

Section 1. Chemical Product and Company Identification

Product name	Classification	Classification	
Blueshield: MNR 4x4; MNR UNIVERSAL; MNR Chinook; MNR Striker	CSA: -	AWS: -	
Description	: SMAW - Mild Steel Electrode.	Generic Code	: AL-MNR-001-0
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, 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	: Absorbed through skin. Dermal contact. Eye contact. Inhalation.
Potential acute health effects	
Eyes	: Very 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, irritant). The amount of tissue damage depends on length of contact. Skin contact can produce inflammation and blistering. Skin contact may produce burns. Skin inflammation is characterized by itching, scaling, reddening or, occasionally, blistering.
Inhalation	: Hazardous by the following route of exposure: of inhalation (lung irritant). Inhalation of dust will produce irritation to gastro-intestinal or respiratory tract, characterized by burning, sneezing and coughing. Over-exposure by inhalation may cause respiratory irritation.
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 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 3 by IARC [Silica, Amorphous]. 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	60 - 80	Not regulated.
Titanium dioxide	13463-67-7	1 - 15	Not regulated.
Manganese	7439-96-5	1 - 11	Not regulated.
Calcium fluoride	7789-75-5	0.01 - 11	UN1740
Bentonite	1302-78-9	0.01 - 11	Not regulated.
Silicium Powder, Amorphous	7440-21-3	0.01 - 11	UN1346
Sodium Silicate	1344-09-8	0.01 - 11	Not regulated.
Kasil #6	1312-76-1	0.01 - 11	Not regulated.
Silica, Amorphous	7631-86-9	0.01 - 11	Not regulated.
Cellulose	9004-34-6	0.01 - 11	Not regulated.
Calcium Carbonate	471-34-1	0.01 - 11	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.

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
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]
Manganese, as Mn	US ACGIH 2/2010	-	0.2	-	-	-	-	-	-	-	[d]
	AB 4/2009	-	0.2	-	-	-	-	-	-	-	[A]
	BC 10/2009	-	0.2	-	-	-	-	-	-	-	[A]
	ON 7/2010	-	0.2	-	-	-	-	-	-	-	
	QC 6/2008	-	1	-	-	3	-	-	-	-	[e][A]
calcium fluoride, as F	US ACGIH 2/2010	-	2.5	-	-	-	-	-	-	-	
	AB 4/2009	-	2.5	-	-	-	-	-	-	-	[B]
	BC 10/2009	-	2.5	-	-	-	-	-	-	-	[B]
	ON 7/2010	-	2.5	-	-	-	-	-	-	-	[C]
	QC 6/2008	-	2.5	-	-	-	-	-	-	-	[B]
Silicon	BC 10/2009	-	3	-	-	-	-	-	-	-	[a]
	ON 7/2010	-	10	-	-	-	-	-	-	-	[b]
	QC 6/2008	-	10	-	-	-	-	-	-	-	[d]
	US ACGIH	-	10	-	-	-	-	-	-	-	[f]
	US ACGIH 2/2010	-	10	-	-	-	-	-	-	-	
Iron Cellulose	AB 4/2009	-	10	-	-	-	-	-	-	-	[3]
	BC 10/2009	-	3	-	-	-	-	-	-	-	[a]
	ON 7/2010	-	10	-	-	-	-	-	-	-	[b]
	QC 6/2008	-	10	-	-	-	-	-	-	-	[c]
	US ACGIH	-	10	-	-	-	-	-	-	-	[d]
Calcium carbonate	AB 4/2009	-	10	-	-	-	-	-	-	-	[3]
	QC 6/2008	-	10	-	-	-	-	-	-	-	[d]
	US ACGIH	-	10	-	-	-	-	-	-	-	[d]

[3]Skin sensitization

Form: [a]Respirable dust [b]Total dust [c]total dust [d]Total dust. [e]fume [f]Inhalable particle.

Notes: [A]as Mn [B]as F [C]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: 4.71 (Water = 1)
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	: Will not occur.

Section 11. Toxicological Information

Additional Toxicity data

Product/ingredient name	Result	Species	Dose	Exposure
Manganese	LD50 Oral	Rat	9 g/kg	-
calcium fluoride	LD50 Oral	Rat	4250 mg/kg	-
Silicon	LD50 Oral	Rat	3160 mg/kg	-
Silicic acid, sodium salt	LD50 Dermal	Rabbit	>4640 mg/kg	-
	LD50 Oral	Rat	1960 mg/kg	-
Cellulose	LC50 Inhalation Vapor	Rat	>5800 mg/m3	4 hours
	LD50 Dermal	Rabbit	>2 g/kg	-
	LD50 Oral	Rat	>5 g/kg	-
Calcium carbonate	LD50 Oral	Rat	6450 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, gastrointestinal tract, 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.
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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 Acute LC50 >1000000 ug/L Marine water Chronic NOEC 1 ppm Fresh water	Daphnia - Daphnia magna - Juvenile (Fledgling, Hatchling, Weanling) - <24 hours Fish - Fundulus heteroclitus	48 hours 96 hours 48 hours
Manganese	Acute EC50 40000 ug/L Fresh water Chronic NOEC 28000 ug/L Fresh water	Daphnia - Daphnia magna	48 hours 48 hours
Bentonite	Acute LC50 19000000 ug/L Fresh water	Fish - Oncorhynchus mykiss	96 hours
Silicic acid, sodium salt	Acute EC50 0.4 mg/L Fresh water	Daphnia - Ceriodaphnia dubia - Neonate - <24 hours	48 hours
Calcium carbonate	Acute LC50 1800000 ug/L Fresh water Acute LC50 >56000000 ug/L Fresh water	Fish - Gambusia affinis - Adult Fish - Gambusia affinis - Adult	96 hours 96 hours

Products of degradation	: Decomposition products may include the following materials: carbon oxides (CO, CO ₂) and water, halogenated compounds. Some metallic oxides.
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Section 13. Disposal Considerations

Waste information	: Waste must be disposed of in accordance with federal, state and local environmental control regulations. Recycle, if possible.
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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: Manganese; Titanium dioxide; Calcium Carbonate; Calcium fluoride; Silicon
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Iron: Fire hazard; Manganese: reactive, Immediate (acute) health hazard, Delayed (chronic) health hazard; Titanium dioxide: Delayed (chronic) health hazard; Calcium Carbonate: Immediate (acute) health hazard; Calcium fluoride: Immediate (acute) health hazard; Silicon: Fire hazard, Immediate (acute) 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 | 5-7 |
| Supplier notification | : Manganese | 5-7 |
- State regulations**
- | | |
|----------------------|---|
| Massachusetts | : The following components are listed: TITANIUM DIOXIDE; MANGANESE; SILICON DUST; AMORPHOUS SILICA; CELLULOSE |
| New York | : None of the components are listed. |
| New Jersey | : The following components are listed: TITANIUM DIOXIDE; TITANIUM OXIDE (TiO2); MANGANESE; SILICON; CELLULOSE |
| Pennsylvania | : The following components are listed: TITANIUM OXIDE (TiO2); MANGANESE; SILICON; SILICA; CELLULOSE |
- California prop. 65**: No products were found.
- 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: Manganese; Calcium fluoride
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 2B: Possible for human.
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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- Notice to reader**

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