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ALLOY RODS CORPORATION

MATERIAL SAFETY DATA SHEET (MSDS)

For Welding Consumables and Related Products
Complies with OSHA Hazard Communication Standard 29 C.F.R. 1910.1200

SECTION I - IDENTIFICATION

Identity: DUAL SHIELD T-5 FLUX CORED WELDING ELECTRODES
CORESHIELD SELF-SHIELDING FLUX CORED ELECTRODES

Manufacturer's Name: ALLOY RODS CORPORATION	Emergency Telephone No. - 717/637-8911
Address: P. O. Box 517, Wilson Avenue, Hanover, PA 17331	Telephone No. for Information - 717/637-8911

Product Trade Name(s):	Product Classification(s):
DUAL SHIELD WIRES: T-75	AWS A5.20, E70T-5
85-C1, T85-B2, T95-B3, T115, AND 4130	AWS A5.29, E80T5-N12, E80T5-B2, E90T5-B3, E110T5-K4, NOT CLASSIFIED
CORESHIELD WIRES: 40, 11, AND 15	AWS A5.20 E70T-4, E71T-11, E71T-GS

SECTION II - HAZARDOUS INGREDIENTS

IMPORTANT: THIS SECTION COVERS THE MATERIALS FROM WHICH THE PRODUCT IS MANUFACTURED. THE FUMES AND GASES PRODUCED DURING WELDING WITH NORMAL USE OF THIS PRODUCT ARE COVERED IN SECTION V.

THE TERM "HAZARDOUS" IN "HAZARDOUS MATERIALS" SHOULD BE INTERPRETED AS A TERM REQUIRED AND DEFINED IN OSHA HAZARD COMMUNICATION STANDARD (29 C.F.R. 1910.1200) AND IT DOES NOT NECESSARILY IMPLY THE EXISTENCE OF ANY HAZARD.

Ingredient	(CAS No.)	Exposure Limit mg/M3)	Source
Iron	(7430-89-6)	10-5	(1) (2)
Silicon	(7440-21-3)	10	(2)
Molybdenum (A)	(7439-98-7)	5	(1) (2)
Aluminum (F)	(7429-90-5)	10	(2)
Calcium Fluoride (D)	(7784-75-5)	2.5 as F	(2)
Magnesium Oxide (E)	(1304-48-4)	10	(2)
Manganese	(7439-96-5)	5 c1	(1) (2)
Chromium (A) [Cr]	(7440-47-3)	1-0.5	(1) (2)
Nickel (B) [Ni]	(7440-02-0)	1	(1) (2)
Magnesium (C)	(7439-95-4)	15-10	(2)
Barium Fluoride (C)	(7787-32-8)	0.5 (4)	(1) (2)

1. Occupational Safety and Health Administration, 29 C.F.R. 1910.1000 Permissible Exposure Limit (PEL).
2. American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV[R]).
3. Not known; nuisance particulate concentration per OSHA 1910.1000, Table Z-3, is 5 mg/M3 respirable dust, and per ACGIH is 10 mg/M3.
4. Exposure limit for soluble barium compounds as barium. No exposure limit for insoluble barium compounds is listed.

(A) In T-115, T4130LN, T85-B2, and T95-B3
(B) In B5C1, T-115, and T4130LN.
(C) In Coreshield 11 and 15 only.
(D) In Coreshield 40 and all Dual Shield electrodes.
(E) In Coreshield 40 only.
(F) In all Coreshield wires.

SECTION III - PHYSICAL AND CHEMICAL DATA

These products as shipped are nonhazardous, nonflammable, nonexplosive, and nonreactive.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Nonflammable: Welding arc and sparks can ignite combustibles. See Z-49.1 referenced in Section VII.

SECTION V - REACTIVITY DATA

HAZARDOUS DECOMPOSITION PRODUCTS:

Welding fumes cannot be classified simply. Their composition and quantity are dependent upon the metal being welded, 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, or galvanizing), number of welds and volume of work area, quality and amount of ventilation, position of 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. The primary route of entry of welding fumes and gases is by inhalation.

When the electrode is consumed, the fume and gas decomposition products are different in percent and form from the ingredients listed in Section II. Decomposition products include those originating from the volatilization, reaction, or oxidation of the materials shown in Section II plus those from base metal, coating, etc. as noted above. These components are virtually always present as complex compounds and not as metals (Characterization of Arc Welding Fume: American Welding Society).

Reasonably expected fume constituents include fluorides and complex oxides containing iron, silicon, manganese, and, when present, chromium, nickel, molybdenum, magnesium, and aluminum. FUMES FROM CORESHIELD 11 AND 15 WILL REACH THE LIMIT FOR SOLUBLE BARIUM COMPOUNDS (0.5 mg/M^3) BEFORE THE GENERAL FUME LIMIT OF 5 mg/M^3 IS REACHED. FUME EXPOSURE GUIDELINE FOR THESE PRODUCTS IS 3.0 mg/M^3 MAXIMUM. 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 welders helmet, if worn, or in the worker's breathing zone. See ANSI/AWS F1.1, available from the American Welding Society, P.O. Box 351040, Miami, FL 33135.

SECTION VI - HEALTH HAZARD DATA

Threshold Limit Value: The ACGIH recommended general limit for welding fume NOC (Not Otherwise Classified) is 5 mg/M3. The ACGIH 1984-85 preface states: "The TLV-TWA should be used as guides in the control of health hazards and should not be used as firm lines between safe and dangerous concentrations." See Section V for specific fume constituents which may modify this TLV.

Effects of Overexposure: FUMES AND GASES can be dangerous to your health. Aggravation of preexisting respiratory or allergic conditions may occur in some workers. 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 may lead to siderosis (iron deposits in the lung) and is believed by some investigators to affect pulmonary function. ARC RAYS can injure eyes and burn skin. ELECTRIC SHOCK can kill. See Section VII.

Emergency & First Aid Procedures: Call for medical aid. Employ first aid techniques recommended by the American Red Cross.

CARCINOGENICITY	NTP?	I ARC Monographs?	OSHA Regulated?
When present	Cr, N1	Cr, N1	Cr

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE/APPLICABLE CONTROL MEASURES

Read and understand the manufacturer's instructions and the precautionary label on this product. See American National Standard Z-49.1, Safety in Welding and Cutting, published by the American Welding Society, P.O. Box 351040, Miami, FL 33135 and OSHA Publication 2206 (29 C.F.R. 1910), U. S. Government Printing Office, Washington, D.C. 20402 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 below the 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 which 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 Z-49.1. 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.