT	0.2 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Manganese - Fume as Mn	CPT	1 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CTT	3 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Calcium oxide	CPT	2 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Quartz	CPT	0.1 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Iron oxide - as Fe	CTT	10 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CPT	5 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Magnesium oxide - Fume as Mg	CPT	10 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Zircon - as Zr	CPT	5 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CTT	10 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Aluminum oxide	CPT	10 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)

Additional exposure limits under the conditions of use: US

Chemical Identity	Туре	Exposure Li	mit Values	Source
Carbon dioxide	TWA	5,000 ppm		US. ACGIH Threshold Limit Values (12 2010)
	STEL	30,000 ppm		US. ACGIH Threshold Limit Values (12 2010)
	PEL	5,000 ppm	9,000 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	STEL	30,000 ppm	54,000 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	REL	5,000 ppm	9,000 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Carbon monoxide	TWA	25 ppm		US. ACGIH Threshold Limit Values (12 2010)
	PEL	50 ppm	55 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	35 ppm	40 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	Ceil_Time	200 ppm	229 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Nitrogen dioxide	TWA	0.2 ppm		US. ACGIH Threshold Limit Values (02 2012)
	Ceiling	5 ppm	9 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02





				2006)
	STEL	1 ppm	1.8 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Ozone	PEL	0.1 ppm	0.2 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	Ceil_Time	0.1 ppm	0.2 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	TWA	0.05 ppm		US. ACGIH Threshold Limit Values (03 2014)
	TWA	0.20 ppm		US. ACGIH Threshold Limit Values (03 2014)
	TWA	0.10 ppm		US. ACGIH Threshold Limit Values (03 2014)
	TWA	0.08 ppm		US. ACGIH Threshold Limit Values (03 2014)
Manganese - Fume as Mn	Ceiling		5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL		1 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	STEL		3 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Manganese - Inhalable fraction as Mn	TWA		0.1 mg/m3	US. ACGIH Threshold Limit Values (03 2014)
Manganese - Respirable fraction as Mn	TWA		0.02 mg/m3	US. ACGIH Threshold Limit Values (03 2014)

Additional exposure limits under the conditions of use: CANADA

Chemical Identity	Туре	Exposure Li	mit Values	Source
Carbon dioxide	STEL	30,000 ppm	54,000 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	5,000 ppm	9,000 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	5,000 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	STEL	15,000 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	5,000 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	STEL	30,000 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	STEV	30,000 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	TWAEV	5,000 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	5,000 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)



	15 MIN	30,000 ppm		Canada. Saskatchewan OELs
	ACL			(Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	5,000 ppm	9,000 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
	STEL	30,000 ppm	54,000 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Carbon monoxide	TWA	25 ppm	29 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	25 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	STEL	100 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	25 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	STEV	100 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
	TWAEV	25 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
	8 HR ACL	25 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	190 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	35 ppm	40 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
	STEL	200 ppm	230 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Nitrogen dioxide	STEL	5 ppm	9.4 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	3 ppm	5.6 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	CEILING	1 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.2 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2012)
	STEV	5 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	TWAEV	3 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	3 ppm		Canada. Saskatchewan OELs



				(Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	5 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	3 ppm	5.6 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Ozone	STEL	0.3 ppm	0.6 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	0.1 ppm	0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	0.05 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.1 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.08 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.2 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWAEV	0.1 ppm	0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
	STEV	0.3 ppm	0.6 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
	15 MIN ACL	0.15 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	8 HR ACL	0.05 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	CEILING	0.1 ppm	0.2 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
	TWA	0.20 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
	TWA	0.05 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
	TWA	0.08 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
	TWA	0.10 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Manganese - as Mn	TWA		0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)



	TWA	0.2 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWAEV	0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	0.2 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	0.6 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Manganese - Fume as Mn	TWA	1 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Dust as Mn	TWA	5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Fume as Mn	STEL	3 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Respirable fraction as Mn	TWA	0.02 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Manganese - Inhalable fraction as Mn	TWA	0.1 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)

