

# MATERIAL SAFETY DATA SHEET

## SECTION I ♦ PRODUCT IDENTIFICATION

**Product Type:** Coated manual electrodes (SMAW) for joining, buildup and hardfacing.

**Product Name:**

**Specification:** No AWS Specification

**Manufacturer:**

Telephone:

FAX:

## SECTION 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.

Hazardous Compounds	Cas No.	OHSA PEL mg/m <sup>3</sup>	TL V mg/m <sup>3</sup>	Weight %
Titanium Dioxide	13463-67-7	5 (respirable)	10 (dust)	0-10
Boron	7440-42-8	15	10 as B2O3	0 – 6.5
Manganese	7439-96-5	1 (fume)	1 (fume) 3 (stel)	.5 - 25
Silicon	7440-21-3	5 (respirable)	10 (dust)	0 - 3
Tungsten	7440-33-7	None	5 (insoluble) 1 (soluble)	0 - 65
Chromium	7440-47-3	0.5 (metal)	0.5 (metal) 0.05 (Cr VI)	0 - 40
Nickel	7440-02-0	1 (metal)	1 (metal) 0.1 (soluble)	0 - 20
Molybdenum	7439-98-7	5 (soluble)	5 (soluble)	0 - 8
Vanadium	7440-62-2	0.5 (dust)	.05 as V <sub>2</sub> O <sub>5</sub> (as fume)	0 - 18
Graphite	7782-42-5	5 (respirable)	2 (respirable)	0 - 3
Fluoride	7789-75-5	2.5	2.5 as F	0 - 2
Calcium Carbonate	1317-65-3	5 (respirable)	10 (dust)	0 – 5
Iron	7439-89-6	10	5 (oxide fume)	35 - 95
Columbium	7440-03-1	None	None	0 - 8

CLG: Ceiling Limit

STEL: Short Tem Exposure Limit

## SECTION III ♦ PHYSICAL DATA

**FORM:** Coated Electrode

**MELTING POINT:** 2150-2710 F



## SECTION 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 irritation of the respiratory system, damage to lungs and asthma-like symptoms.

Nickel compounds 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 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. Chromates may cause an 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 workers indicated a higher incidence of lung and nasal cancers. Nickel and its compounds are considered as carcinogenic as required 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.

THRESHOLD LIMIT VALUE – The ACGIH 1985-86 recommended limit for welding fumes not otherwise classified (NOC) is 5 mg/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 25249.5 et seq.)

## SECTION 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 respirable 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 any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with federal, state and local regulations.

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

For further information contact: Director of Quality

## SECTION 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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