

Section 1. Chemical Product and Company Identification

Product name	Classification	Classification	
Blueshield:	CSA:	AWS:	
LA C-3M;	-	E70C-3M-H8;	
LA C-6;	E491C-6-H4 / E491C-6M-H4;	E70C-6M-H4;	
LA C-6 LF;	E491C-6-H4 / E491C-6M-H4	E70C-6M-H4;	
LA C-6 CT;	E491C-6-H4 / E491C-6M-H4	E70C-6M-H4;	
LA C-6 CR;	E491C-6-H4 / E491C-6M-H4	E70C-6M-H4;	
LA C-6 LS;	E492C-6-H4 / E492C-6M-H4	E70C-6M-H4;	
SAFDUAL			
SAFDUAL 200;	E491C-G-H4;	E70C-G-H4;	
Description	: MCAW - Carbon Steel Metal-Cored Wires.	Generic Code	: AL-T-002-0
In case of emergency	: 1-514-878-1667	Date of issue	: 01/15/2011
Supplier	: Air Liquide Canada Inc. 1250, René-Lévesque West, Suite 1700 Montreal, QC H3B 5E6		

Section 2. Hazards Identification

Physical state and Appearance	: Solid.
Emergency overview	: These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold. WARNING! ELECTRIC SHOCK can kill. FUMES AND GASES can be dangerous to your health. ARC RAYS can injure eyes and burn skin. MAY BE HARMFUL IF INHALED. CAUSES RESPIRATORY TRACT IRRITATION. MAY CAUSE ALLERGIC SKIN REACTION. MAY CAUSE EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE. CANCER HAZARD - CONTAINS MATERIAL WHICH CAN CAUSE CANCER. 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.
Routes of entry	: Dermal contact. Eye contact. Inhalation.
Potential acute health effects	
Eyes	: Hazardous by the following route of exposure: of eye contact (irritant). Inflammation of the eye is characterized by redness, watering and itching.
Skin	: Hazardous by the following route of exposure: of skin contact (corrosive, sensitizer). Skin contact may produce burns.
Inhalation	: Hazardous by the following route of exposure: of inhalation (lung irritant).
Ingestion	: 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.
Potential chronic health effects	: CARCINOGENIC EFFECTS(*) : Classified + by NIOSH [Nickel]. Classified 2B by IARC, 3 by European Union [Nickel]. Classified 2 by NTP [Nickel]. Classified A5 by ACGIH [Nickel]. Classified None by NIOSH [Chromium, Metal]. Classified A4 by ACGIH, 3 by IARC [Chromium, Metal]. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Not available.
Medical conditions aggravated by over-exposure	: 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	80 - 98	Not regulated.
Manganese QMP	7439-96-5	1 - 4	Not regulated.
Nickel QMP	7440-02-0	0.01 - 4	Not regulated.
Chromium, QMP	7440-47-3	0.01 - 3	Not regulated.
Silicium Powder, Amorphous	7440-21-3	0.01 - 3	UN1346
Molybdenum QMP	7439-98-7	0.01 - 2	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 the following materials or conditions: open flames, sparks and static discharge, heat and shocks and mechanical impacts.
- 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.

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.

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredient	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Manganese, as Mn	US ACGIH 2/2010	-	0.2	-	-	-	-	-	-	-	[A]
	AB 4/2009	-	0.2	-	-	-	-	-	-	-	[A]
	BC 10/2009	-	0.2	-	-	-	-	-	-	-	[A]
	ON 7/2010	-	0.2	-	-	-	-	-	-	-	[a][A]
	QC 6/2008	-	1	-	-	3	-	-	-	-	[b]
Nickel	US ACGIH 2/2010	-	1.5	-	-	-	-	-	-	-	[c]
	AB 4/2009	-	1.5	-	-	-	-	-	-	-	[d]
Nickel, as Ni	BC 10/2009	-	0.05	-	-	-	-	-	-	-	[3]
	Nickel	-	1	-	-	-	-	-	-	-	[e]
Chromium, measured as Cr	QC 6/2008	-	1	-	-	-	-	-	-	-	[f]
	US ACGIH 2/2010	-	0.5	-	-	-	-	-	-	-	[g]
	AB 4/2009	-	0.5	-	-	-	-	-	-	-	[b]
	BC 10/2009	-	0.5	-	-	-	-	-	-	-	[h]
	ON 7/2010	-	0.5	-	-	-	-	-	-	-	[i]
Chromium, as Cr	QC 6/2008	-	0.5	-	-	-	-	-	-	-	[j]
	Silicon	-	3	-	-	-	-	-	-	-	[k]
	BC 10/2009	-	10	-	-	-	-	-	-	-	[l]
Molybdenum, as Mo	ON 7/2010	-	10	-	-	-	-	-	-	-	[m]
	QC 6/2008	-	10	-	-	-	-	-	-	-	[n]
	US ACGIH 2/2010	-	10	-	-	-	-	-	-	-	[o]
	AB 4/2009	-	3	-	-	-	-	-	-	-	[p]
	BC 10/2009	-	3	-	-	-	-	-	-	-	[q]
Molybdenum	ON 7/2010	-	10	-	-	-	-	-	-	-	[r]
	BC 10/2009	-	10	-	-	-	-	-	-	-	[s]
Molybdenum, as Mo	ON 7/2010	-	10	-	-	-	-	-	-	-	[t]
	BC 10/2009	-	3	-	-	-	-	-	-	-	[u]
Iron	US ACGIH	-	10	-	-	-	-	-	-	-	[v]

