

MATERIAL SAFETY DATA SHEET

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Manufacturer/Supplier Name: **Magnum USA**

Address: 8979 Lager Road, Phelan CA 92371

Phone Number:

Trade Name: Nickel Rod

Classification: **AWS A5.4/ASME SFA 5.4, ASME SFA 5.4 Section III, ABS, CWB-AWS A5.4, Covered Corrosion-resisting Chromium and Chromium Nickel Steel Welding Electrodes**

Product Type: **-15, -16 and -17 type Manual Metal Arc Welding Electrodes**

Product Identifiers: 307-15, 307-16, 308L-15, 308/308L-16, 308/308L-17, 308-15, 308/308H-16, 308/308H-17, 347-15, 347-16, 316L-15, 316/316L-16, 316/316L-17, 316-15, 316/316H-16, 316/316H-17, 308MoL-15, 308MoL-16, 317-15, 317-16, 318-15, 318-16, 309-15, 309-16, 309-17, 309L-15, 309L-16, 309L-17, 309Cb-15, 309Cb-16, 309MoL-16, 309MoL-17, 309Mo-15, 309Mo-16, 310-15, 310-16, 310H-15, 310H-16, 312-16, 29-9-16SA, 320-15, 320-16, 330-15, 330-16, 410-15, 410-16, 410NiMo-15, 410NiMo-16, 420-15, 420-16, 430-15, 430-16, 630-15, 630-16, 20.25.5.LCu, 25.22.2.LMnB, 27.31.4.LCu, 22.12.HTR, 2209-16, 2209-17, 2209-15, 25.10.4.LR, 383-15, 383-16, 385-15, 385-16, 25.20.LB

SECTION 2: HAZARDS IDENTIFICATION

Chrome-Nickel coated electrodes are welding consumables consisting of a solid core wire and a flux coating.

EMERGENCY OVERVIEW

Effects of Over-exposure:

Electric arc welding may create one or more of the following health hazards:

FUMES AND GASES can be dangerous to your health.

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 to welding fumes can lead to siderosis (iron deposits in lungs), central nervous system, liver or kidney damage, skin and respiratory sensitization (allergic reaction), and is believed by some investigators to affect pulmonary function.

PRIMARY ROUTE OF ENTRY is the respiratory system.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing eye, respiratory or allergic conditions.

ARC RAYS can injure eyes and burn skin.

ELECTRIC SHOCK can kill.

CARCINOGENICITY:

Certain hexavalent chromium compounds, nickel metal and compounds and respirable crystalline silica are listed in the National Toxicology Program (NTP) Annual Report on Carcinogens, found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs, or listed by OSHA/ACGIH as potential carcinogens.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

The following is composition information of the product as manufactured.

Hazardous Ingredient	CAS No.	WT %
Calcium Carbonate (CaCO ₃)	471-34-1	1-10
Calcium Fluoride (CaF ₂)	7789-75-5	1-10
Chromium (Cr)	7440-47-3	5-30
Copper (Cu)	7440-50-8	0-4
Iron (Fe)	7439-89-6	Bal.
Manganese (Mn)	7439-96-5	1-10
Molybdenum (Mo) ¹⁾	7439-98-7	1-10
Nickel (Ni)	7440-02-0	1-35
Niobium (Nb) ²⁾	7440-03-1	0.5-1
Potassium (K)	7440-09-7	0-1
Sodium (Na)	7440-23-5	1-10

Hazardous Ingredient	CAS No.	WT %
Silicon (Si)	7440-21-3	1-10
Silica (SiO ₂) (quartz)	14808-60-7	<0.5
Sodium Aluminum Fluoride (Na ₃ AlF ₆)	15096-52-3	1-10
Sodium Fluoride (NaF)	7681-49-4	0-2
Titanium Dioxide (TiO ₂)	13463-67-7	1-20

The following are typical constituents of welding fumes and gases. When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form than ingredients listed above. Decomposition products of normal operation include those originating from the volatilization reaction, or oxidation of the materials shown above, plus those from the base metal and coating, etc. which may include paint, plating, galvanizing, or phosphate coatings on steels which would produce phosphine gas and other contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities which may be decomposed by the arc into toxic gases such as phosgene).

Fume Constituent (Gases)	CAS No.	Fume Constituents (Solids)	CAS No.
Carbon Dioxide (CO ₂)	124-38-9	Calcium Fluoride (CaF ₂)	7789-75-5
Carbon Monoxide (CO)	630-08-0	Chromates (CrO ₃)	1333-82-0
Dinitrogen Tetroxide (N ₂ O ₄)	10544-72-6	Copper Oxide (CuO)	1344-70-3
Hydrogen Fluoride (HF)	7664-39-3	Manganese Tetraoxide (Mn ₃ O ₄)	1317-35-7
Nitric Oxide (NO)	10102-43-9	Nickel Oxide (NiO)	1314-06-3
Nitrogen Dioxide (NO ₂)	10102-44-0	Silicon Dioxide (SiO ₂) (quartz)	14808-60-7
Ozone (O ₃)	10028-15-6	Iron Oxide (Fe ₂ O ₃)	1309-37-1
Phosgene (COCl ₂) *	75-44-5	Molybdenum Trioxide (MoO ₃) ¹⁾	1313-27-5
Phosphine (PH ₃) **	7803-51-2	Sodium Aluminum Fluoride (Na ₃ AlF ₆)	15096-52-3
		Sodium Fluoride (NaF)	7681-49-4
		Niobium Oxide (NbO) ²⁾	12034-57-0
		Sodium Oxide (NaO)	1313-59-3
		Potassium Oxide (KO)	12136-45-7
		Titanium Dioxide (TiO ₂)	13463-67-7

