

MATERIAL SAFETY DATA SHEET

For welding consumables and related products

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 2001/58/EG** concerning **Council Directive 91/155/EEG** 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 68H	AWS SPEC or Other Spec: E310-16
Product Type:	Shielded Metal Arc Welding Electrode	
Suppliers name:	BÖHLER WELDING GROUP USA, INC.	
Address: 10401Greenbough Dr.,Stafford, TX 77477	Telephone number for information:	+1-281-499-1212
Date prepared:1/08	Signature of preparer:	M Isenhart
	Emergency number:	+1-281-499-1212
	Intoxication information centre	

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. Consult local authorities for acceptance exposure limits.
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, the same applies correspondingly to the elements provided with hazardous signs.

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	0.04
Chromium (Cr)	7440-47-3	TWA 0.5	TWA 0.5		25
Manganese (Mn)	7439-96-5	TWA 5.0 ceiling	TWA 0.2		3.3
Nickel (Ni)	7440-02-0	TWA 1.0	TWA 1.5		20
Silicon (Si)	7440-21-3	TWA 5.0 respirable fraction TWA 15.0 total dust	TWA 10.0		0.90
Coating or Filling					
Alkali Silicate	N/R	TWA 5.0 respirable fraction TWA 15.0 total dust	TWA 10.0 inhalable fraction TWA 3.0 respirable fraction		25-35
Chromium (Cr)	7440-47-3	TWA 1.0	TWA 0.5		11.6
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		11.6
Earth Alkali Fluoride	N/R	TWA 2.5	TWA 2.5		7.7
Iron Carbonate	563-71-3	TWA 10.0	TWA 5.0 inhalable fraction		2.5
Iron Carbon Poor	7439-89-6	TWA 10.0	TWA 5.0 inhalable fraction		4-8
Magnesium (Mg)	7439-95-4	TWA 15.0	TWA 10.0		0.58
Manganese (Mn)	7439-96-5	TWA 5.0 ceiling	TWA 0.2		3.5

Molybdenum (Mo)	7439-98-7	TWA 5.0 soluble compounds	A3	0.5-1.5
Nickel (Ni)	7440-02-0	TWA 15.0 total dust	TWA 1.5	
Rutile	13463-67-7	TWA 1.0	TWA 10.0	3.8
<p>* 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.</p> <p>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</p> <p>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.</p>				

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 odour		

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.

Carcinogenicity

NICKEL: The International Agency for Research on Cancer indicates nickel refining and "certain nickel compounds" were cancer-causing, but could not state with certainty which forms of nickel may be carcinogenic. The National Toxicology Program lists nickel powder, nickel subsulfide, nickel oxide, nickel carbonate, nickel carbonyl and nickelocene as substances "that may reasonably be anticipated to be carcinogens." Because of this, the OSHA Hazard Communication Standard requires that everyone who manufactures or imports these substances or mixtures or alloys containing these substances must warn of a cancer hazard on their MSDS's and labels. This warning is mandated by OSHA even though studies have not demonstrated cancer risks associated with the use of nickel. Intramuscular injection and implantation of nickel powder produced localized tumors in rats and mice. Inhalation studies using animals showed no evidence of carcinogenicity.

CHROMIUM: The International Agency for Research on Cancer and The National Toxicology Program indicates there is sufficient evidence for carcinogenicity of chromium compounds both in humans and experimental animals. IARC notes that "the compounds responsible for the carcinogenic effect in humans cannot be specified." Studies with chromium metal and trivalent forms of chromium compounds have shown inadequate evidence for carcinogenicity in both animals and humans.

Threshold Limit Value: The ACGIH recommended general limit for Welding Fume NOC – (Not Otherwise Classified) is 5 mg/m³. The TLV-TWA is the time weighted average concentration for a normal 8-hour workday and a 40 hour workweek, to which nearly all workers may be repeatedly exposed, day after day, without adverse effect. Limit Values are figures published by the American Conference of Government Inpoussièrerial Hygienists.

Workers exposed to hexavalent chrome (Cr⁶⁺) are at an increased risk of developing lung cancer. It also possible that occupational exposure to (Cr⁶⁺) may result in asthma, and damage to the nasal epithelia and skin. To avoid any risk follow the requirements of the OSHA rule for hexavalent chromium published on February 28, 2006 in the U.S. Federal Register 71, pages:10099-10385 which established an 8-hour time-weighted average (TWA) exposure limit of 5 micrograms of hexavalent chrome per cubic meter of air (5 µg/m³). This is a considerable reduction from the previous PEL of 1 milligram per 10 cubic meters of air (1 mg/10 m³, or 100 µg/m³) reported as CrO₃, which is equivalent to a limit of 52 µg/m³ as (Cr⁶⁺). This rule also contains ancillary provisions for worker protection such as requirements for exposure determination, preferred exposure control methods, including a compliance alternative for a small sector for which the new PEL is infeasible, respiratory protection, protective clothing and equipment, hygiene areas and practices, medical surveillance, recordkeeping, and start-up dates that include four years for the implementation of engineering controls to meet the PEL.

CRYSTALLINE SILICA: The National Toxicology Program indicates there is sufficient evidence for the carcinogenicity or respirable crystalline silica in experimental animals. Increases in incidence of lung cancers have been found in inhalation studies in rats. An IARC working group reported there is limited evidence for the carcinogenicity of crystalline silica in humans.

Sign and symptoms of exposure:

Short term exposure to welding fumes may result in discomfort, dizziness, nausea, or dryness or irritation of the throat.

Medical conditions generally aggravated by exposure:

Individuals with impaired pulmonary functions or illness may have symptoms exacerbated by fume irritants.

Emergency and first aid procedures:

Remove from dust or fume exposure. If breathing has stopped perform artificial respiration. Summon medical aid immediately.

Section VII/VIII - Precautions for Safe Handling and Use

Steps to be taken in case material is released or spilled **N/A**

Waste Disposal Method: Prevent waste from contaminating the surrounding environment. Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with federal, state and local regulations

Precautions to be taken in handling and storing: Avoid humidity and temperature shocks.

Other precautions: Electric shock from arc welding equipment can kill. When welding welding arc or torch flame may be a source of ignition of combustible.

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.

General protection and hygienic measures: Wash hands before breaks and at the end of work

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.

Hand protection: Heat protection gloves(non-combustible).

Material for gloves: Gloves made of leather.

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
Biological Exposure Indices (BEIs)

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