
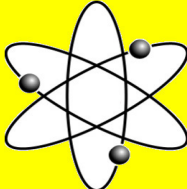


STEELS

Vulcan Sun-Arc		Universal maintenance electrode for welding all steels	
			
Type of Wire:	Chrome Vanadium		
Description:	Arc welding alloy rich in Nickel, Chrome, and Vanadium. It produces a high tensile weld that controls carbon pick-up from base metals, making it the most universal welding alloy. It can be used to produce smooth welds without spatter or undercut.		
Typical Applications:	Ideal for repair of all cracked tool and die steels, high Manganese steels, stainless steels, carbon steels, pressure vessels, heat-treat trays, tap and drill extensions, high tensile shock resistant steels, tap and stud extraction, and rebuilding shafts, gears, and blades used in mining, chemical, and construction industries as well as for removing broken studs.		
Procedures:	Prepare joint area by removing foreign material. Bevel heavy sections to form a 90 degree vee. Preheat high carbon steels to 400 degrees F. Use jigs, fixtures, and tack welds to maintain alignment. Hold a short arc. Stringer beads are preferred to prevent over-heating. Allow to cool before removing slag. Deposits will take a high polish when subjected to wear.		
Specs:	Tensile Strength	up to 120,000 PSI	
	Working Tensile	up to 180,000 PSI	
	Yield Strength	up to 110,000 PSI	
	Hardness	25 to 30 RC	
	Elongation Factor	25% to 30%	
Current/ Amperage For Each Size:	1/16" Dia.	30-40 amps	AC/DCEP (electrode +)
	3/32" Dia.	40-80 amps	AC/DCEP (electrode +)
	1/8" Dia.	65-125 amps	AC/DCEP (electrode +)
	5/32" Dia.	95-165 amps	AC/DCEP (electrode +)
Warnings:	Fumes and gases can be dangerous to your health. Arc rays can injure eyes and burn skin. Electric shock can kill. See "American National Standard Z49.1 <u>Safety to Welding and Cutting.</u>"		
Manufactured by:		Vulcan Systems, LLC 5740 F-41 Oscoda, MI 48750 1-800-642-9885 info@vulcan-systems.com	

MATERIAL SAFETY DATA SHEET

Revised: Feb. 2011

SECTION 1 – IDENTIFICATION

Trade Name: Vulcan Sunarc **Manufacturer:** Vulcan Systems, LLC
Emergency Telephone. No: (989)739-8050 5740 f-41, Oscoda, MI 48750

SECTION 2 – HAZARDOUS INGREDIENTS

This section covers the material from which this product is manufactured. The term “hazardous ingredients” should be interpreted as a term required and defined in OSHA hazard communication standard. This product contains toxic chemicals subject to the reporting requirements of section 313 of title III of SARA and CFR part 372.

INGREDIENT	CASE NO.	OSHA Permissible Exposure Limit (PEL)	ACGIH Threshold Limit Value (TLV)	%
MICA	12001-26-2	20	10	9
MANGANESE	7439-96-5	5	1	6
VANADIUM	7440-62-2	NO LIMIT	0.05	3
SILICON	7440-21-3	5	3	2
CHROMIUM	7440-47-3	1	5	20-30
NICKEL	7440-02-0	1	1	8-10
MOLYBDENUM	7439-98-7	15	10	1
IRON	7439-89-6	5	NR	BALANCE
IRON OXIDE (FE)	1309-37-1	10	5	2
TITANIUM (DUST)	7440-32-6	15	5	2
TITANIUM DIOXIDE	13463-67-7	15	5	16
CALCIUM CARBONATE	1317-65-3	5	2	5
MAGNESITE (FUME)	546-93-0	NR	10	3
CRYOLITE (AS F)	15096-52-3	NR	10	3
FELDSPAR (DUST)	68427-25-5	1.2	5	1
POTASSIUM OXALATE	6487-48-5	NR	5	1
CELLULOSE	9004-34-6	NR	.10	1
SODIUM SILICATE	1344-09-8	NR	.3	4
POTASSIUM SILICATE	1312-76-1	NR	.3	4

SECTION 3 – PHYSICAL AND CHEMICAL CHARACTERISTICS

Material is an electrode with a flux coating. No hazard exists until this product is used in welding.

