

MATERIAL SAFETY DATA SHEET

PLEASE CAREFULLY READ AND UNDERSTAND THIS MATERIAL SAFETY DATA SHEET BEFORE USING THIS PRODUCT

For Welding Consumables and Related Products

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

SECTION I (IDENTIFICATION)

Manufacturer/Supplier Name: UNIWELD PRODUCTS, INC. Emergency Phone No.: (954) 584-2000
 2850 Ravenswood Road
 Fort Lauderdale, FL 33312

Product Name(s): **UNI-Cobalt 1, RCoCr-C, UNI-Cobalt 6, RCoCr-A, UNI-Cobalt 12, RCoCr-B, UNI-Cobalt 1, ECoCr-C, FC UNI-Cobalt 6FC, ECoCr-A, UNI-Cobalt 12FC, ECoCr-B**

Product Classification: **COVERED ARC WELDING ELECTRODES AND BARE RODS**

SECTION II (HAZARDOUS INGREDIENTS/IDENTITY INFORMATION)

Important: This section covers the materials from which these products are manufactured. The fumes and gases produced during normal use of these products are covered by Section V. The term "Hazardous Materials" should be interpreted as a term required and defined in OSHA Hazard Communication Standard 26 CFR 1910.1200 and it does not necessarily imply the existence of hazard. The chemicals or compounds reportable by Section 313 of SARA are marked by the symbol #.

| INGREDIENT | % WEIGHT | CAS NO. | EXPOSURE LIMIT (mg/m ³) | |
|-------------------------------------|----------|--------------------------|---------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| | | | OSHA PEL | ACGIH TLV |
| #COBALT | 30-50 | 7440-48-4 | 0.05 (Dust & Fume) | 0.02 (Dust & Fume) {A3} |
| #CHROMIUM | 15-25 | 7440-47-3 | 1 (Metal) 0.5 (Cr II & Cr III Compounds) 0.1 CL** (Cr VI Compounds) | 0.5 (Metal) {A4} 0.5 (Cr III Compounds) {A4} 0.05 (Cr VI Soluble Compounds) {A1} |
| TITANIUM DIOXIDE | 5-15 | 13463-67-7 | 5 R* | 10 {A4} |
| CALCIUM CARBONATE | <10 | 1317-65-3 | 5 R* 5 (as CaO) | 10 2 (as CaO) |
| SILICA++ (Amorphous Silica Fume) | <5 | 14808-60-7 69012-64-2 | 0.1 R* 0.8 | 0.1 R*◆◆ 2 R* |
| FLUORSPAR | <5 | 7789-75-5 | 2.5 (as F) | 2.5 (as F) {A4} |
| IRON+ | <5 | 7439-89-6 | 5 R* 10 (Oxide Fume) | 3 R* 5 (Oxide Fume) {A4} |
| #NICKEL | <3 | 7440-02-0 | 1 (Metal) 1 (Soluble Compounds) 1 (Insoluble Compounds) | 1.5 (Metal) {A5} 0.1 (Soluble Compounds) {A4} 0.2 (Soluble Compounds) {A1} |
| TUNGSTEN | 0-10 | 7440-33-7 | 1, 3 STEL*** | 1, 3 STEL*** |
| SILICATE BINDERS | <5 | N/A | N/A | N/A |

* - Respirable Fraction. ** - Ceiling Limit. *** - Short Term Exposure Limit.

{A1} - Confirmed Human Carcinogen per ACGIH. {A3} - Animal Carcinogen per ACGIH.
 {A4} - Not Classifiable as a Human Carcinogen per ACGIH. {A5} - Not Suspected as a Human Carcinogen per ACGIH.
 + - As a nuisance particulate covered under "Particulates Not Otherwise Regulated" by OSHA or "Particulates Not Otherwise Classified" by ACGIH.
 ++ - Crystalline silica is bound within the product as it exists in the package. However, research indicates silica is present in welding fume in the amorphous (noncrystalline) form.
 # - Reportable material under Section 313 of SARA.
 ◆◆ - 1999 ACGIH listed under Notice of Intended Changes. A2 - "Suspected Human Carcinogen". Limits of 0.05 mg/m³ (respirable fraction) are proposed and should be considered as trial limits.
The exposure limit for welding fume has been established at 5 mg/m³ with OSHA's PEL and ACGIH's TLV. The individual complex compounds within the fume may have lower exposure limits than the general welding fume PEL/TLV. An Industrial Hygienist, the OSHA Permissible Exposure Limits For Air Contaminants (29 CFR 1910.1000), and the ACGIH Threshold Limit Values should be consulted to determine the specific fume constituents present and their respective exposure limits.

