

## Section 1. Chemical Product and Company Identification

<b>Product name</b>	<b>Classification</b>	<b>Classification</b>
<b>Blueshield:</b>	<b>CSA:</b>	<b>AWS:</b>
OPT-18AC;	E48018/ E4918;	E7018;
OPT-18;	E48018-1-H4/ E4918-1-H4;	E7018-1-H4;
<b>Description</b>	: SMAW - Low-Hydrogen Electrodes.	<b>Generic Code</b> : AL-OPT-J-002-0
<b>In case of emergency</b>	: 1-514-878-1667	<b>Date of issue</b> : 01/15/2011
<b>Supplier</b>	: Air Liquide Canada Inc. 1250, René-Lévesque West, Suite 1700 Montreal, QC H3B 5E6	

## Section 2. Hazards Identification

<b>Physical state and Appearance</b>	: Solid.
<b>Emergency overview</b>	: <b>These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.</b>
	<p>WARNING!</p> <p>ELECTRIC SHOCK can kill.</p> <p>FUMES AND GASES can be dangerous to your health.</p> <p>ARC RAYS can injure eyes and burn skin.</p> <p>MAY BE HARMFUL IF INHALED. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE. CANCER HAZARD - CONTAINS MATERIAL WHICH CAN CAUSE CANCER.</p> <p>Do not handle until all safety precautions have been read and understood. Obtain special instructions before use. Use only with adequate ventilation. Do not eat, drink or smoke when using this product. Avoid contact with eyes, skin and clothing. Keep container tightly closed. Use personal protective equipment as required. Wash thoroughly after handling.</p>
<b>Routes of entry</b>	: Absorbed through skin. Dermal contact. Eye contact. Inhalation.
<b>Potential acute health effects</b>	
	<p><b>Eyes</b> : Very hazardous by the following route of exposure: of eye contact (irritant). Inflammation of the eye is characterized by redness, watering and itching.</p> <p><b>Skin</b> : Hazardous by the following route of exposure: of skin contact (corrosive, irritant). Skin contact may produce burns. Skin inflammation is characterized by itching, scaling, reddening or, occasionally, blistering.</p> <p><b>Inhalation</b> : Hazardous by the following route of exposure: of inhalation (lung irritant).</p> <p><b>Ingestion</b> : Since the product (welding fumes) is a gas and that it is mostly probable that it will be inhaled more than ingested, please consider first to look at the preventive measures in case of inhalation.</p>
<b>Potential chronic health effects</b>	: <b>Carcinogenic effects(*)</b> : Classified 2B by IARC [Titanium dioxide]. Classified None. by NIOSH [Titanium dioxide]. Classified A4 by ACGIH [Titanium dioxide]. Classified A4 by ACGIH, 3 by IARC [Calcium fluoride]. Classified 1 by NTP, + by NIOSH [Silica crystalline quartz]. Classified A2 by ACGIH, 2A by IARC [Silica crystalline quartz].
	<p><b>MUTAGENIC EFFECTS</b>: Not available.</p> <p><b>TERATOGENIC EFFECTS</b>: Not available.</p>
<b>Medical conditions aggravated by over-exposure</b>	: Repeated exposure to the fumes emitted while using this material may produce general deterioration of health.
	(*) See Abbreviations (section 16).

## Section 3. Composition, Information on Ingredients

Name	CAS #	% by weight	UN number
Iron	7439-89-6	45 - 70	Not regulated.
Titanium dioxide	13463-67-7	2 - 20	Not regulated.
Calcium fluoride	7789-75-5	1 - 13	UN1740
Sodium Silicate	1344-09-8	1 - 10	Not regulated.
Silicic acid, potassium salt	1312-76-1	1 - 10	Not regulated.
Manganese	7439-96-5	1 - 7	Not regulated.
Ferrosilicon	8049-17-0	1 - 5	UN1408
Mica	12001-26-2	0.5 - 1.5	Not regulated.
Silica, Crystalline - Quartz	14808-60-7	0.1 - 1	Not regulated.

The fumes emitted by the electrodes, in use, are hazardous. This MSDS is written for workers using these electrodes.

See Section 8 for Exposure Limits of the oxides found in the welding fumes.