SECTION 4 – FIRE AND CHEMICAL CHARACTERISTICS

Non-flammable. Welding arc and sparks can ignite combustible and flammable products. Refer to the Canadian standard “Safety in Welding and Cutting and Allied Procedures” for fire prevention and protection information during the use of welding and allied procedure. **Extinguishing Media** – Co2 or Dry Chemical Extinguisher.

SECTION 5 – HAZARDOUS DECOMPOSITION PRODUCTS

Welding fumes cannot be classified simply. The composition and quantity of both are dependent on the metal being welded, the process, procedures, and electrodes used. Other conditions which also influence the composition and quality of the fumes and gases to which workers may be exposed include coating on the metal being welded (such as paint, plating, or galvanizing), the number of welders, 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, and presence of contaminants in the atmosphere (ie, chlorinated hydrocarbon vapors from cleaning & degreasing activities). When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in section 2. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in section 2, plus those from the base metal and coating, etc.

SECTION 6 – HEALTH HAZARD

The international agency for research on cancer (IARC) has indicated that nickel and certain nickel compounds are probably carcinogenic for humans, but that the specified compounds which may be carcinogenic cannot be specified precisely. Chromium has also been listed by IARC because of “sufficient evidence for the carcinogenicity of chromium and certain chromium compounds.” The studies forming the basis for the conclusion were from operations different from the production or welding of nickel and chromium alloys. Recent studies of workers melting and working alloys containing nickel/chromium have found increased risk of cancer. Nevertheless, exposure limits for these and all others must be maintained below the levels specified in sections 2 & 5.

Route of entry - primarily the respiratory system, eyes and skin.

Effects of acute exposure - Short term overexposure to welding fumes may result in discomfort such as dizziness, nausea, or dryness or irritation of nose, throat, lungs, or eyes. (see section 5&7)

Effects of chronic exposure - Long term over exposure to welding fumes can result in chronic respiratory problems, iron build up in the lungs, bone erosion, reduced pulmonary functions and nervous disorders.

Irritancy of products - Aggravation of pre-existing respiratory or allergenic conditions may occur in some workers even if the concentration of the fume is maintained below the recommended limits. Some studies have shown a higher level of lung related problems among older welders who smoked than those who did not smoke.

Carcinogenicity - Nickel and chromium must be considered possible carcinogens under OSHA (29cfr19410.1200).

SECTION 7 – PRECAUTIONS FOR SAFE HANDLING AND USE

Read and understand manufacturer’s instructions and the precautionary label on the product. See American National Standard z249.1 “Safety in Welding and Cutting” published by the American Welding Society. Maintain all exposure below the limits in section 5. Monitor the air to ensure that the levels are below the above mentioned limits. See AWS f1.1 “Methods for Sampling Airborne Particles Generated by Welding and Allied Procedures” and AWS f1.3 “Evaluating Constituents in the Welding Environment: A Sampling Strategy Guide.”

Use enough ventilation, local exhaust at the arc, or both, to keep the fumes and gases below TLVs (threshold limit values) in the workers’ breathing zone and the general area. Train the welder to keep his head out of the fumes. Use respirable fume respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below the TLV.

Wear helmet or use a face shield with filter lens. Wear hand, head, and body protection, which help to prevent injury from radiation, sparks, and electrical shock. Train the welder not to touch live electrical parts and insulate himself from work and ground.

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, and local regulations.

SECTION 8 – FIRST AID PROCEDURES

If overcome by smoke or fumes, remove the victim to fresh air and call for medical aid. Employ first aid techniques recommended by the Red Cross.

Vulcan Systems, LLC, believes this data to be accurate, but no warranty, expressed or implied, is made.