

MATERIAL SAFETY DATA SHEET

May be used to comply with Osha's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labour
Occupational Safety and Health Administration
(Non-Mandatory Form) Form Approved OMB No. 1218-0072

Maybe used to comply with **Council Directive 93/112/EC** concerning **Council Directive 91/155/EEC** relating to the classification, packaging and labelling of dangerous substances, referenced in the **Official Journal of the European Communities, European Regulation L 314/38**

Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I – Identification

Product: **UTP 6824MOLC AWS SPEC or Other Spec: E309MoL-16**

Product Type: Shielded Metal Arc Welding Electrode

Suppliers name: **Böhler Thyssen Welding USA, Inc**

Address: **10401 Greenbough Drive, Stafford, TX 77477**

Telephone number for information: **01-281-499-1212**

Date prepared: 6/07

Signature of preparer: **M. Isenhardt**

Section II - Hazardous* Ingredients

Important: This section covers the materials from which this product is manufactured. The fumes and gases produced during normal use when welding with this product are covered by section V.

Ingredient	CAS#	OSHA PEL mg/m ³	ACGIH TLV mg/m ³	other limits recommended	approx. wt.-% (optional)
Wire or rod					
Carbon (C)	7440-44-0	TWA 5.0 respirable fraction TWA 15.0 total dust	TWA 10.0 inhalable fraction TWA 3.0 respirable fraction	inert	0.01
Chromium (Cr)	7440-47-3	TWA 0.5	TWA 0.5		19.0 Balance
Iron (Fe)	7439-89-6	TWA 10.0	TWA 5.0		
Magnesium (Mg)	7439-95-4	TWA 15.0	TWA 10.0		1.60
Manganese (Mn)	7439-96-5	TWA 5.0 ceiling TWA 5.0 soluble	TWA 0.2		
Molybdenum (Mo)	7439-98-7	TWA 15.0 total dust TWA 1.0	A3		2.0
Nickel (Ni)	7440-02-0	TWA 1.0	TWA 1.5		12.0
Coating or Filling					
Earth Alkali Carbonate &	471-34-1	TWA 5.0 respirable fraction TWA 15.0 total dust	TWA 10.0 inhalable fraction TWA 3.0 respirable fraction		25-30
Alkali Silicate	N/R	TWA 5.0 respirable fraction TWA 15.0 total dust	TWA 10.0 inhalable fraction TWA 3.0 respirable fraction		
Chromium (Cr)	7440-47-3	TWA 1.0	TWA 0.5		15-20
Fluoride	16984-48-8	TWA 2.5	TWA 2.5		10-15
Iron (Fe)	7439-89-5	TWA 10.0	TWA 5.0		<5
Manganese (Mn)	7439-96-5	TWA 5.0 ceiling TWA 5.0 soluble	TWA 0.2		<5
Molybdenum (Mo)	7439-98-7	TWA 15.0 total dust TWA 1.0	A3		<2
Nickel (Ni)	7440-02-0	TWA 1.0	TWA 1.5		5-10
Titanium Dioxide (Rutile)	1317-80-2	TWA 15.0 total dust	TWA 10.0		25-30

* The term „Hazardous“ in „Hazardous Ingredients“ 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.

- A1 Listed by ACGIH as a Human Carcinogen
- A2 Listed by ACGIH as a Suspected Human Carcinogen
- A3 Listed by ACGIH as an Animal Carcinogen
- C Listed by OSHA as a Human Carcinogen

N/R Not reported or listed
 mppcf Million Particles per Cubic Foot
 BEI Listed by ACGIH as a substance for which there are biological exposure indices

WARNING: This product contains or produces a chemical known to the state of California to cause cancer.
WARNING: This product contains or produces a chemical known to the state of California to cause birth defects or other reproductive harm.

IMPORTANT: This section covers the material from which this product is manufactured. The fumes and gases produced during welding with this product are covered by SECTION VI.

Section III - Physical and Chemical Characteristics

Boiling Point	N/A	Specific Gravity (H ₂ O = 1)	N/A
Vapour Pressure (mm Hg.)	N/A	Melting Point	N/A
Vapour Density (air = 1)	N/A	Evaporation Rate (Butyl Acetate = 1)	N/A
Solubility in Water	insoluble		
Appearance and Odour	Unalloyed and low alloyed basic coated electrodes are welding consumables consisting of a solid core wire and a gray coating, no specific odor		

Section IV - Fire and Explosion Hazard Data

Flash Point (Method used)	Flammable Limits	LEL	UEL
non-flammable	N/A	N/A	N/A

Extinguishing Media N/A

Special fire fighting procedures: N/A

IMPORTANT! Product is non flammable! Welding arc and spark can ignite combustibles and flammables. Refer to ANSI/ASC Z 49.1-1983 Section 6 for fire prevention during the use of welding and allied products.

