

Section 1. Chemical Product and Company Identification

Product name <i>Blueshield</i>	Classification	
CSA	AWS	
LA C-3M; LA C-6; LA C-6 LF; LA C-6 CT; LA C-6 CR;	- E491C-6-H4 / E491C-6M-H4; E491C-6-H4 / E491C-6M-H4 E491C-6-H4 / E491C-6M-H4 E491C-6-H4 / E491C-6M-H4	E70C-3M-H8; E70C-6M-H4; E70C-6M-H4; E70C-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 : 10/01/2006
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 :	<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>SUSPECT CANCER HAZARD. MAY CAUSE CANCER.</p> <p>CONTAINS MATERIAL WHICH CAUSES DAMAGE TO THE FOLLOWING ORGANS: BLOOD, KIDNEYS, LUNGS, LIVER, RESPIRATORY TRACT, SKIN, CENTRAL NERVOUS SYSTEM, EYES, NOSE, SINUSES.</p> <p>MAY BE HARMFUL IF INHALED.</p> <p>MAY CAUSE EYE AND SKIN IRRITATION.</p> <p>MAY CAUSE ALLERGIC SKIN REACTION.</p> <p>Risk of cancer depends on duration and level of exposure. Avoid contact with eyes. Avoid breathing dust. Avoid prolonged or repeated contact with skin. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.</p>
Routes of entry :	Dermal contact. Eye contact. Inhalation.
Potential acute health effects	
Eyes :	Very hazardous in case of eye contact (irritant). Inflammation of the eye is characterized by redness, watering and itching
Skin :	Hazardous in case of skin contact (sensitizer). Skin contact may produce burns.
Inhalation :	Hazardous in case of inhalation.
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 :	<p>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].</p> <p>Mutagenic effects Not available.</p> <p>Teratogenic effects Not available.</p>
Medical conditions aggravated by over-exposure :	Repeated exposure to the fumes emitted while using this material may produce general deterioration of health.
See section 11 for more detailed information on health effects and symptoms.	
(*) See Abbreviations (section 16).	

Section 3. Composition, Information on Ingredients

Name	CAS #	% by weight	UN number
Iron	7439-89-6	70 - 100	Not applicable.
Manganese	7439-96-5	1 - 3	Not applicable.
Nickel	7440-02-0	1 - 3	Not applicable.
Chromium, Metal	7440-47-3	1 - 3	Not applicable.
Silicium Powder, Amorphous	7440-21-3	1 - 3	UN1346
Molybdenum	7439-98-7	1 - 3	Not applicable.

This product is a manufactured product under the Canadian WHMIS and an Article under the United States Hazard Communication System. Therefore it is EXEMPTED from the regulatory requirements under WHMIS and HCS. The fumes emitted by this material when in used are nevertheless hazardous under these same laws and regulations. This MSDS has been written for workers using these electrodes. The information contain in this document, except in Sections 1, 2, 9 and 10 refers to the material being used in welding operations.

[See Section 8 for Exposure Limits.](#) [See Section 11 for Toxicological Data.](#)

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. 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 airborne levels below recommended exposure 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.

Workspace environment : Always use a radiation screen to protect your working environment, yourself and others.