SECTION III (PHYSICAL DATA)

Welding consumables applicable to this sheet are solid and nonvolatile as shipped.

SECTION IV (FIRE AND EXPLOSION HAZARD DATA)

Welding consumables applicable to this sheet as shipped are nonreactive, nonflammable, nonexplosive and essentially nonhazardous until welded. Welding arcs and sparks can ignite combustibles and flammable products. See American National Standard Z49.1 referenced in Section 7.

SECTION V (REACTIVITY DATA)

Welding fumes and gases cannot be classified simply. The composition and quantity of both 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), the number of welds and volume of the work area, quality and amount of ventilation, 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 percentage and composition from the ingredients listed in Section II. Fume and gas decomposition products, not the ingredients in the electrode, are important. Decomposition products generated in normal operations include those originating from the volatilization, reaction, or oxidation of the materials shown in Section II plus those from the base metal, coating, etc., as noted above.

One recommended way to determine the composition and quantity of fumes 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 ANSI/AWS F1.1, available from the American Welding Society, P.O. Box 351040, Miami, FL 33135. Also from AWS is F1.3, "Evaluating Contaminants in the Welding Environment - A Sampling Strategy Guide," which gives additional advice on sampling.) At a minimum, materials listed in this section should be analyzed for the following:

SECTION VI (HEALTH HAZARD DATA)

EFFECTS OF OVEREXPOSURE:

Electric arc welding may create one or more of the following health hazards:
 ARC RAYS can injure eyes and burn skin.
 ELECTRIC SHOCK can kill. See Section 7.
 FUMES AND GASES can be dangerous to your health.
 PRIMARY ROUTES OF ENTRY are the respiratory system, eyes and/or skin.

SHORT-TERM (ACUTE) OVEREXPOSURE EFFECTS:

WELDING FUMES - May result in discomfort such as dizziness, nausea or dryness or irritation of nose, throat or eyes.

COBALT - Pulmonary irritation, cough, dermatitis, weight loss.

CHROMIUM - Inhalation of fume with chromium (VI) compounds can cause irritation of the respiratory tract, lung damage and asthma-like symptoms. Swallowing chromium (VI) salts can cause severe injury or death. Dust on skin can form ulcers. Eyes may be burned by chromium (VI) compounds. Allergic reactions may occur in some people.

TITANIUM DIOXIDE - Irritation of respiratory system.

CALCIUM OXIDE - Dust or fumes may cause irritation of the respiratory system, skin and eyes.

SILICA (AMORPHOUS) - Dust and fumes may cause irritation of the respiratory system, skin and eyes.

FLUORIDES - Fluoride compounds evolved may cause skin and eye burns, pulmonary edema and bronchitis.

IRON, IRON OXIDE - None are known. Treat as nuisance dust or fume.

NICKEL, NICKEL COMPOUNDS - Metallic taste, nausea, tightness in chest, metal fume fever, allergic reaction.

TUNGSTEN - Dust may cause irritation of the skin and eyes. Inhalation of dust may cause acute airways obstructive asthma which is reversible following overexposure. Symptoms are tightening chest and productive cough.

LONG-TERM (CHRONIC) OVEREXPOSURE EFFECTS:

WELDING FUMES - Excess levels may cause bronchial asthma, lung fibrosis, pneumoconiosis or "siderosis."

COBALT - Repeated overexposure to cobalt compounds can produce reduced pulmonary function, diffuse nodular fibrosis of lungs and respiratory hypersensitivity. IARC considers cobalt compounds as possibly carcinogenic to humans (GROUP 2B).

CHROMIUM - Ulceration and perforation of nasal septum. Respiratory irritation may occur with symptoms resembling asthma. Studies have shown that chromate production workers exposed to hexavalent chromium compounds have an excess of lung cancers. Chromium (VI) compounds are more readily absorbed through the skin than chromium (III) compounds. Good practice requires the reduction of employee exposure to chromium (III) and (VI) compounds.