Unusual fire and explosion hazards:

N/A

Section V – Reactivity Data

Stability	Unstable	-	Conditions to avoid	N/A
	Stable	X		

Incompatibility (Materials to avoid): N/A

Hazardous Decomposition or By-products:

Important: Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, and the process, procedures, and electrodes used. Other conditions which 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, galvanising, or phosphate coatings on steels which would produce phosphine gas), the number of welders and the volume of the 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 vapours from cleaning and degreasing activities which may be decomposed by the arc into toxic gases such as phosgene).

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 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 and coating, etc..., as noted above.

Reasonably expected fume constituents of this product would include: Example for Carbon dioxide shielded flux-cored electrode (AWS 5.20 E70-T-1): Reasonably expected fume constituents of this product would include: primarily oxides of Iron; secondarily complex oxides of Manganese, Silicon, Titanium and Sodium. The present ACGIH TLV for Manganese, 0.2 mg/m³ will result in a significant reduction from the 5 mg/m³ general welding fume (NOC) level. Example for Stainless Steel covered electrodes (AWS 5.4): Reasonably expected fume constituents of this product would include: primarily fluorides and complex oxides of Iron and Silicon, secondarily complex oxides of Manganese, titanium, chromium, nickel, sodium and potassium. **The present 1995 OSHA PEL (Permissible Exposure Limit) 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 from the decomposition products in these electrodes comes from the limit shown at the bottom of OSHA Table Z-2, which is for 0.1 mg of CrO₃- which calculates to 0.05 mg of Cr⁺⁶/m³. It applies to soluble chromates of the types found in covered stainless electrode fumes. Reasonably expected gaseous constituents would include Carbon monoxide and Carbon dioxide. Ozone and nitrogen

Section VIII – Control Measures

special protection information and precautions : Read and understand the manufacturer's instruction and the precautionary label on the product. See American National Standard Z49.1 and OSHA Publication (29 CFR 1910 Hazard Communication Standard for more detail on many of the following.

Ventilation: Use enough ventilation, local exhaust at the arc, or both, to keep the fumes and gases from the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes. Keep exposures as low as possible

Respiratory Protection: Use respirable fumes respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below the recommended exposure limit.

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

Protective Clothing: Wear hand, head, 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, and well as dark substantial clothing. Train the welder not to touch live electrical parts and to insulate himself from work and ground.

REFERENCED STANDARDS

In this publication, reference is made to the standards listed below. Copies are available from the indicated sources.

Official Journals of the European Communities L 314/38, L174/54, referencing Council Regulations 93/112/EC, 91/155/EEC, 88/379/EEC and 67/548/EEC

American Welding Society, Inc.
550 N.W. LeJeune Road
Miami, FL 33126

AWS F1.1-1992 Methods for Sampling Airborne Particulates Generated by Welding and Allied Processes
AWS F1.2-1992 Laboratory Method for Measuring Fume Generation Rates and Total Fume Emission for Welding and Allied Processes

American National Standards Institute
11 West 42nd Street
New York, NY 10036
ANSI Z49.1-1994 Safety in Welding, Cutting and Allied Processes

Superintendent of Documents Administration
U.S. Government Printing Office
Washington, DC 20402
OSHA Standard 29 CFR 1910 Toxic and Hazardous Substances

Subpart Z
1910.1000 Air Contaminants Table Z-2

U.S. Department of Labor
Occupational Safety and Health Administration
200 Constitution Avenue
Room N-3101
Washington, DC 20210
OSHA Standard 29 CFR Material Safety Data Sheet (Non-Mandatory Form) 1910.1200

Environmental Protection Agency
401 M Street, S.W.
Washington, DC 20460
Sections 311, 312, 313 Emergency Planning and Community Right-To-Know Act of 1986 (EPCRA)

American Conferencel of Governmental Industrial Hygienists
Technical Affairs Office
Kemper Woods Center
1330 Kemper Meadow Drive
Cincinnati, OH 45240
Threshold Limit Values (TLVs) for Chemical Substances and Physical Agents and

Exposure Indices (BEIs)

Biological

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