

MATERIAL SAFETY DATA SHEET (MSDS)

THIS MSDS IS EFFECTIVE JANUARY 1, 2018 AND SUPERSEDES ALL PREVIOUSLY ISSUED SAFETY DATA SHEETS.

SECTION I (IDENTIFICATION)

Manufacturer/ Processor/Importer:	Eagle Alloys Ltd. Emergency Tel No (780) 481 8082
Address:	10077 - 166 Street Edmonton Alberta T5P 4Y1
Product Name:	Eagle 674
Classification:	Covered Electrode for SMAW

SECTION II (HAZARDOUS INGREDIENTS/IDENTITY INFORMATION)

IMPORTANT: This section covers the materials of which the products are manufactured. The fumes and gases produced during normal use of this product are covered in Section V. The term "Hazardous" in "Hazardous Material" should be interpreted as a term required and defined in OSHA Hazard Communication Standard 29CFR 1910-1200 and it does not necessarily imply the existence of hazard.

INGREDIENTS	CAS NUMBER	PERCENT RANGE	OSHA PEL mg/M ³	ACGIH-TLV mg/M ³	Carcinogenicity
Iron	7439-89-6	31 - 60	10 (as Fe)	5 (as Fe)	NO
Calcium Carbonate	1317-65-3	1 - 10	5	10	NO
Phenyl Formaldehyde	9003-35-4	1 - 10	0.75 (as formaldehyde)	0.3 (as formaldehyde)	NO
Calcium Fluoride	7789-75-5	1 - 10	2.5 (as F)	2.5 (as F)	NO
Chromium	7440-47-3	31 - 60	0.5	0.5	YES
Manganese	7439-96-5	1 - 5	5 (ceiling)	0.2	YES
Carbon	7440-44-0	1 - 10	2.5	2	NO
Silicon	7440-21-3	0.1 - 1.0	5	10	NO
Silicon Dioxide	14808-60-7	1 - 10	0.1	0.1	NO
Feldspar	68476-25-5	1 - 10	10	2	NO

Note: Phenyl formaldehyde may be present in cured state.

SECTION III (PHYSICAL DATA) Not Applicable

SECTION IV (FIRE AND EXPLOSION HAZARD DATA)

Non-Flammable - Welding arc and sparks can ignite combustibles. Refer to American National Standard Z49.1 for fire prevention during welding.

SECTION V (REACTIVITY DATA)

The term "Hazardous" should be interpreted as a term required and defined in the OSHA Hazard Communication Standards (29 CFR Part 1910, 1200) and does not necessarily imply the existence of any hazard. These products as shipped are stable, non-hazardous, nonflammable, non-explosive and non-reactive.

Hazardous Decomposition Products

Exposure limit: Welding fumes cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, the procedures and electrodes used. Other conditions which also influence the composition and quantity of the fumes and gases to which worker's may be exposed include: coatings on the metal being welded (such as paint, plating or galvanization), number of welders and volume of work area, quality and amount of ventilation, position of weldor's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities).

SECTION V (REACTIVITY DATA) CON'T

When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section II. Fume and gas decomposition products, not the ingredients in the electrode, are important. The concentration of a given fume or gas component may decrease or increase by many times the original concentration in the electrode. Also, new compounds not in the electrodes may form. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in Section II plus those from the base metal, coating, etc. as note above. The components are virtually always present as complex compounds and not as metals (Characterization of Arc Welding Fume: American Welding Society).

Reasonably expected fume constituents of these products would include primary fluorides and complex oxides of iron, manganese and silicon: secondary complex oxides of chromium, nickel, molybdenum titanium, calcium, sodium and potassium. The present OSHA PEL for hexavalent chromium (Cr^{+6}) is (0.05 mg/M³) which will result in a significant reduction from the 5 mg/m³ general welding fume (NOC) level. The limit of 0.05 mg/m³ for hexavalent chromium in these electrodes comes from the limit shown in OSHA table Z-2, which is for 0.1 mg of CrO₃ that calculates to 0.05 mg of Cr⁺⁶/m³. It applies to soluble chromate's of the types found in covered stainless electrode fumes and other chromium containing welding materials.

OSHA PEL for nickel metal and soluble compounds is 1 mg/m³. The ACGIH TLV for nickel metal is 1 mg/m³ and TLV for soluble compounds is 0.1 mg/m³. These limitations will also result in a significant reduction from the 5 mg/m³ general welding fume (NOC) level.

Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc.