TITANIUM DIOXIDE - Pulmonary irritation and slight fibrosis.

CALCIUM OXIDE - Prolonged overexposure may cause ulceration of the skin and perforation of the nasal septum, dermatitis and pneumonia.

SILICA (AMORPHOUS) - Research indicates that silica is present in welding fume in the amorphous form. Long term overexposure may cause pneumoconiosis. Noncrystalline forms of silica (amorphous silica) are considered to have little fibrotic potential.

FLUORIDES - Serious bone erosion (Osteoporosis) and mottling of teeth.

IRON, IRON OXIDE FUMES - Can cause siderosis (deposits of iron in lungs) which some researchers believe may affect pulmonary function. Lungs will clear in time when exposure to iron and its compounds ceases. Iron and magnetite (Fe₃O₄) are not regarded as fibrogenic materials.

NICKEL, NICKEL COMPOUNDS - Lung fibrosis or pneumoconiosis. Studies of nickel refinery workers indicated a higher incidence of lung and nasal cancers.

TUNGSTEN - Long term overexposure may cause pulmonary fibrosis characterized by a rapid onset of cough, sputum and dyspnea on exertion.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Persons with pre-existing impaired lung functions (asthma-like conditions).

EMERGENCY AND FIRST AID PROCEDURES:

Call for medical aid. Employ first aid techniques recommended by the American Red Cross.

Eyes & Skin: If irritation or flash burns develop after exposure, consult a physician.

CARCINOGENICITY:

Chromium VI, nickel, and cobalt compounds must be considered carcinogens according to OSHA (29 CFR 1910.1200). Chromium compounds are classified as IARC Group 1 and NTP Group 1 carcinogens. Nickel compounds are classified as IARC Group 1 and NTP Group 2 carcinogens. Cobalt compounds are classified as IARC Group 2B carcinogens. Welding fumes must be considered as possible carcinogens under OSHA (29 CFR 1910.1200).

▽ WARNING: DO NOT BREATHE FUMES!

Avoid direct inhalation of fumes during heating. Avoid inhalation or ingestion of dust. Do not allow dust to accumulate.

▽ **WARNING: CALIFORNIA PROPOSITION 65:** This product, when used for welding, soldering, brazing, cutting and other metal working or flame processes, produces fumes, particulates, residues and other by-products which contain chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. ▽ **WARNING:** This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

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

Carefully read and understand the manufacturer's instructions and the precautionary label on the 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 CFR 1910), US Government Printing Office, Washington, DC 20402 for more details on the following):

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

▽ WARNING: DO NOT BREATHE FUMES!

RESPIRATORY PROTECTION: Use NIOSH approved or equivalent respirable fume respirator or air supplies respirator when welding in confined spaces or where local exhaust or ventilation does not keep exposure below PEL/TLVs.

EYE PROTECTION: Wear helmet or use face shield with filter lens. As a rule of thumb, begin with shade #14. Adjust if needed by selecting the next lighter or darker shade number.

PROCEDURE FOR CLEANUP OR SPILLS OR LEAKS: Recyclable solid. Vacuuming is strongly recommended for accumulated dust. Conform with applicable federal, state, local, and OSHA regulatory statutes..

WASTE DISPOSAL: 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.

SPECIAL PRECAUTIONS: IMPORTANT. MAINTAIN EXPOSURE BELOW PEL/TLV. USE INDUSTRIAL HYGIENE MONITORING TO ENSURE THAT YOUR USE OF THIS MATERIAL DOES NOT CREATE EXPOSURES WHICH EXCEED PEL/TLV. Always use exhaust ventilation. Refer to the following sources for important additional information: ANSI Z-49.1. The American Welding Society, P.O. Box 351040, Miami FL 33135; OSHA (29 CFR 1910), US Dept. of Labor, Washington, DC 20210.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Store unused rods in dry place at ambient temperatures. Gloves should be worn during handling to avoid cuts, scrapes, and burns (when applicable). Clothing should be laundered after contact. Wash hands after handling. Do not smoke cigarettes while handling.

Uniweld Products, Inc. believes this data to be accurate and to reflect qualified expert opinion regarding current research. Uniweld Products, Inc. cannot make any expressed or implied warranty as to this information.