## Section 4. First Aid Measures

- Eye contact** : Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 20 minutes. Get medical attention immediately.
- Skin contact** : Wash with soap and water. Get medical attention if irritation develops.
- Inhalation** : If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
- Ingestion** : Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If potentially dangerous quantities of this material have been swallowed, call a physician immediately.

## Section 5. Fire Fighting Measures

- Flammability of the product** : Non-flammable. Emits toxic fumes when heated.
- Explosibility** : Non-explosive in the presence of open flames, sparks and static discharge, of shocks, of heat.
- Fire-fighting media and instructions** : Use extinguishing media suitable for surrounding materials.

## Section 6. Accidental Release Measures

- Small/Large Spill and Leak** : Use appropriate tools to transfer the spilled solid to a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

## Section 7. Handling and Storage

- Handling** : Avoid breathing dusts, vapors or fumes from burning materials. Use only with adequate ventilation. Avoid contact with eyes, skin and clothing. Do not ingest. Keep container closed. Wash thoroughly after handling.
- Storage** : All filler metals in their original, unopened containers should be kept in a relatively dry storage area at temperatures between 15°C (60°F) and 30°C (80°F) and 50% maximum relative humidity.

## Section 8. Exposure Controls, Personal Protection

- Engineering controls** : Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. If user operations generate dust, fumes or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

**Personal protection**

- Eyes** : Safety glasses with side shields. Face shield with radiation shielding.
- Body** : Full suit. (Fire resistant.)
- Respiratory** : Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear a canister breathing apparatus (respirator) or a supplied-air respirator, when required, to weld in a confined space or when room exhaust or ventilation does not keep exposure below the acceptable values.
- Hands** : Gloves. (Fire resistant.)
- Feet** : Metal cap, safety boots.

<b>Occupational exposure limits</b>		<b>TWA (8 hours)</b>			<b>STEL (15 mins)</b>			<b>Ceiling</b>			
<b>Ingredient</b>	<b>List name</b>	<b>ppm</b>	<b>mg/m<sup>3</sup></b>	<b>Other</b>	<b>ppm</b>	<b>mg/m<sup>3</sup></b>	<b>Other</b>	<b>ppm</b>	<b>mg/m<sup>3</sup></b>	<b>Other</b>	<b>Notations</b>
Titanium dioxide	US ACGIH 2/2010	-	10	-	-	-	-	-	-	-	
	AB 4/2009	-	10	-	-	-	-	-	-	-	[3]
	BC 10/2009	-	3	-	-	-	-	-	-	-	[a]
	ON 7/2010	-	10	-	-	-	-	-	-	-	[b]
	QC 6/2008	-	10	-	-	-	-	-	-	-	[c]
Silicate, mica	US ACGIH 2/2010	-	3	-	-	-	-	-	-	-	[d]
	AB 4/2009	-	3	-	-	-	-	-	-	-	[e][A]
	BC 10/2009	-	3	-	-	-	-	-	-	-	[f]
	ON 7/2010	-	3	-	-	-	-	-	-	-	[f]
	QC 6/2008	-	3	-	-	-	-	-	-	-	[e]
Manganese, as Mn	US ACGIH 2/2010	-	0.2	-	-	-	-	-	-	-	[g]
	AB 4/2009	-	0.2	-	-	-	-	-	-	-	[B]
	BC 10/2009	-	0.2	-	-	-	-	-	-	-	[B]
	ON 7/2010	-	0.2	-	-	-	-	-	-	-	[h][B]
	QC 6/2008	-	1	-	-	3	-	-	-	-	[B]
calcium fluoride, as F	US ACGIH 2/2010	-	2.5	-	-	-	-	-	-	-	[h][B]
	AB 4/2009	-	2.5	-	-	-	-	-	-	-	[C]
	BC 10/2009	-	2.5	-	-	-	-	-	-	-	[C]
	ON 7/2010	-	2.5	-	-	-	-	-	-	-	[D]
	QC 6/2008	-	2.5	-	-	-	-	-	-	-	[C]
Quartz (SiO <sub>2</sub> )	US ACGIH 2/2010	-	0.025	-	-	-	-	-	-	-	[e]
	AB 4/2009	-	0.025	-	-	-	-	-	-	-	[i]
	BC 10/2009	-	0.025	-	-	-	-	-	-	-	[f]
	ON 7/2010	-	0.1	-	-	-	-	-	-	-	[j]
	QC 6/2008	-	0.1	-	-	-	-	-	-	-	[g]
Iron	US ACGIH	-	10	-	-	-	-	-	-	-	[k]

