KENNAMETAL
STELLITE

Material Safety Data Sheet – Stellite 1010 Rod

SECTION 1 – PRODUCT IDENTIFICATION

Product Name:	Stellite 1 Rod		
Other Product Name(s):	Welding Rod No. 1010		
Product Type and Use:	Bare Cobalt Base Welding Rod for Oxygen/Fuel or Tungsten Arc Welding		
Manufacturer:	Kennametal Stellite 1201 Eisenhower Drive Goshen, Indiana 46526	Phone: 574-534-2585 Fax: 574-534-3417	
MSDS Issued Date:	May, 2012	**Previous Issue Date:**	March, 2007

SECTION 2 – COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS No.	Weight %
Chromium	7440-47-3	15-40
Cobalt	7440-48-4	30-60
Iron	1309-37-1	1-5
Manganese	7439-96-5	.1-1.0
Molybdenum	7439-98-7	
Nickel	7440-02-0	1-5
Silicon	7440-21-3	.5-1.5
Tungsten	7440-33-7	7-13

SECTION 3 – HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: A grey, odorless metallic rod. Can release toxic metallic fumes if involved in a fire.

POTENTIAL HEALTH HAZARDS:

Welding Operations	Electric arc or oxy-fuel welding may product intense arc rays and/or infrared heat rays which are hazardous to the eyes and skin. In addition, such operations may produce noise at levels damaging to hearing. Use of electric arc equipment can present a potential electrocution hazard.

The potential health effects described as chronic effects and in the OSHA carcinogen table in this section cover all potential ingredients in this family of products: Refer to Section 2 (above) for ingredients found in this specific product:

Skin Contact	Handling with bare hands may cause an allergic skin reaction in some individuals.
Eye Contact	Not hazardous as shipped.
ingestion	Not a route of entry
Inhalation	Inhalation of welding-generated fumes can cause irritation, chills, cough, fever, nausea, vomiting, weakness and flu-like symptoms. Products containing cobalt may cause an allergic respiratory reaction in sensitized individuals. Excessive inhalation can lead to severe toxic effects up to and including death.
Chronic Effects	Chromium: While insoluble hexavalent chromium compounds are associated with lung damage and lung cancer, however, the chromium metal found in this product is not considered a suspect carcinogen. Cobalt: Cobalt has caused cancer in laboratory animals and is associated with lung

	injury and effects upon the circulatory system. Nickel metal is considered to be possibly carcinogenic to humans. Long-term overexposure to nickel compounds may cause lung damage (fibrosis or pneumoconiosis). Soreness and itchiness of the nose and change in skin color and/or appearance may also result. Manganese: Repeated inhalation of manganese dust or fume can cause irreversible damage to the central nervous system resulting in symptoms similar to Parkinson's disease. Manganese is also associated with chronic lung disease and potential reproductive effects. Molybdenum: Molybdenum is considered an animal carcinogen based on laboratory test.

Potential ingredients found on one of the OSHA designated Carcinogen Lists are listed below.

Ingredient Name	NTP Status	IARC Status	OSHA Status
Cobalt metal	-----	2B – Possibly carcinogenic	-----
Nickel metal	Suspect carcinogen	2B – Possibly carcinogenic	-----

SECTION 4 – FIRST AID MEASURES

Skin Contact	Wash with soap and water. Get medical assistance for irritation or allergic reaction.
Eye Contact	Not a route of entry.
Ingestion	Not a route of entry.
Inhalation	(Welding fumes) Remove to fresh air. Get immediate medical assistance if breathing is difficult or has stopped. Get medical assistance for persistent irritation.
Advice to Physician	Treat symptomatically.

SECTION 5 – FIRE FIGHTING MEASURES

Flash Point and Method	None
Autoignition Temperature	Not determined
Upper / Lower/ Flame Limits	Not applicable
Extinguishing Media to Use	Use media suitable for surrounding structural fire.
Extinguishing Media to Avoid	None (see below)
Special Fire Fighting Procedures	Avoid skin contact and wear self-contained breathing apparatus to avoid inhalation of fumes.
Unusual Fire and Explosion Hazards	None normally present.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

In case of spill	Wear appropriate personal protective equipment. Pick up spilled materials and place into containers for use and/or disposal.