Additional exposure limits under the conditions of use: MEXICO

Chemical Identity	Туре	Exposure Li	mit Values	Source
Carbon dioxide	CPT	5,000 ppm	9,000 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CTT	15,000 ppm	27,000 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Carbon monoxide	CTT	400 ppm	400 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CPT	50 ppm	55 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Nitrogen dioxide	CTT	5 ppm	10 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CPT	3 ppm	6 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Ozone	P	0.1 ppm	0.2 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Manganese - as Mn	CPT		0.2 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Manganese - Fume as Mn	CPT		1 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CTT		3 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)

# Appropriate Engineering Controls

**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.** 





#### Individual protection measures, such as personal protective equipment

General information: Exposure Guidelines: Threshold Limit Values (TLVs) and Biological

Exposure Indices (BEIs) are values published by the American Conference of Government Industrial Hygienists (ACGIH). ACGIH Statement of Positions Regarding the TLVs® and BEIs® states that the TLV-TWA should be used as a guide in the control of health hazards and should not be used to indicate a fine line between safe and dangerous exposures. See Section 10 for information on potential fume constituents of health interest. Threshold Limit Values are figures published by the American

Conference of Government Industrial Hygienists.

Maximum Fume Exposure Guideline<sup>TM</sup> (MFEG)<sup>TM</sup> for this product (based on content of Manganese) is 0.5 mg/m3. This exposure guideline is calculated using the most conservative value of the ACGIH TLV or OSHA

PEL for the stated substance.

**Eye/face protection:** Wear helmet or use face shield with filter lens shade number 12 or darker

for open arc processes. No specific lens shade recommendation for submerged arc processes. Shield others by providing screens and flash

goggles.

**Skin Protection** 

Hand Protection: Wear protective gloves. Suitable gloves can be recommended by the glove

supplier.

Other: Protective Clothing: Wear hand, head, and body protection which help to

prevent injury from radiation, sparks and electrical shock. See 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. Wear dry gloves free of holes or split seams. Train the welder not to permit electrically live parts or electrodes to contact skin . . . or clothing or gloves if they are wet. Insulate yourself from the work piece and ground using dry plywood, rubber mats or other dry insulation.

Respiratory Protection: Keep your head out of fumes. Use enough ventilation and local exhaust to

keep fumes and gases from your breathing zone and the general area. An approved respirator should be used unless exposure assessments are

below applicable exposure limits.

Hygiene measures: Do not eat, drink or smoke when using the product. Always observe good

personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing

and protective equipment to remove contaminants.

Determine the composition and quantity of fumes and gases to which workers are exposed by taking an air sample from inside the welder's helmet if worn or in the worker's breathing zone. Improve ventilation if exposures are not below limits. See ANSI/AWS F1.1, F1.2, F1.3 and F1.5,

available from the American Welding Society, www.aws.org.



## 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Steel rod with extruded flux coating

Physical state: Solid Form: Solid

Color: No data available. Odor: No data available. Odor threshold: No data available. :Ha Not applicable Melting point/freezing point: No data available. Initial boiling point and boiling range: No data available. Flash Point: Not applicable **Evaporation rate:** Not applicable Flammability (solid, gas): No data available.

Upper/lower limit on flammability or explosive limits

Flammability limit - upper (%):

Flammability limit - lower (%):

Explosive limit - upper (%):

Explosive limit - lower (%):

No data available.

No data available.

No data available.

No data available.

Not applicable

Vapor density:

Not applicable

Not applicable

Not applicable

Not applicable

Solubility(ies)

Solubility in water:
Solubility (other):
No data available.
Partition coefficient (n-octanol/water):
No data available.
No data available.
No data available.
No data available.
Viscosity:
No data available.
No data available.

## 10. STABILITY AND REACTIVITY

**Reactivity:** The product is non-reactive under normal conditions of use, storage and

transport.

Chemical Stability: Material is stable under normal conditions.

Possibility of Hazardous

Reactions:

No data available.

**Conditions to Avoid:** Avoid heat or contamination.





Incompatible Materials: No data available.