Exposure limits

Product name

Product name	Exposure limits
Welding fume	ACGIH (TLV) TWA: 5 mg/m ³ as Iron Oxide; STEL: 3 mg/m ³ as Manganese Oxide.
Calcium fluoride	OSHA PEL Z2 (United States, 8/1997). TWA: 2.5 mg/m ³ 8 hour(s). Form: Dust ACGIH TLV (United States, 1/2005). TWA: 2.5 mg/m ³ 8 hour(s). Form: All forms.
Chromium oxide	ACGIH TLV (United States, 1/2004). TWA: 0.5 mg/m ³ 8 hour(s). Form: Inorganic OSHA PEL (United States, 8/1997). TWA: 1 mg/m ³ 8 hour(s). Form: All forms NIOSH REL (United States, 12/2001). TWA: 0.5 mg/m ³ 10 hour(s). Form: All forms
Chromium trioxide (VI)	ACGIH TLV (United States, 1/2005). TWA: 0.05 mg/m ³ 8 hour(s). Form: Soluble TWA: 0.01 mg/m ³ 8 hour(s). Form: Insoluble OSHA PEL (United States, 8/1997). TWA: 1 mg/m ³ 8 hour(s). Form: All forms.
Molybdenum oxide	ACGIH TLV (United States, 1/2004). TWA: 3 mg/m ³ 8 hour(s). Form: Insoluble OSHA PEL (United States, 8/1997). TWA: 15 mg/m ³ 8 hour(s). Form: Total dust
Aluminum Oxide	ACGIH TLV (United States, 1/2005). TWA: 10 mg/m ³ 8 hour(s). Form: All forms. NIOSH REL (United States, 12/2001). TWA: 5 mg/m ³ 10 hour(s). Form: All forms. OSHA PEL (United States, 8/1997). TWA: 5 mg/m ³ 8 hour(s). Form: Respirable fraction TWA: 15 mg/m ³ 8 hour(s). Form: Total dust
Nickel oxide	ACGIH TLV (United States, 1/2005). TWA: 0.1 mg/m ³ 8 hour(s). Form: Soluble TWA: 0.2 mg/m ³ 8 hour(s). Form: Insoluble OSHA PEL (United States, 8/1997). TWA: 1 mg/m ³ 8 hour(s). Form: All forms.

[Consult local authorities for acceptable exposure limits.](#)

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 cold water, hot 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

Toxicity data

<u>Ingredient name</u>	<u>Test</u>	<u>Result</u>	<u>Route</u>	<u>Species</u>
Silicium Powder, Amorphous	LD50	3160 mg/kg	Oral	Rat

- Chronic 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.
- Other toxic effects on humans** : Very hazardous in case of eye contact (irritant).
Hazardous in case 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

<u>Ingredient name</u>	<u>Species</u>	<u>Period</u>	<u>Result</u>
Manganese	Daphnia magna (EC50)	48 hour(s)	40 mg/l
Nickel	Daphnia magna (EC50)	48 hour(s)	1 mg/l
Chromium, Metal	Daphnia magna (EC50)	48 hour(s)	0.07 mg/l
Molybdenum	Oncorhynchus mykiss (LC50)	96 hour(s)	800 mg/l

- 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 classes were found applicable to the mixture.

Section 15. Regulatory Information

- HCS Classification** : Contains material which may cause cancer
Irritating material
Sensitizing material
Target organ effects

- U.S. Federal regulations** : TSCA 8(b) inventory: All components listed.
Clean Water Act (CWA) 307: Nickel alloyed; Chromium, Metal; Copper
Clean Water Act (CWA) 311: No products were found.
Clean Air Act (CAA) 112 accidental release prevention: 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 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 alloyed; Silicium alloyed; Molybdenum
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Iron: Fire hazard; Manganese: reactive, Immediate (acute) health hazard, Delayed (chronic) health hazard; Nickel alloyed: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard; Silicium alloyed: Fire hazard, Immediate (acute) health hazard; Molybdenum: Immediate (acute) health hazard, Delayed (chronic) health hazard

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Form R - Reporting requirements	: Manganese	1 - 3
	Nickel alloyed	1 - 3
	Chromium, Metal	1 - 3
Supplier notification	: Manganese	1 - 3
	Nickel alloyed	1 - 3
	Chromium, Metal	1 - 3

- State regulations** : Pennsylvania RTK: Manganese: (environmental hazard, generic environmental hazard); Nickel alloyed: (special hazard, environmental hazard, generic environmental hazard); Chromium, Metal: (environmental hazard, generic environmental hazard); Silicium alloyed: (generic environmental hazard); Molybdenum: (generic environmental hazard); Copper: (environmental hazard, generic environmental hazard)
Massachusetts RTK: Manganese; Nickel alloyed; Chromium, Metal; Silicium alloyed; Molybdenum; Copper
New Jersey: Manganese; Nickel alloyed; Chromium, Metal; Silicium alloyed; Molybdenum; Copper

WARNING: This product contains a chemical known to the State of California to cause cancer.

WHMIS (Canada)

- : 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 CPR and the MSDS contains all the information required by the CPR.

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 : **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.

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