Spills may be reportable to the National Response Center or other agencies. See section 15 for 'reportable quantities' (RQs) that may exist.

SECTION 7 – HANDLING AND STORAGE

Use this product in accordance with ANSI Z49.1 "Safety in Welding, Cutting and Allied Processes" and in compliance with OSHA welding regulations, 29CFR1910.252-255 (as appropriate).

Normal Handling	Avoid contact with skin. Do not breathe welding fumes
Storage	Keep containers closed and store in a dry area. Do not store where contamination with foreign materials may occur. Avoid storage next to acids. Avoid storage near sources of combustion.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limits for possible ingredients:

Ingredient	ACGIH TLV	OSHA PEL	Other Limit
Chromium metal	0.5 mg/m^3 TWA	1 mg/m^3 TWA	* 0.5 mg m^3 TWA
Cobalt metal	0.02 mg/m^3 TWA	0.1 mg/m^3 TWA (dust and fume)	* 0.05 mg m^3 TWA (dust and fume)
Iron (as iron oxide)	5 mg/m^3 TWA (dust and fume)	10 mg/m^3 TWA	* 5 mg/m^3 TWA (dust and fume)
Manganese metal	0.2 mg/m^3 TWA	5 mg/m^3 Ceiling (fume)	* 1 mg/m^3 (fume)
Molybdenum metal	10 mg/m^3 TWA (inhalable fraction) 3 mg/m TWA (respirable fraction)	15 mg/m^3 TWA (total dust)	* 5 mg/m^3 TWA
Nickel metal	1.5 mg/m^3 TWA	1 mg/m^3 TWA	* 0.015 mg/m^3 TWA
Silicon	None	15 mg/m^3 TWA 5 mg/m^3 TWA (respirable)	* 10 mg/m^3 TWA (total) 5 mg/m^3 TWA (respirable)
Tungsten metal	5 mg/m^3 TWA 10 mg/m^3 STEL	None	* 5 mg/m^3 TWA
Welding Fumes (produced during use)	None	None established	* Lowest Feasible Concentration

* = NIOSH NIOSH TWA's are based upon a 10 hour day (vs. 8 hrs for OSHA and ACGIH).

Engineering Controls	Provide local exhaust ventilation at areas where material is being used in welding operations. Ventilation should maintain exposure levels below the exposure levels listed above.

Personal Protective Equipment

Skin Protection	Wear head, hand, 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, as well as dark substantial clothing. Train the welder not to touch live electrical parts and to insulate himself from work and ground.
Eyes Protection	Wear helmet or use face shield with filter lens. As a rule of thumb, start with a shade that 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.
Respiratory Protection	Use air-purifying fume respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below TLV.

SECTION 9 – PHYSICAL AND CHEMICAL PROPTERIES

Appearance & Physical State	Gray metallic rod
Odor	None
Specific Gravity	8.69
Melting Point	2,355 °F
Freezing Point	2,290 °F
Vapor pressure	None
pH	Not applicable
Flash Point and Method	None
Autoignition Temperature	Not determined
Lower/ Flame Limits	Not applicable

SECTION 10 – STABILITY AND REACTIVITY

Chemical Stability	Material is normally stable.
Conditions to Avoid	Do not allow contact with inorganic acids. Flammable hydrogen gas may be released.
Hazardous Decomposition Products	Oxides of metal components and oxides of organic fluxes used in the welding process may be formed. Inhalation should be avoided.
Possibility of Hazardous Reactions	Material will not polymerize or undergo self-reactions.