[3]Skin sensitization

**Form:** [a]Respirable dust [b]Total dust [c]total dust [d]Total dust. [e]Respirable fraction; see Appendix C [f]Respirable [g]Respirable dust. [h]fume [i]Respirable particulate [j]Respirable fraction: means that size fraction of the airborne particulate deposited in the gas-exchange region of the respiratory tract and collected during air sampling with a particle size-selective device that, (a) meets the ACGIH particle size-selective sampling criteria for airborne particulate matter; and (b) has the cut point of 4 µm at 50 per cent collection efficiency. [k]Inhalable particle.

**Notes:** [A]Respirable fraction; see Appendix C, paragraph C. [B]as Mn [C]as F [D]as fluoride

## Section 9. Physical and Chemical Properties

- Physical state and Appearance** : Solid.
- Color** : Reddish-brown. Grayish-white.
- Odor** : Odorless.
- Melting/freezing point** : 1540 to 2030°C (2804 to 3686°F)
- Specific gravity** : Weighted average: 7.03 (Water = 1)
- Solubility** : Easily soluble in the following materials: Methanol, acetone.  
Insoluble in the following materials: cold water, hot water.

## Section 10. Stability and Reactivity

- Stability and reactivity** : The product is stable.
- Hazardous decomposition products** : Metallic oxides. Carbon oxides (CO, CO<sub>2</sub>). Arc radiation can support the production of ozone and nitrogen oxides.
- Hazardous polymerization** : Will not occur.

## Section 11. Toxicological Information

### Additional Toxicity data

Product/ingredient name	Result	Species	Dose	Exposure
Silicic acid, sodium salt	LD50 Dermal LD50 Oral	Rabbit Rat	>4640 mg/kg 1960 mg/kg	- -
Manganese calcium fluoride	LD50 Oral LD50 Oral	Rat Rat	9 g/kg 4250 mg/kg	- -

**Chronic effects and other toxic effects on humans** : **CARCINOGENIC EFFECTS:** See Section 2.  
Contains material which causes damage to the following organs: blood, kidneys, lungs, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea.

Acute exposure to welding fumes may result in discomfort such as: dizziness, nausea or dryness of nose, throat or the eyes.

## Section 12. Ecological Information

### Ecotoxicity data

Product/ingredient name	Result	Species	Exposure
Iron	Acute LC50 33000 to 100000 ug/L Marine water Acute LC50 0.56 ppm Fresh water	Crustaceans - Crangon crangon Fish - Cyprinus carpio - Juvenile (Fledgling, Hatchling, Weanling) - 3.5 cm	48 hours 96 hours
Titanium dioxide	Acute LC50 5.5 ppm Fresh water	Daphnia - Daphnia magna - Juvenile (Fledgling, Hatchling, Weanling) - <24 hours	48 hours
	Acute LC50 >1000000 ug/L Marine water Chronic NOEC 1 ppm Fresh water	Fish - Fundulus heteroclitus Daphnia - Daphnia magna - Juvenile (Fledgling, Hatchling, Weanling) - <24 hours	96 hours 48 hours
Silicic acid, sodium salt	Acute EC50 0.4 mg/L Fresh water	Daphnia - Ceriodaphnia dubia - Neonate - <24 hours	48 hours
Manganese	Acute LC50 1800000 ug/L Fresh water Acute EC50 40000 ug/L Fresh water Chronic NOEC 28000 ug/L Fresh water	Fish - Gambusia affinis - Adult Daphnia - Daphnia magna Daphnia - Daphnia magna	96 hours 48 hours 48 hours

**Products of degradation** : Decomposition products may include the following materials: carbon oxides (CO, CO<sub>2</sub>), halogenated compounds. Some metallic oxides.

## Section 13. Disposal Considerations

**Waste information** : Waste must be disposed of in accordance with federal, state and local environmental control regulations. Recycle, if possible.  
**Consult your local or regional authorities.**

## Section 14. Transport Information

No transport class is found applicable to this product.

