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 Section I - IDENTIFICATION
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Eutectic Canada Inc.
 428 Aimé-Vincent
 Vaudreuil-Dorion, Québec
 J7V 5V5

Emergency Telephone: (514) 695-7500

Product Name: E 312-17
 AWS Standard Terminology: Shielded Metal Arc Welding Electrode
 WHMIS Classification: D-2A Serious Toxic Effects
 D-2B Other Toxic Effects

Transport of Dangerous Goods: Not Applicable

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 Section II - HAZARDOUS INGREDIENTS
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Ingredient	Range wt%	CAS Number	Exposure Limit mg/m3
Iron elemental	30-60	7439-89-6	5 (fume)
Chromium elemental	10-30	7440-47-3	0.5
Nickel elemental	10-30	7440-02-0	1
Manganese elemental	2-7	7439-93-5	5
Silica (Quartz, Crystalline)	1-5	14808-60-7	0.1
Titanium dioxide	1-5	13463-67-7	10
Calcium carbonate	1-5	1317-65-3	10
Calcium fluoride	1-5	7789-75-5	2.5 (fluoride)
Sodium silicate	1-5	1344-09-8	Not listed

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 Section III - PHYSICAL / CHEMICAL CHARACTERISTICS
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The following data should only be used in the context of the Material Safety Data Sheet.

Physical State: Solid
 Appearance and Odour: Electrode, no odour

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 Section IV - FIRE AND EXPLOSION DATA
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Flammable: No

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 Section V - REACTIVITY
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Level of stability: Stable
 Hazardous Polymerization: Will not occur

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 Section VI - HEALTH HAZARD DATA
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The body can be affected if fumes and gases are inhaled, and/or come into contact with eyes.

FUMES AND GASES CAN BE DANGEROUS TO YOUR HEALTH

SHORT TERM (ACUTE) over exposure to welding fumes may result in discomfort such as dizziness, nausea or irritation of the nose, throat or eyes.

FLUORIDES - compounds evolved may cause skin and eye burns and/or pulmonary edema.

MANGANESE, MANGANESE DIOXIDE - toxicity caused by inhalation of dust or fumes. Remove from exposure. Wash eyes and/or skin with water to remove dust.

SILICON, SILICON OXIDE - Possible eye irritant. Remove by washing eyes with lots of water.

CHROMIUM - Inhalation of fume with chromium (VI) compounds can cause irritation of the respiratory system, damage lungs and asthma. Swallowing chromium (VI) salts can cause severe injury or death. Dusts on the skin can form ulcers. Eyes can be burned by chromium (VI) compounds.

NICKEL, NICKEL OXIDE - Inhalation of fume with nickel compounds may cause metallic taste, nausea, tightness in chest, fever, allergic reactions.

MOLYBDENUM -Trioxide has caused irritation of the eyes, nose and throat, weight loss and digestive disturbances in animals.

BARIUM - Inhalation of fumes with barium compounds may cause aching eyes, rhinitis, frontal headache, wheezing, laryngeal spasms, salivation, anorexia.

COPPER - Metal fume fever can be caused by fresh copper oxide fumes.

LEAD - Inhalation of gases, fumes, dust or compounds (soluble or insoluble) can cause blood and cell problems.

SILVER - Salts of silver are corrosive. Ulceration and eye burns are treated by flushing with copious amounts of water.

ZINC - Inhalation of zinc fumes may cause chills, breathing difficulties, fever, cough, muscular pain, nausea and vomiting. Recovery generally complete.

CADMIUM - Fumes cause irritation of the nose and throat. Sufficient inhalation (after a delay of several hours) may develop coughing, chest pain, sweating, chills, shortness of breath and weakness. Death may occur.

TIN - Eye, skin and respiratory system irritation from fumes.

LONG TERM (CHRONIC) over exposure may lead to siderosis (iron deposits in lungs), affect pulmonary functions, blood and cell disorders.

FLUORIDES - Repeated exposure to fluorides can cause serious bone erosion.

MANGANESE, MANGANESE DIOXIDE - Long term over exposure to these compounds may affect the central nervous system. Symptoms include muscular weakness, tremors and behavioral and handwriting changes.

SILICON, SILICON OXIDE - Prolonged exposure to dust can cause pulmonary fibrosis (silicosis).

CHROMIUM - Chromium (VI) compounds are considered by OSHA to be carcinogenic. Absorption of chromium (VI) compounds through the skin can cause systemic poisoning primarily affecting the kidneys and liver.

NICKEL, NICKEL OXIDE - Long term over exposure to nickel compounds may cause lung fibrosis or pneumoconiosis. Nickel and its compounds are considered by the OSHA as carcinogenic.

MOLYBDENUM - Not known

BARIUM - Long term exposure to soluble barium compounds may cause nervous disorders and may have deleterious effects on the heart and circulatory systems.

COPPER - No adverse long-term effects have been reported.

LEAD - Repeated and prolonged exposures from gases, fumes or dusts are poisonous. This may lead to blood, cell, kidney, liver and/or generic disorders.

SILVER - Silver and its compounds cause pigmentation of the skin, eyes and respiratory tract (argyria).

ZINC - Severe and prolonged over exposure may cause pulmonary edema and pneumonia.

CADMIUM - Repeated and prolonged exposures to fumes may cause loss of smell, ulceration of the nose, shortness of breath (emphysema), kidney damage and mild anemia.

TIN - No significant long term effects.

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Section VII - EMERGENCY FIRST AID
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Remove to well ventilated area. Obtain medical assistance and apply artificial respiration if necessary.

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Section VIII - PREVENTIVE MEASURES
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Personal protective equipment: Use NIOSH approved respirator for protection against fumes in confined areas or where local exhaust or ventilation does not keep exposure below the recommended exposure limit. Wear protective helmet or use face shield with filter lens. Provide protective screens and flash goggles if necessary. Refer to CSA W117.2 - Safety in Welding and Cutting - for further information.

Storage and handling: Keep in cool dry place.

Steps to be taken if material is released or spilled: Electrodes, themselves are not hazardous.

Waste Disposal Method: Prevent waste from contaminating environment. Disposal should be in accordance with local, provincial and federal regulations.

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Section XI - PREPARATION DATE OF MATERIAL SAFETY DATA SHEET
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Prepared by: Director of Products and Services
Contact number: 514-695-7500
Date prepared: 30/09/99
Date revised: 30/09/2010 - Expiration Date: 30/09/2013