SECTION 11 – TOXICOLOGICAL INFORMATION

Acute Toxicity	Cobalt: LD_{50} (oral, rat) – 6171 mg/kg Manganese: LD_{50} (oral, rat) – 9 g/kg Silicon: LD_{50} (oral, rat) – 3160 mg/kg
Chronic Toxicity	Chromium: Although hexavalent forms of insoluble chromium are considered to be lung carcinogens, trivalent compounds and chromium metal are not associated with cancer. Cobalt: Cobalt has caused cancer in laboratory animals and is associated with lung injury and effects upon the circulatory system (myocardial effects). Manganese: Repeated inhalation of manganese dust or fume can cause irreversible damage to the central nervous system resulting in symptoms similar to Parkinson's disease. Manganese is also associated with chronic lung disease and reduced reproductive vitality in males (based on studies of male workers in manganese production). Molybdenum: An animal carcinogen. (Lung cancer – rats) Relevance to human health is uncertain. Nickel: Classified as a suspect carcinogen by NTP and as an animal carcinogen by IARC. Chronic exposure is associated with lung damage (fibrosis or pneumoconiosis). Soreness and itchiness of the nose and change in skin color and/or appearance may also result. Nickel can also cause allergic sensitization via contact.

SECTION 12 – ECOLOGICAL INFORMATION

Chromium content classifies this product as hazardous to the environment if discharged. Both chromium and nickel may be persistent in the environment.

SECTION 13 – DISPOSAL CONSIDERATIONS

Is unused product a RCRA Hazardous Waste if discarded?	No

If yes, the RCRA waste identification number is:	------

Always dispose of in accordance with Federal, State and Local regulations.

SECTION 14 – TRANSPORT INFORMATION

DOT Classification	Not regulated
UN Identification Number	Not applicable
DOT Shipping Description	Not applicable

SECTION 15 – REGULATORY INFORMATION

Toxic Substances Control Act	All ingredients are listed on the Toxic Substances Control Act Inventory of Chemical Substances.
SARA 311 Hazard Class	Immediate, delayed

SARA 313: This product may contain certain toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning Community Right-To-Know Act of 1988 and 40 CFR 372:

Ingredient	C.A.S. No.	Maximum Wt % in this Product
Chromium	7440-47-3	33
Cobalt	7440-48-4	50
Manganese	7439-96-5	1
Nickel	7440-02-0	3

Reportable Quantities and Threshold Planning Quantities: The following possible ingredients have CERCLA/SARA Reportable Quantities (RQs) and/or Threshold Planning Quantities (TPQs).

Ingredient	RQ	TPQ
Chromium	5000 lbs (for particles whose diameter is less than 0.004")	None
Cobalt	1 lb. (compounds of cobalt only) Cobalt metal has no RQ	None
Manganese	1 lb. (compounds of manganese only) Manganese metal has no RQ.	None
Nickel	100 lbs (for particles whose diameter is less than 0.004")	None

State Right to Know Lists: In addition to ingredients listed in section 2, the following information is presented for state right to know purposes.

Ingredient	Comment
Cobalt	Listed on the California Proposition 65 carcinogen list.
Nickel	Listed on the California Proposition 65 carcinogen list.

Foreign Inventory Status:	The ingredients of this product are on the following chemical control inventories: Australia, Canada (DSL), China, European Union, Korea, Philippines
WHMIS Classification	D2A - This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

SECTION 16 – OTHER INFORMATION

Changes to this datasheet from previous version:		July 2003 - New MSDS format. Modification of hazards text in section 3, first aid information in section 4. Updated regulatory references and performed a general rewrite of entire MSDS. March 2007 – Section 8. Updated exposure limits for Iron, Manganese, Silicon and Welding Fumes. Also updated Calcium Carbonate and Titanium Dioxide if applicable. Data for changes came from 2006 ACGIH "Guide to Occupational Exposure Values" May, 2012 – Updated manufacturer to Kennametal Stellite in Goshen, IN

NFPA Ratings	Health: 1	Fire: 1	Reactivity: 0
HMIS (III) Ratings	Health: * 1	Fire: 1	Physical Hazard: 0