## Section 15. Regulatory Information

- HCS Classification** : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.  
Irritating material  
Carcinogen  
Target organ effects
- U.S. Federal regulations** : **United States inventory (TSCA 8b)**: All components are listed or exempted.  
**SARA 302/304/311/312 extremely hazardous substances**: No products were found.  
**SARA 302/304 emergency planning and notification**: No products were found.  
**SARA 302/304/311/312 hazardous chemicals**: Calcium Carbonate; Titanium dioxide; Calcium fluoride; Manganese; Ferrosilicon; Mica; Titanium  
**SARA 311/312 MSDS distribution - chemical inventory - hazard identification**: Iron: Fire hazard; Calcium Carbonate: Immediate (acute) health hazard; Titanium dioxide: Delayed (chronic) health hazard; Calcium fluoride: Immediate (acute) health hazard; Manganese: reactive, Immediate (acute) health hazard, Delayed (chronic) health hazard; Ferrosilicon: Fire hazard, reactive; Mica: Immediate (acute) health hazard; Titanium: Fire hazard, Delayed (chronic) health hazard  
**Clean Water Act (CWA) 307**: No products were found.  
**Clean Water Act (CWA) 311**: No products were found.  
**Clean Air Act (CAA) 112 regulated flammable substances**: No products were found.  
**Clean Air Act (CAA) 112 regulated toxic substances**: No products were found.
- SARA 313**
- Form R - Reporting requirements** : Manganese 1 - 5  
**Supplier notification** : Manganese 1-5
- State regulations** : **Massachusetts** : The following components are listed: TITANIUM DIOXIDE; MICA DUST; MANGANESE  
**New York** : None of the components are listed.  
**New Jersey** : The following components are listed: TITANIUM DIOXIDE; TITANIUM OXIDE (TiO<sub>2</sub>); TITANIUM; MICA; FERROSILICON; FERROCERUM; MANGANESE; SILICA, QUARTZ; QUARTZ (SiO<sub>2</sub>)  
**Pennsylvania** : The following components are listed: TITANIUM OXIDE (TiO<sub>2</sub>); MANGANESE; QUARTZ (SiO<sub>2</sub>)  
**WARNING**: This product contains a chemical known to the State of California to cause cancer.
- WHMIS (Canada)** : **These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.**  
Class D-2A: Material causing other toxic effects (Very toxic).  
Class D-2B: Material causing other toxic effects (Toxic).  
**CEPA Toxic substances**: The following components are listed: Calcium fluoride  
**Canadian ARET**: None of the components are listed.  
**Canadian NPRI**: The following components are listed: Calcium fluoride; Manganese  
**Alberta Designated Substances**: None of the components are listed.  
**Ontario Designated Substances**: None of the components are listed.  
**Quebec Designated Substances**: None of the components are listed.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

## Section 16. Other Information

- Label requirements** : See Section 2.
- Hazardous Material Information System (U.S.A.)** : Health: 2\* Fire: 0 Reactivity: 0
- National Fire Protection Association (U.S.A.)** : Health: 2 Fire: 0 Reactivity: 0 Other: None
- References** : - 29CFR Part1910.1200 OSHA MSDS Requirements. - 49CFR Table List of Hazardous Materials, UN#, Proper Shipping Names, PG. - Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2005. - CRC Handbook of chemistry and physics, 67th edition. CRC Press inc., Boca Raton, Florida. - Manufacturer's Material Safety Data Sheet. ANSI Z400.1, MSDS Standard, 2004. ANSI Z49.1 Safety in Welding and Cutting, The American Welding Society, P.O. Box 351040, Miami, FL 33135. Canadian Standard Association, CSA W117.2, Code for Safety in Welding and Cutting, 2003.
- Abbreviations and acronyms** : **ACGIH: American Conference of Governmental Industrial Hygiene.**  
ACGIH A2--Suspected Human Carcinogen.  
ACGIH-A4-Not Classifiable as a Human Carcinogen.  
**IARC: International Agency for Research on Cancer.**  
IARC 2A: Probable for human.  
IARC 2B: Possible for human.  
IARC 3: Not classifiable for human.  
**NIOSH: National Institute of Occupational Safety and Health.**  
NIOSH +: Proven.  
NIOSH: None.  
**NTP: National Toxicology program.**  
NTP 1: Known to be human carcinogens.
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- Notice to reader**

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