One recommended way to determine the composition and quantity of fumes and gases to which worker's are exposed is to take an air sample inside the weldor's helmet, if worn, or in the worker's breathing zone. ANSI/AWS FI.1 available from the American Welding Society. P.O. Box 351040, Miami, FL 33135.

SECTION VI (HEALTH HAZARD DATA)

Electrical arc welding or oxy fuel welding may create one or more of the following health hazards.

Fumes and Gases: can be dangerous to your health. Common entry is by inhalation.

Short Term (ACUTE) - over exposure to welding fumes may result in discomfort such as: dizziness, nausea, or dryness of nose, throat, or eyes. Chromate's present in the fume can cause irritation of the respiratory system, damage to lungs and asthma-like symptoms.

Nickel compounds in the fume can cause a metallic taste, nausea, and tightness in the chest, fever and allergic reactions.

Fluorides can cause pulmonary edema bronchitis.

LONG TERM (CHRONIC) - over exposure to welding fumes can lead to siderosis (iron deposits in the lung) and affect pulmonary function.

Long term over exposure to manganese compounds may affect the central nervous system. Symptoms include muscular weakness and tremors similar to Parkinson's disease. Behavioral changes and changes in handwriting may also appear. Employees exposed to manganese compounds should get quarterly medical examinations for early detection of manganism.

Studies have shown that production workers exposed to hexavalent chromium compounds have an increased incidence of lung cancers. Chromate's may cause ulceration and perforation of the nasal septum. Liver damage and allergic skin rash have been reported. Chromium VI compounds are required to be considered carcinogenic.

Long term over exposure to nickel compounds may cause lung fibrosis or pneumoconiosis. Studies of nickel refinery workers indicate a higher incidence of lung and nasal cancer. Nickel and its compounds are required to be considered carcinogenic by OSHA.

SECTION VI (HEALTH HAZARD DATA) CON'T

Repeated over exposure to fluoride fumes may cause serious bone erosion and excessive calcification of the bones and ligaments of the ribs, pelvis and spinal column. Fluorides may also cause skin rash.

Shielding gases such as argon, helium and carbon dioxide are asphyxiants and adequate ventilation must be provided.

Threshold Limit Value: The ACGIH recommended general limit for welding fume NOC (Not Otherwise Classified) is 5 mg/M³. The ACGIH 1984-85 preface states: "The TLV-TWA should be used as guides in the control of health hazards and should not be used as firm lines between safe and dangerous concentrations." See Section V for specific fume constituents that may modify this TLV.

ARC RAYS - can injure eyes and burn skin.

HEAT RAYS - (infrared radiation from flame or hot metal) can injure eyes.

ELECTRICAL SHOCK - can kill.

NOISE - can damage hearing.

CARCINOGENICITY - Chromium and nickel and their compounds are on the IARC and NTP lists as posing a carcinogenic risk to humans.

Emergency & First Aid Procedures: Call for medical aid. Employ first aid techniques recommended by the Canadian Red Cross.

Carcinogenicity When Present	NTP? Cr	I Arc Monographs Cr	OSHA Regulated Cr
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SECTION VII

(PRECAUTIONARY FOR SAFE HANDLING AND USE/APPLICABLE CONTROL MEASURES)

Read and understand the manufacturer's instructions and the precautionary label on this product. See American National Standard Z-49.1 Safety in Welding and cutting, published by the American Welding Society, P.O. Box 351040, Miami, FL 33135 and OSHA Publication 2206 (29CFR 1910), U.S.

Government, Printing Office, Washington D.C, 20402 for more details on the following:

Ventilation: Use enough ventilation, local exhaust at the arc, or both to keep the fumes and gases below the TLV'S in the worker's breathing zone and the general area. Train the weldor to keep his head out of the fumes.

Respiratory Protection: Use respirable fume respirator or air supplies respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below TLV.

Eye Protection: Wear helmet or use face shield with filter lens. As a rule of thumb, start with a shade darker to see the weld zone. Then go to the next lighter shade that gives sufficient view of the weld zone. Provide screens and flash goggles, to shield others.

Protective Clothing: Wear head, hand and body protection that will help to prevent injury from radiation, sparks and electrical shock. See ANSI Z-49.1. At a minimum, this includes weldor's gloves and a protective face shield and may include arm protectors, aprons, hats, shoulder protection, as well as dark and substantial clothing. Train the welder not to touch live electrical parts and to insulate himself from work and ground.

Waste: Dispose of any grinding dust or waste residues in accordance with EPA or local regulations.

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