Hazardous Decomposition Products:

Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedure and electrodes used. 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 worker 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.)

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 of the materials shown in Section 3, plus those from the base metal and coating, etc., as noted above. Reasonably expected fume constituents produced during arc welding include the oxides of iron, manganese and other metals present in the welding consumable or base metal. Hexavalent chromium compounds may be in the welding fume of consumables or base metals which contain chromium. Gaseous and particulate fluoride may be in the welding fume of consumables which contain fluoride. Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc.

#### 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

**Ingestion:** Health injuries from ingestion are not known or expected under normal use.

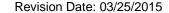
**Inhalation:** Potential chronic health hazards related to the use of welding consumables

are most applicable to the inhalation route of exposure. Refer to Inhalation

statements in Section 11.

**Skin Contact:** Arc rays can burn skin. Skin cancer has been reported.

**Eye contact:** Arc rays can injure eyes.





#### Symptoms related to the physical, chemical and toxicological characteristics

Inhalation: Short-term (acute) overexposure to welding fumes may result in discomfort

such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema). Long-term (chronic) overexposure to welding fumes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects. Respiratory exposure to the crystalline silica present in this welding electrode is not anticipated during normal use. Respiratory overexposure to airborne crystalline silica is known to cause silicosis, a form of disabling pulmonary fibrosis which can be progressive and may lead to death. Crystalline silica is on the IARC (International Agency for Research on Cancer) and NTP (National Toxicology Program) lists as posing a cancer risk to humans.

#### Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral

Product: Not classified

Specified substance(s):

Iron LD 50 (Rat): 98.6 g/kg Zircon LD 50 (Rat): 3,200 mg/kg

Dermal

Product: Not classified

Inhalation

Product: Not classified

Specified substance(s):

Aluminum oxide LC 50 (Rat, 1 h): 7.6 mg/l

**Repeated Dose Toxicity** 

**Product:** Not classified

Skin Corrosion/Irritation

Not classified Product:

Serious Eye Damage/Eye Irritation

Product: Not classified

Respiratory or Skin Sensitization

Product: Not classified

Carcinogenicity

Product: Arc rays: Skin cancer has been reported.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

Titanium dioxide Overall evaluation: 2B. Possibly carcinogenic to humans.

Overall evaluation: 1. Carcinogenic to humans. Quartz

**US. National Toxicology Program (NTP) Report on Carcinogens:** 

Known To Be Human Carcinogen.





#### US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):

No carcinogenic components identified

**Germ Cell Mutagenicity** 

In vitro

Product: Not classified

In vivo

Product: Not classified

**Reproductive Toxicity** 

Product: Not classified

**Specific Target Organ Toxicity - Single Exposure** 

Product: Not classified

Specific Target Organ Toxicity - Repeated Exposure

**Product:** Not classified

**Aspiration Hazard** 

Product: Not classified

Other Effects: Organic polymers may be used in the manufacture of various welding

consumables. Overexposure to their decomposition byproducts may result in a condition known as polymer fume fever. Polymer fume fever usually occurs within 4 to 8 hours of exposure with the presentation of flu like symptoms, including mild pulmonary irritation with or without an increase in body temperature. Signs of exposure can include an increase in white blood cell count. Resolution of symptoms typically occurs quickly, usually

not lasting longer than 48 hours.

## Additional toxicological Information under the conditions of use:

Symptoms related to the physical, chemical and toxicological characteristics under the condition of use Inhalation:

Specified substance(s):

Manganese Overexposure to manganese fumes may affect the brain and central nervous

system, resulting in poor coordination, difficulty speaking, and arm or leg

tremor. This condition can be irreversible.

# Additional toxicological Information under the conditions of use:

**Acute toxicity** 

Inhalation

Specified substance(s):

Carbon dioxide

Carbon monoxide

Carbon monoxide

Nitrogen dioxide

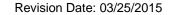
Ozone

LC Lo (Human, 5 min): 90000 ppm

LC 50 (Rat, 4 h): 1,300 mg/l

LC 50 (Rat, 4 h): 88 ppm

LC Lo (Human, 30 min): 50 ppm





## 12. ECOLOGICAL INFORMATION

**Ecotoxicity** 

Acute hazards to the aquatic environment:

**Fish** 

**Product:** Not classified.

**Aquatic Invertebrates** 

Product: Not classified.