¹⁾ Only in Molybdenum-alloyed grades.

²⁾ Only in Niobium-alloyed grades.

* May result from contact with chlorinated hydrocarbon vapors.

** May result from welding on phosphate coated steels.

Refer to Section 8 for occupational exposure limits.

SECTION 4: FIRST AID MEASURES

Eye: If eye irritation occurs, flush eyes immediately with water while holding open eyelids. Get medical attention if irritation persists.

Skin: None normally needed. Get immediate medical attention for treatment of burns.

Inhalation: Remove victim to fresh air. Give artificial respiration if needed. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

SECTION 5: FIRE FIGHTING MEASURES

(Nonflammable) – Welding arc and sparks can ignite combustibles and flammables. Refer to American National Z49.1 for fire prevention during the use of welding and allied procedures.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Pick up and return to container for use.

SECTION 7: HANDLING AND STORAGE

Avoid breathing welding fumes. Keep your head out of the fumes. Use with enough ventilation or exhaust at the arc, or both, to keep fumes and gases below the occupational exposure limits in your breathing zone and the general area. Use air sampling to determine the need for corrective action. (Refer to Section 10 for additional information)

Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Fumes from welding and oxygen depletion can alter the air quality causing injury or death.

Take appropriate precautions to prevent fires and explosion.

Read and understand the manufacturer's instructions and the precautionary label on the product. See American National Standard Z49.1, 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, DC 20402, for more information. Assure compliance with the OSHA Standard on Chromium (VI), 29CFR 1910.1026.

Storage: Store in a dry area. Refer to product data sheet (available from Sandvik Materials Technology) for specific storage information.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

See Appendix A for occupational exposure limits for Canadian Provinces

The following are the occupational exposure limits for the components of the product as manufactured.

Ingredient	OSHA PEL	ACGIH TLV	ACGIH STEL
Calcium Carbonate (CaCO ₃)	5 mg/m ³ TWA (respirable fraction)	None Established	-
Calcium Fluoride (CaF ₂) (as F)	15 mg/m ³ TWA (total dust) 2.5 mg/m ³ TWA	2.5 mg/m ³ TWA	-
Chromium (Cr) (as metal)	1 mg/m ³ TWA	0.5 mg/m ³ TWA	-
Copper (Cu) (as dust and mists)	1 mg/m ³ TWA	1 mg/m ³ TWA	-
Iron (Fe)	10 mg/m ³ TWA (as fume)	5 mg/m ³ TWA (respirable)	-
Manganese (Mn)	5 mg/m ³ Ceiling Limit	0.2 mg/m ³ TWA	-
Molybdenum (Mo) ¹⁾	15 mg/m ³ TWA (total dust)	3 mg/m ³ TWA (respirable fraction)	-
Nickel (Ni) (elemental)	1 mg/m ³ TWA	10 mg/m ³ TWA (inhalable) 1.5 mg/m ³ TWA (inhalable)	-
Niobium (Nb) ²⁾	None Established	None Established	-
Potassium (K)	None Established	None Established	-
Sodium (Na)	None Established	None Established	-
Silicon (Si)	5 mg/m ³ TWA (respirable) 15 mg/m ³ TWA (total dust)	None Established	-
Silica (SiO ₂) (quartz) 10 (respirable fraction) TWA	%SiO ₂ +2 fraction) TWA	0.025 mg/m ³ TWA (respirable)	-
Sodium Aluminum Fluoride (Na ₃ AlF ₆) (as F)	2.5 mg/m ³ TWA	2.5 mg/m ³ TWA	-
Sodium Fluoride (NaF) (as F)	2.5 mg/m ³ TWA	2.5 mg/m ³ TWA	-
Titanium Dioxide (TiO ₂)	15 mg/m ³ TWA (total dust)	10 mg/m ³ TWa	-
The following are the occupational exposure limits for the typical decomposition products.			

GASES

Fume Constituent	OSHA PEL	ACGIH TLV	ACGIH STEL
Carbon Dioxide (CO ₂)	5,000 ppm TWA	5,000ppm TWA	30,000 ppm
Carbon Monoxide (CO)	50 ppm TWA	25 ppm TWA	-
Dinitrogen Tetroxide (N ₂ O ₄)	None Established	None Established	-