[3]Skin sensitization

Form: [a]fume [b]Inhalable fraction. See Appendix C, paragraph A. Inhalable Particulate Mass TLVs (IPM-TLVs) for those materials that are hazardous when deposited anywhere in the respiratory tract. [c]Inhalable fraction: means that size fraction of the airborne particulate deposited anywhere in 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 100 µm at 50 per cent collection efficiency. [d]Inorganic [e]Respirable dust [f]Total dust [g]Total dust. [h]Respirable fraction; see Appendix C [i]Respirable [j]Inhalable [k]Inhalable particle.

Notes: [A]as Mn

Section 9. Physical and Chemical Properties

Physical state and Appearance : Solid.
Color : Bluish-grey.
Odor : Odorless.
Melting/freezing point : 1540°C (2804°F)
Specific gravity : Weighted average: 7.54 (Water = 1)
Solubility : Insoluble in water.

Section 10. Stability and Reactivity

Stability and reactivity : The product is stable.
Hazardous decomposition products : Metallic oxides. Carbon oxides (CO, CO₂). Arc radiation can support the production of ozone and nitrogen oxides. See Toxicological Information (section 11) for a partial list of welding fumes ingredients.
Hazardous polymerization : Will not occur.

Section 11. Toxicological Information

Additional Toxicity data

Product/ingredient name	Result	Species	Dose	Exposure
Manganese	LD50 Oral	Rat	9 g/kg	-
Silicon	LD50 Oral	Rat	3160 mg/kg	-

Chronic effects and other toxic effects on humans : **CARCINOGENIC EFFECTS:** See Section 3.
Contains material which causes damage to the following organs: blood, kidneys, lungs, liver, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea, nose/sinuses.
Very hazardous by the following route of exposure: of eye contact (irritant).
Hazardous by the following route of exposure: of skin contact (sensitizer), of inhalation. Skin contact may produce burns. 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
Manganese	Acute EC50 40000 ug/L Fresh water Chronic NOEC 28000 ug/L Fresh water	Daphnia - Daphnia magna	48 hours
Nickel	Acute EC50 1000 ug/L Marine water Acute IC50 0.31 mg/L Marine water	Daphnia - Daphnia magna Crustaceans - Americamysis bahia - Juvenile (Fledgling, Hatchling, Weanling) - <48 hours	48 hours 48 hours
Chromium	Acute LC50 47.5 ng/L Fresh water Acute LC50 50 to 65 ug/L Fresh water	Fish - Heteropneustes fossilis Crustaceans - Simocephalus vetulus - <24 hours	96 hours 48 hours
Molybdenum	Acute LC50 22 ug/L Fresh water Acute LC50 14.3 ppm Fresh water Acute LC50 800 mg/L Fresh water	Daphnia - Daphnia magna - <24 hours Fish - Cyprinus carpio Fish - Oncorhynchus mykiss - 20 mm	48 hours 96 hours 96 hours

Products of degradation : 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
Sensitizing material
Carcinogen
Target organ effects
- U.S. Federal regulations** : TSCA 8(b) inventory: All components listed.
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: Manganese; Nickel; Silicon; Molybdenum
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Iron: Fire hazard; Manganese: reactive, Immediate (acute) health hazard, Delayed (chronic) health hazard; Nickel: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard; Silicon; Fire hazard, Immediate (acute) health hazard; Molybdenum: Immediate (acute) health hazard, Delayed (chronic) health hazard
Clean Water Act (CWA) 307: Nickel; Chromium; Copper
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 - 3 |
| | Nickel alloyed | 1 - 3 |
| | Chromium | 1 - 3 |
| | Copper | 0.01 - 1 |
| Supplier notification | : Manganese | 1 - 3 |
| | Nickel alloyed | 1 - 3 |
| | Chromium | 1 - 3 |
| | Copper | 0.01 - 1 |
- State regulations** : **Massachusetts** : The following components are listed: MANGANESE; NICKEL; CHROMIUM; SILICON DUST; MOLYBDENUM
New York : The following components are listed: Nickel; Chromium
New Jersey : The following components are listed: MANGANESE; NICKEL; CHROMIUM; SILICON; MOLYBDENUM
Pennsylvania : The following components are listed: MANGANESE; NICKEL; CHROMIUM; SILICON; MOLYBDENUM
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 DSL: All components 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-A4-Not Classifiable as a Human Carcinogen.
ACGIH-A5-Not suspected as a Human Carcinogen.
IARC: International Agency for Research on Cancer.
IARC 2B: Possible for human.
IARC 3: Not classifiable for human.
NIOSH: National Institute of Occupational Safety and Health.
NIOSH + : Proven.
NIOSH : None.
European Union
3: Possible for human.
NTP: National Toxicology program.
NTP 2: Reasonably Anticipated to be human carcinogens.
- Responsible name** : Atrion Regulatory Services, Inc.
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- Notice to reader**

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