Specified substance(s):

Manganese EC50 (Water flea (Daphnia magna), 48 h): 40 mg/l Intoxication

Chronic hazards to the aquatic environment:

Fish

**Product:** Not classified.

**Aquatic Invertebrates** 

Product: Not classified.

**Toxicity to Aquatic Plants** 

Product: Not classified.

Persistence and Degradability

Biodegradation

**Product:** No data available.

**Bioaccumulative Potential** 

**Bioconcentration Factor (BCF)** 

**Product:** No data available.

Mobility in Soil: No data available.

## 13. DISPOSAL CONSIDERATIONS

**General information:** The generation of waste should be avoided or minimized whenever

possible. When practical, recycle in an environmentally acceptable, regulatory compliant manner. Dispose of non-recyclable products in accordance with all applicable Federal, State, Provincial, and Local

requirements.

**Disposal Instructions:** Discharge, treatment, or disposal may be subject to national, state, or local

laws.



# 14. TRANSPORT INFORMATION

DOT

**UN Number:** 

UN Proper Shipping Name: NOT DG REGULATED

Transport Hazard Class(es)

Class: NR
Label(s): –
Packing Group: –

Marine Pollutant: Not regulated.

Special precautions for user: -

**IMDG** 

UN Number:

UN Proper Shipping Name: NOT DG REGULATED

Transport Hazard Class(es)

Class: NR Label(s): – EmS No.:

Packing Group:

Marine Pollutant: Not regulated.

Special precautions for user: -

**IATA** 

UN Number:

Proper Shipping Name: NOT DG REGULATED

Transport Hazard Class(es):

Class: NR
Label(s): –

Packing Group: –

Environmental Hazards Not regulated.

Special precautions for user: -

Other information

Passenger and cargo aircraft: Allowed. Cargo aircraft only: Allowed.

**TDG** 

**UN Number:** 

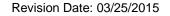
UN Proper Shipping Name: NOT DG REGULATED

Transport Hazard Class(es)

Class: NR
Label(s): –
Packing Group: –

Marine Pollutant: Not regulated.

Special precautions for user: -





## 15. REGULATORY INFORMATION

Canadian Controlled Products Regulations:

This product has been classified according to the hazard criteria of the Canadian Controlled Products Regulations, Section 33, and the MSDS contains all required information.

#### **US Federal Regulations**

#### US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

None present or none present in regulated quantities.

## CERCLA Hazardous Substance List (40 CFR 302.4):

Manganese Reportable quantity: Included in the regulation but with no data values.

See regulation for further details.

Copper and/or copper alloys and compounds (as Cu)

Reportable quantity: 5000 lbs.

#### Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard	categories

X Acute (Immediate) X Chron	nic (Delayed) Fire Reactive Pressure Generating
SARA 302 Extremely Hazardo None present or none p	ous Substance present in regulated quantities.
SARA 304 Emergency Releas	se Notification
Chemical Identity	RQ
Manganese	Included in the regulation but with no data values. See regulation for

further details.

Copper and/or copper alloys and compounds (as Cu)

5000 lbs.



#### SARA 311/312 Hazardous Chemical

Chemical Identity	Threshold Planning Quantity
Iron	10000 lbs
Titanium dioxide	10000 lbs
Mica	10000 lbs
Potassium silicate	10000 lbs
Manganese	10000 lbs
Calcium oxide	10000 lbs
Quartz	10000 lbs
Iron oxide	10000 lbs
Magnesium oxide	10000 lbs
Feldspar	10000 lbs
Hydroxyethyl cellulose	10000 lbs
Zircon	10000 lbs
Aluminum oxide	10000 lbs

## **SARA 313 (TRI Reporting)**

	Reporting threshold for	Reporting threshold for manufacturing and
Chemical Identity	other users	processing
Manganese	10000 lbs	25000 lbs.

## Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)

None present or none present in regulated quantities.

#### Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

None present or none present in regulated quantities.

## **US State Regulations**

## **US. California Proposition 65**

Titanium dioxide Carcinogenic.

Quartz Carcinogenic.

**WARNING:** This product contains or produces 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.)

## US. New Jersey Worker and Community Right-to-Know Act

Titanium dioxide Listed
Mica Listed
Manganese Listed

#### **US. Massachusetts RTK - Substance List**

Titanium dioxide Listed
Mica Listed
Manganese Listed
Quartz Listed





US. Pennsylvania RTK - Hazardous Substances

Titanium dioxide Listed Mica Listed Manganese Listed

**US. Rhode Island RTK** 

Manganese Listed

**Inventory Status:** 

Australia AICS: On or in compliance with the inventory

Canada DSL Inventory List: One or more components are not listed or are exempt from listing.

EINECS, ELINCS or NLP: On or in compliance with the inventory

Japan (ENCS) List: One or more components are not listed or are exempt from listing.

Korea Existing Chemicals Inv.

(KECI):

On or in compliance with the inventory

Canada NDSL Inventory: One or more components are not listed or are exempt from listing.

US TSCA Inventory: One or more components are not listed or are exempt from listing.

New Zealand Inventory of

Chemicals:

On or in compliance with the inventory

Japan ISHL Listing: One or more components are not listed or are exempt from listing.

Japan Pharmacopoeia Listing: One or more components are not listed or are exempt from listing.

China Inv. Existing Chemical

Substances:

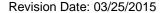
On or in compliance with the inventory

Philippines PICCS: On or in compliance with the inventory

# 16. OTHER INFORMATION

#### **Definitions:**

The Maximum Fume Exposure Guideline™ (MFEG)™ is a guideline limit for total welding fume exposure for a specific consumable product which may be used by employers to manage worker exposure to welding fume where that product is used. The MFEG™ is an estimate of the level of total welding fume exposure for a given product above which the exposure limit for one of the fume constituents may be exceeded. The exposure limits referenced are the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV®) and the U.S. OSHA Permissible Exposure Limit (PEL) whichever limit is lower. The MFEG™ never exceeds 5 mg/m³ which is the maximum recommended exposure limit for total welding fume. The MFEG™ is intended to serve as a general guideline to assist in the management of workplace exposure to welding





fume and does not replace the regular measurement and analysis of worker exposure to individual welding fume constituents.

The Maximum Dust Exposure Guideline™ (MDEG)™ is provided to assist with the management of workplace exposures where granular solid welding products or other materials are being utilized. It is derived from relevant compositional data and estimates the lowest level of total airborne dust exposure, for a given product, at which some specific constituent might potentially exceed its individual exposure limit. The specific exposure limits referenced are the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV®) and the U. S. OSHA Permissible Exposure Limit (PEL), which ever value is the lowest. The MDEG™ is never greater than 10 mg/m³ as this is the airborne exposure guideline for total particulate (total dust). The MDEG™ is intended to serve as a general guideline to assist in the management of workplace exposure and does not replace the regular measurement and analysis of worker exposure to individual airborne dust constituents.

**Revision Date:** 03/25/2015

Most recent revision(s) are noted by the bold, double bars in the left-hand

margin throughout this document.

**Further Information:** Additional information is available by request.

**Disclaimer:** The Lincoln Electric Company urges each end user and recipient of this SDS

to study it carefully. See also www.lincolnelectric.com/safety. If necessary, consult an industrial hygienist or other expert to understand this information and safeguard the environment and protect workers from potential hazards associated with the handling or use of this product. This information is believed to be accurate as of the revision date shown above. However, no warranty, expressed or implied, is given. Because the conditions or methods of use are beyond Lincoln Electric's control, we assume no liability resulting from the use of this product. Regulatory requirements are subject to change and may differ between various locations. Compliance with all applicable Federal, State, Provincial, and local laws and regulations remain the

responsibility of the user.