

# MATERIAL SAFETY DATA SHEET

For Welding Consumables and Related Products. Conforms to OSHA Hazard Communication Standard 29CFR 1910.1200  
Standard Must Be Consulted for Specific Requirements  
Date: 2010/01/01 MSDS No. 728

## SECTION 1: IDENTIFICATION

Manufacturer	
Trade Name	Cobalt-1 Bare (RCoCr-C)/Coated (ECoCr-C), Cobalt-6 Bare (RCoCr-A)/Coated (ECoCr-A), Cobalt-12 Bare (RCoCr-B)/Coated (ECoCr-B), Cobalt-21 Bare/Coated
Classification	AWS A5.13
Telephone Number	
Emergency Number	800-424-9300

## SECTION 2: HAZARDOUS MATERIALS\*

**Important:** This section covers the materials of which the products are manufactured. The fumes and gases produced during normal use of this product are covering in Section 5.

\* The term "Hazardous Materials" should be interpreted as a term required and defined in OSHA Hazard Communication Standard 29CFR 1910-1200; however the use of this term does not necessarily imply the existence of any hazard.

FLUX OR OTHER INGREDIENTS	CAS #	Exposure Limit (mg/m <sup>3</sup> ) OSHA PEL	Exposure Limit (mg/m <sup>3</sup> ) ACGIH-TLV
Cobalt (Co)	7440-48-4	0.1	0.05
Chromium (Cr)	7440-47-3	1	0.5
Tungsten (W)	7440-37-1	Nothing Found	1, 3**
Iron (Fe)	1309-37-1	5	N/A
Nickel (Ni)	7440-02-0	1	1
Carbon (C)	7440-44-0	3.5	3, 7, 17**
Silicon (Si)	7440-21-3	Nothing Found	10, 20**
Manganese (Mn)	7439-96-5	15	10, 20**
Molybdenum (Mo)	7439-98-7	5*	5*
Calcium Fluoride	7789-75-5	2.5 (as F)	2.5 (as F)
Titanium Dioxide	13463-67-7	15	10, 20**
Potassium Titanate	12030-97-6	Nothing Found	FND
Magnesium Oxide	1309-48-4	15	10

Occupational Safety and Health Administration 29 CFR 1910.1000 Permissible Exposure Limit (PEL).  
American Conference of Governmental Industrial Hygienists (ACGIH)  
Threshold Limit Value (TLV[R]).

\* Ceiling Limit \*\*Short Term Exposure Limit ND=Nuisance Dust  
Chromium and Nickel have been recognized as a suspect carcinogen by NTC and IARC.

## SECTION 3: PHYSICAL DATA

NOT APPLICABLE

## SECTION 4: FIRE AND EXPLOSION HAZARD DATA

Non-Flammable; Welding arc and sparks can ignite combustibles. See Z-49.1 references in Section 6.

## SECTION 5: REACTIVITY DATA

### Hazardous Decomposition Products

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. Workers should be aware that the composition and quantity of the fumes and gases to which they may be exposed include: coatings which may be present on the metal being welded (such as paint, plating or galvanizing), the number of welders in operation 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 vapors from cleaning and degreasing procedure). When the electrode is consumed, the fumes and gas decomposition products generated are different in percent and form from the ingredients listed in Section 2. The composition of these fumes and gases are the concerning matter and not the composition of the electrode itself. Decomposition products include those originating from the volatilization, reaction or oxidation of the ingredients shown in Section 2, plus those from the base metal, coating, and other factors as noted above

Rod and electrodes are stable at ordinary temperatures; however, caution should be taken with acids, bases, and oxidizers. Molten metal will react violently with water.

Gaseous reaction products may include carbon monoxide and carbon dioxide.

Ozone and nitrogen oxides may be formed by the radiation from the arc.

One method of determining the composition and quantity of fumes and gases to which workers are exposed by taking an air sample from inside the welder's helmet while worn or in the worker's breathing zone. See ANSI/AWS F1.1 publication available from the American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.

## SECTION 6: HEALTH HAZARD DATA

**Threshold Limit Value:** The ACGIH recommended general limit for Welding Fume NOC-(Not Otherwise Classified) is 5 mg/m<sup>3</sup>. ACGIH-1985 preface states "The TLC-TWA should be used as guides in the control of health hazards and should not be used as fine lines between safe and dangerous concentrations". See Section 5 for specific fume constituents which may modify this TLV.

**Common Entry is by Inhalation.**

**Effects of Overexposure:** Inhalation of welding fumes and gases can be dangerous to your health. Short-term (acute) overexposure to welding fumes may result in discomfort such as dizziness, nausea or dryness or irritation of nose, throat or eyes. Chromium (VI) compounds present in the fume may cause abdominal pain, diarrhea, muscular weakness and convulsions. Continued inhalation could cause loss of consciousness and death. Chromium (VI) compounds may burn eyes. Chromium compounds may cause allergic reactions in some people. Nickel oxides present in the fume may cause tightness around the chest, fever and allergic reactions in some people. Long-term (chronic) overexposure to welding fumes can lead to siderosis (iron deposits in lung) and may affect pulmonary function. Repetitive exposure to fluoride fumes and/or gases may cause excessive calcification of the bones and ligaments of the ribs, pelvis and spinal column. Constant inhalation of chromium (VI) may cause an ulceration and perforation of the nasal septum as well as liver and kidney damage. Workers exposed to chromium (VI) compounds have higher incidences of lung and nasal cancers. Chromium and nickel and their compounds are on the IARC (International Agency for Research on Cancer) list as posing a carcinogenic risk to humans.

Arc Rays can injure eyes and burn skin.  
Electric shock can kill.  
See Section 7.

**Emergency and First Aid Procedures:** Call for medical assistance. Use first aid procedures recommended by the American Red Cross. If breathing is difficult give oxygen. IF NOT BREATHING use CPR (Cardiopulmonary Resuscitation).

**Carcinogenicity**

OSHA (29 CFR 1910.1200) lists Nickel and Chromium as possible carcinogens.

**SECTION 7: CONTROL MEASURES AND PRECAUTIONS FOR SAFE HANDLING AND USE**

Read and understand the manufacturer's instructions and the precautionary label on the product. See American National Standard Z49.1; Safety in Welding, Cutting published by the American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126 and OSHA Publication 2206 (29 CFR 1910), U.S. Government Printing Office, Washington D.C. 20402 for more details on the following topics.

**Ventilation:** Use plenty of ventilation and/or local exhaust at the arc to keep the fumes and gases below the threshold limit value within the worker's breathing zone and the general area. Welders should be advised to keep their head out of the fumes.

**Respiratory Protection:** Use respirable fume respirator or air supplied respirator when welding in confined space or general work areas when local exhaust or ventilation does not keep exposure below TLV.

**Eye Protection:** Wear helmet or use face shield with filter lens shade number 12-14 or darker. Shield other workers by providing screens and flash goggles.

**Protective Clothing:** Wear hand, head and body protection which help to prevent injury from radiation, sparks and electrical shock. See ANSI Z49.1. This would include wearing welder's gloves and a protective face shield, and may include arm protectors, apron, hats, shoulder protection as well as dark substantial clothing. Train the welder not to allow electrically live parts to contact skin or wet clothing and gloves. The welder should insulate themselves from the work and ground.

**Waste Disposal Method:** Discard any product, residue, disposable container or liner in an environmentally acceptable manner approved by Federal, State and Local regulations.

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MANUFACTURER. believes that the information contained in the (MSDS) Material Safety Data Sheet is accurate. However, MANUFACTURER. does not express or implies any warranty with respect to this information.