

# MATERIAL SAFETY DATA SHEET (MSDS)

## I. Product Identification

**Product Type** – Stainless Steel Tig Rod / Mig Wire

**Product Name** – ER308/ER308L, ER309/ER309L, ER316/ER316L, ER347, ER309Mo

**Specification** – JIS, AWS

**Manufacturer** – DYNAWELD INDUSTRIAL SUPPLIES

**Address** – 123 FAIRFORD RD,  
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**Date Revised** – July 19, 2008

## II. Hazardous Ingredients

**Important:** This section covers the materials from which these products are manufactured. The fumes and gases produced when welding with normal use of these products are covered in section V. All ingredients listed may not be present in all electrodes. The term 'hazardous' in 'Hazardous Materials' should be interpreted as a term required and defined in the Hazards Communication Standard and does not necessarily imply the existence of any hazard.

Hazardous Compounds	Cas No.	Wt.%	TL V mg/m <sup>3</sup>	PEL mg/m <sup>3</sup>
Silicates Minerals	1344-09-8	<5	10*	10*
Nickel***	7440-02-0	1-25	1	1
Iron	7439-89-6	Bal.	10*	10*
Chromium and chromium alloys	7440-47-3	1-30	0.5(b)	1.0(b)
Manganese and/or manganese alloys and compounds (as Mn)	7439-96-5	1-6	0.2	1.0(c)
Niobium alloy (as Nb) (347 type only)	7440-03-1	<2	10*	10*
Molybdenum alloys (as Mo)	7439-98-7	<4	10	10

### Supplemental Information:

(\*) Not listed. Nuisance value maximum is 10 milligrams per cubic meter. PEL value for iron oxide is 10 mg/m<sup>3</sup>. TLV value for iron oxide is 5 milligrams per cubic meter.

(\*\*) As respirable dust.

(\*\*\*) Subject to the reporting requirements of Sections 311, 312, and 313 of the Emergency Planning and Community Right-to-know Act of 1986 and of 40CFR 370 and 372.

(c) Values are for manganese fume. STEL(Short Term)

(b) TLV-PEL for water soluble chromium (VI) is 0.05 milligrams per cubic meter. The OSHA PEL is ceiling value that shall not be exceeded at any time. The TLV for insoluble chromium (VI) is 0.01 milligrams per cubic meter.

## III. PHYSICAL DATA

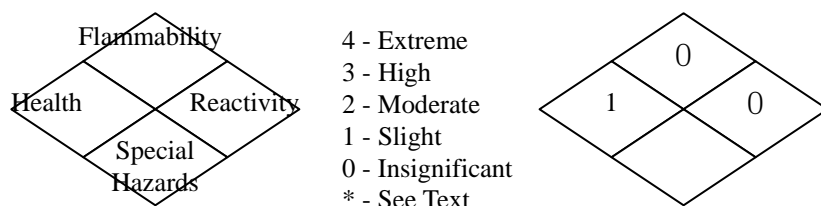
As shipped, these products are nonflammable, non-explosive, non-reactive, and non-hazardous

**Physical State:** GAS (X) LIQUID (X) SOLID ( )

## IV. FIRE AND EXPLOSION HAZARD DATA

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

**Odor and Appearance:** Coated mild steel wire or rod, odorless.



## V. REACTIVITY DATA

The term “hazardous” should be interpreted as a term required and defined in the OSHA Hazard Communication Standard (29 CFR Part 1910.1200) and does not necessarily imply the existence of any hazard. These products as shipped are stable, non hazardous, non flammable, non explosive and non reactive.

### Hazardous Decomposition Products

Exposure limit: Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedure and electrodes used. Other conditions that also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating, or galvanizing), the number of welders and the volume of work area, the quality and amount of ventilation, the position of the welder’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 generated are different in percent and form from the ingredients listed in Section II. Fume and gas decomposition products and 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 powder. Also, new compounds not in the electrode may form. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the material shown in Section II, plus those from the base metal and coating, etc. Reasonably expected fume constituents of these products would include complex oxides of iron, manganese and silicon; secondarily complex oxides of titanium, calcium, sodium and potassium.

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 workers are exposed is to take an air sample inside the welder’s helmet if worn or in the worker’s breathing zone. See ANI/AWS FI.1 “Method for sampling Airborne Particles Generated by Welding and Allied Processes” available from the American Welding Society, P.O. Box 351040, Miami, FL 33135.

## VI. HEALTH HAZARD DATA

Electric 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 discomforts such as: dizziness, nausea, or dryness or irritation of nose, throat, or eyes.

Chromates present in the fume can cause metallic taste nausea, 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 compound 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.

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.

**THRESHOLD LIMIT VALUE** – the ACGIH 1985-86 recommended limit for welding fumes not otherwise classified (NOC) is 5mg/m<sup>3</sup>. TLV-TWA's should be used as a guide in the control of health hazards and not as fine lines between safe and dangerous concentrations. See Section V for specific fume constituents that may modify this TLV-TWA.

**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 (International Agency for Research on Cancer) list and the NTP (National Toxicology Program) list as posing a carcinogenic risk to humans.

**EMERGENCY AND FIRST AID PROCEDURES** – Call for medical aid. Employ first aid techniques recommended by the American Red Cross.

WARNING: This product may contain or may produce a chemical known to the State of California to cause cancer. (California Health & Safety Code 35249.5 et seq.)

## **VII. PRECAUTIONS FOR SAFE HANDLING AND USE/APPLICABLE CONTROL MEASURES**

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 (29CFR1910). U.S. Government Printing Office, Washington, D.C. 20401 for more details on many of the following.

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

**RESPIRATORY PROTECTION** – Use respirator fume respirator or air-supplied 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 that is too dark to see the weld zone. Then go to the next lighter shade, which gives sufficient view of the weld zone. Provide protective screens and flash goggles, if necessary, to shield others.

**PROTECTIVE CLOTHING** – Wear head, hand and body protection, which help to prevent injury from radiation, sparks, and electrical shock. See ANSI Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Train the welder not to touch live electrical parts and to insulate himself from work and ground.

**PROCEDURE FOR CLEANUP OF SPILLS OR LEAKS** – Not applicable.

**WASTE DISPOSAL METHOD** – Prevent waste from contaminating surrounding environment. Discard compliance with federal, state and local regulations.

The information herein is supplied in good faith, but no warranties are expressed or implied.

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## VII. DEFINITIONS

CAS No.	Chemical Abstracts Service Number
OSHA	U.S. Department of Labor, Occupational Safety and Health Administration
PEL	Permissible Exposure Level (1983)
ACGIH	American Conference of Governmental Industrial Hygienists
TLV	Threshold Limit Value (1987-88)
TWA	Time Weighted Average
STEL	Short Term Exposure Limit
CLG	Ceiling Limit
NOC	Not Otherwise Classified
IARC	International Agency for Research on Cancer
NTP	National Toxicology Program

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