Material Safety Data Sheet - MSDS

Section 1. Chemical Product and Company Identification

Product name
Blueshield:
CRYSTAL 4043;
CRYSTAL 5356;
CRYSTAL 4047

Classification
CSA:
ER4043;
ER5356;
ER4047;

Classification
AWS:
ER4043;
ER5356;
ER4047;

Description : Aluminium Wire for GMAW (MIG).

In case of emergency : 1-514-878-1667

Supplier : Air Liquide Canada Inc.
1250, René-Lévesque West, Suite 1700
Montreal, QC H3B 5E6

Generic Code : **AL-J-012-0**

Date of issue : **01/15/2011**

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. MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE. POSSIBLE CANCER HAZARD - CONTAINS MATERIAL WHICH MAY CAUSE CANCER, BASED ON ANIMAL DATA.
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). Skin contact may produce burns.

Inhalation : Hazardous by the following route of exposure: 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 : **Carcinogenic effects(*)**: Classified None. by NIOSH [Chromium]. Classified A4 by ACGIH, 3 by IARC [Chromium].
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
Aluminum	7429-90-5	87 - 98	UN1309
Silicium Powder, Amorphous	7440-21-3	4 - 13	UN1346
Copper Metal Powder	7440-50-8	0.1 - 6	Not regulated.
Magnesium Metal Powder	7439-95-4	0.1 - 5	UN2950
Manganese	7439-96-5	<1.5	Not regulated.
Chromium, Metal	7440-47-3	<0.5	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. 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.

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
Aluminium powder (pyrophoric)	US ACGIH 2/2010	-	1	-	-	-	-	-	-	-	[a]
	AB 4/2009	-	10	-	-	-	-	-	-	-	[3] [b]
	BC 10/2009	-	1	-	-	-	-	-	-	-	[c]
	ON 7/2010	-	1	-	-	-	-	-	-	-	[a]
Aluminium powder (pyrophoric), as Al	QC 6/2008	-	10	-	-	-	-	-	-	-	[A]
Silicon	BC 10/2009	-	3	-	-	-	-	-	-	-	[d]
		-	10	-	-	-	-	-	-	-	[e]
	ON 7/2010	-	10	-	-	-	-	-	-	-	
	QC 6/2008	-	10	-	-	-	-	-	-	-	[f]
Copper	US ACGIH 2/2010	-	0.2	-	-	-	-	-	-	-	[g][B]
		-	1	-	-	-	-	-	-	-	[C]
Copper, as Cu	AB 4/2009	-	1	-	-	-	-	-	-	-	[h][C]
		-	0.2	-	-	-	-	-	-	-	[g][C]
	BC 10/2009	-	1	-	-	-	-	-	-	-	[i][C]
		-	0.2	-	-	-	-	-	-	-	[g][C]
Copper	ON 7/2010	-	1	-	-	-	-	-	-	-	[j]
		-	0.2	-	-	-	-	-	-	-	
Copper, as Cu	QC 6/2008	-	1	-	-	-	-	-	-	-	[k][C]
		-	0.2	-	-	-	-	-	-	-	[l][C]
Manganese, as Mn	US ACGIH 2/2010	-	0.2	-	-	-	-	-	-	-	[D]
	AB 4/2009	-	0.2	-	-	-	-	-	-	-	
	BC 10/2009	-	0.2	-	-	-	-	-	-	-	[D]
	ON 7/2010	-	0.2	-	-	-	-	-	-	-	
	QC 6/2008	-	1	-	-	3	-	-	-	-	[l][D]
Chromium, measured as Cr	US ACGIH 2/2010	-	0.5	-	-	-	-	-	-	-	[m][E]
Chromium, as Cr	AB 4/2009	-	0.5	-	-	-	-	-	-	-	[3]
Chromium	BC 10/2009	-	0.5	-	-	-	-	-	-	-	
Chromium, as Cr	ON 7/2010	-	0.5	-	-	-	-	-	-	-	
Chromium	QC 6/2008	-	0.5	-	-	-	-	-	-	-	

