

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 564 MC
Classification:	Metal Cored Welding Wire for FCAW

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	35 - 95	10	5 (Oxide fume)	No
Titanium Dioxide	13463-37-7	0 - 10	5 (respirable)	10 dust	No
Chromium	7440-47-3	0 - 40	0.5 (metal)	.05 (metal) 0.05 (Cr VI)	Yes
Manganese	7439-96-5	.5 - 25	1 (fume)	1 fume 3 (stel)	No
Boron	7440-42-8	0 - 7	15	10 as B 203	No
Silicon	7440-21-3	0 - 3	5 (respirable)	10 (dust)	No
Tungsten	7440-33-7	0 - 65	None	5 (insoluble) 1 (soluble)	No
Nickel	7440-20-0	0 - 20	1 metal	1 metal 0.1 (soluble)	Yes
Molybdenum	7439-98-7	0 - 8	5 (soluble)	5 (soluble)	No
Vanadium	7440-62-2	0 - 18	0.5 (dust)	.05 as V ₂ O ₅ (as fume)	No
Fluoride	7789-75-5	0 - 2	2.5	2.5 as F	No
Graphite	7782-42-5	0 - 3	5 (respirable)	2 (respirable)	No
Columbium	7440-03-1	0 - 8	15	10	No
Calcium Carbonate	1317-65-3	0 - 5	5 (respirable)	10 (dust)	No

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)

Welding fumes cannot be classified simply. The composition and quality of both are dependent upon the metal being welded, the process, 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 welds 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). When the electrode is consumed, the fume and gas decomposition products 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. Decomposition products include those originating from the volatilization, reaction, or oxidation of the materials shown in Section II

SECTION V (REACTIVITY DATA) CON'T

plus those from the base metal, coating, etc. as noted above. These components are virtually always present as complex compounds and not as metals (Characterization of Arc Welding Fume: American Welding Society).

Reasonable expected fume constituents would include primarily fluorides and complex oxides of iron, manganese and silicon: secondarily complex oxides of chromium, nickel, molybdenum, titanium, calcium, sodium and potassium.

The present OSHA PEL for hexavalent chromium (CR) is 0.05 mg/m³ that will result in a significant reduction from the 5 mg/m³ general welding fume (NOC) level. The limit of 0.05mg/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, which calculates to 0.05 mg of Cr/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 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)

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 VI for specific fume constituents that may modify this TLV.

Effects of Overexposure: FUMES AND GASES can be dangerous to your health. Primary route of exposure is inhalation of fumes. Preexisting respiratory or allergic conditions may be aggravated in some individuals. SHORT-TERM (ACUTE) OVEREXPOSURE to welding fumes may result in discomfort such as: dizziness, nausea, or dryness or irritation of nose, throat, or eyes. LONG-TERM (CHRONIC) OVEREXPOSURE may lead to siderosis (iron deposits in the lungs) and is believed by some investigators to 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 by OSHA to be considered carcinogenic. Long Term over exposure to nickel compounds may cause lung fibrosis or pneumoconiosis. Studies of nickel refinery worker indicate a higher incidence of lung and nasal cancer. Nickel and its compounds are required to be considered as carcinogenic by OSHA. 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 asphyxiates and adequate ventilation must be provided. ARC RAYS can injure eyes and burn skin. ELECTRIC SHOCK can kill. See Section VII.

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

Carcinogenicity	NTP	I Arc Monographs	OSHA Regulated
When Present	Cr Ni	Cr Ni	Cr Ni

SECTION VII

(PRECAUTION 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 detail 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 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 substantial clothing. Train the weldor not to touch live electrical parts and to insulate himself from work and ground.

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

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