[3]Skin sensitization
Form: [a]Respirable fraction; see Appendix C [b]Metal Dust [c]Respirable [d]Respirable dust [e]Total dust [f]Total dust. [g]Fume [h]Dusts and Mists [i]Dusts and mists [j]dust and mists [k]dusts & mists [l]fume [m]Inorganic
Notes: [A]as Al [B]Substances for which the TLV is higher than the OSHA Permissible Exposure Limit (PEL) and/or the NIOSH Recommended Exposure Limit (REL). See CFR 58(124) :36338-33351, June 30, 1993, for revised OSHA PEL. Adopted Values enclosed are those for which changes are proposed. Consult the Notice of Intended Changes for current proposal. See Notice of Intended changes. [C]as Cu [D]as Mn [E]measured as Cr

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 : Not available.

Solubility : 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_2). Arc radiation can support the production of ozone and nitrogen oxides.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological Information

Product/ingredient name	Result	Species	Dose	Exposure
Silicon	LD50 Oral	Rat	3160 mg/kg	-
Manganese	LD50 Oral	Rat	9 g/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, liver, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea.

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

Section 12. Ecological Information

Ecotoxicity data

Product/ingredient name	Result	Species	Exposure
Aluminium powder (pyrophoric)	Acute LC50 120 ug/L Fresh water	Fish - Oncorhynchus mykiss - EMBRYO	96 hours
Copper	Acute EC50 4.1 ug/L Fresh water	Crustaceans - Simocephalus vetulus - Juvenile (Fledgling, Hatchling, Weanling) - <48 hours	48 hours
	Acute EC50 1 ug/L Fresh water	Daphnia - Ceriodaphnia dubia - Juvenile (Fledgling, Hatchling, Weanling) - <24 hours	48 hours
	Acute LC50 9.4 ug/L Fresh water	Fish - Pimephales promelas - Juvenile (Fledgling, Hatchling, Weanling) - <1 months	96 hours
	Chronic NOEC 7.43 ug/L Fresh water	Fish - Salmo trutta - IMMATURE - 14 cm - 26.3 g	4 days
Manganese	Acute EC50 40000 ug/L Fresh water	Daphnia - Daphnia magna	48 hours
	Chronic NOEC 28000 ug/L Fresh water	Daphnia - Daphnia magna	48 hours
Chromium	Acute LC50 50 to 65 ug/L Fresh water	Crustaceans - Simocephalus vetulus - <24 hours	48 hours
	Acute LC50 22 ug/L Fresh water	Daphnia - Daphnia magna - <24 hours	48 hours
	Acute LC50 14.3 ppm Fresh water	Fish - Cyprinus carpio	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.**

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: Aluminum; Silicon; Manganese; Copper; Magnesium
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Aluminum: Fire hazard, reactive; Silicon: Fire hazard, Immediate (acute) health hazard; Manganese: reactive, Immediate (acute) health hazard, Delayed (chronic) health hazard; Copper: Immediate (acute) health hazard; Magnesium: Fire hazard, reactive

Clean Water Act (CWA) 307: Copper; Chromium

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	Aluminum	60 - 100
	Copper	1 - 5
	Manganese	1 - 5
Supplier notification	Aluminum	60 - 100
	Copper	1 - 5
	Manganese	1 - 5

State regulations

Massachusetts: The following components are listed: ALUMINUM; SILICON DUST; MAGNESIUM; COPPER; MANGANESE

New York: The following components are listed: Copper; Chromium

New Jersey: The following components are listed: ALUMINUM; SILICON; MAGNESIUM; COPPER; MANGANESE; CHROMIUM

Pennsylvania: The following components are listed: ALUMINUM; SILICON; MAGNESIUM; COPPER FUME; MANGANESE; CHROMIUM

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: None of the components are listed.
Canadian ARET: None of the components are listed.
Canadian NPRI: The following components are listed: Aluminum; Copper;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-A4-Not Classifiable as a Human Carcinogen.
IARC: International Agency for Research on Cancer.
IARC 3: Not classifiable for human.
NIOSH: National Institute of Occupational Safety and Health.
NIOSH: None.

Responsible name: Atrion Regulatory Services, Inc.

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