

MATERIAL SAFETY DATA SHEET

For welding consumables and related products

Conforms to Workplace Hazardous Materials Information System (WHIMS) Rev. Nov. 1988

May be used to comply with Osha's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.
Maybe used to comply with Council Directive 93/112/EC concerning Council Directive 91/155/EEG relating to the classification, packaging and
labelling of dangerous substances, referenced in the Official Journal of the European Communities, European Regulation

L 314/38

Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I – Product and Company Identification

**MANUFACTURER/
SUPPLIERS NAME:**

High Performance Products
10546 N 2nd ST
Machesney Park, IL 61115 USA

TEL: 815-985-0441



FAX: 815-637-1239

Products: HPP 101 FOX EAS 4 M-VD

Prod. Type: stick electrode, high alloyed, corrosion resistant

Section II – Composition/Information on Ingredients

Important: This section covers the materials from which this product is manufactured. The fumes and gases produced during normal use when welding with this product are covered by section X. Consult local authorities for acceptance exposure limits.

Ingredient	CAS No.	Risk category	Danger icon	Security category	OSHA PEL mg/m ³	ACGIH TLV mg/m ³	Wt %
<i>core wire</i>							
Carbon (C)	7440-44-0 231-153-3		Not listed		3.5	3.5	<0.012
Silicon (Si)	7440-21-3 231-130-8		Not listed		10.0	5.0	<0.08
Manganese (Mn)	7439-69-5 231-105-1	48/20	Xn 	24 25	5.0 (ceiling)	0.2	<1.6
Iron (Fe)	7439-89-6 231-096-4		Not listed		10.0	5.0	Rest
Nickel (Ni)	7440-02-0 231-111-4	40 43	Xn 	(2) 22 36	1.0	1.0	<9.4
Molybdenum (Mo)	7439-98-7 231-107-2		Not listed		5.0	5.0	<2
Chromium (Cr)	7440-47-3 231-157-5		Not listed		1.0 (metal) 0.05 (as Cr ^{VI})	0.5 (as metal) 0.05 (as Cr ^{VI})-Al	<18.2
Silicon Dioxide (SiO ₂)	14808-60-7 238-878-4		Not listed		10/(%SiO ₂ +2) (respirable) 30/(%SiO ₂ +2) (total dust)	0.1 (respirable)	<4.4
Titanium Dioxide (TiO ₂)	13463-67-7 236-675-5		Not listed		15.0	10.0	<7.7
Calzium Carbonate (CaCO ₃)	471-34-1 207-439-9		Not listed		5.0	2.0	<2.2
Calzium Fluoride (CaF ₂)	7789-75-5 232-188-7		Not listed		5.0 (as F)	2.5 (as F)	<1.1
Calium Oxide (K ₂ O)	12136-45-7 235-227-6		Not listed		5.0 (respirable) 15.0 (total)	10.0 (inhalable) 3.0 (respirable)	<1.4
Aluminium Oxide (Al ₂ O ₃)	1344-28-1 216-691-6		Not listed		5.0 (respirable) 15.0 (total)	10.0 (inhalable)	<1.8

(LD_{Lo}, LC_{Lo}) Lowest published toxic concentration.

TLV-PEL for water soluble chromium (VI) is 0.05 milligrams per cubic meter. The OSHA PEL is a plafond value that shall not be exceeded at any time. The TLV for insoluble chromium (VI) is 0.01 milligrams per cubic meter.

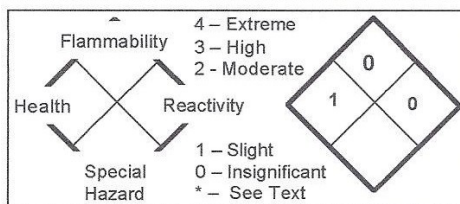
* The term „Hazardous“ in „Hazardous Ingredients“ should be interpreted as a term required and defined in the OSHA Hazard Communication Standard (29 CFR Part 1910.1200) and does not necessarily imply the existence of any hazard.

WARNING: This product contains or produces a chemical known to the state of California to cause cancer.

WARNING: This product contains or produces a chemical known to the state of California to cause birth defects or other reproductive harm.

IMPORTANT: This section covers the material from which this product is manufactured. The fumes and gases produced during welding with this product are covered by SECTION VI.

Section III – Hazards Identification



General:

Different kinds of fume and dust occur during the welding and grinding process. Chromium-VI compounds and nickel oxides might occur, which are classified as carcinogenic. In addition irritant substances such as fluorides and manganese oxides as well as fine dusts (mostly iron oxides) occur.

Health Hazards (acute and chronic)

Welding electrodes and wires are non-hazardous solids at ambient temperature. Actual exposure should be determined by monitoring the fume in the operator's breathing zone. Compounds of Chromium and Nickel in the fume should be considered possible carcinogens per OSHA 29 CFR 1910.1200. No clear association, however, has been established between Cr and Ni in welding fume and the development of cancer.

Short term overexposure to welding fumes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat or eyes and may aggravate pre-existing respiratory problems (e.g. asthma, emphysema). See SECTIONS IV and VII. Exposure to extremely high levels of fluorides can cause abdominal pain, diarrhea, muscular weakness, and convulsions. In extreme cases it can cause loss of consciousness and death.

Long term overexposure to welding fumes can lead to siderosis (iron deposits in lung) and may affect pulmonary function. Manganese overexposure can affect the central nervous system, resulting in impaired speech and movement. The primary entry route for welding fumes and gases is by inhalation. Bronchitis and some lung fibrosis have been reported. Repeated exposure to fluorides may cause excessive calcification of the bone and calcification of ligaments of the ribs, pelvis and spinal column. May cause skin rash.

Overexposure to hexavalent chromium and nickel present in welding fume can present the risk of lung cancer, asthma and damage to the nose and skin.

Arc Rays can injure eyes and burn skin. Electric Shock can kill. Before use, read and understand the manufacturer's instructions, MSDSs, and your employer's safety practices. Keep your head out of the fumes. Use enough ventilation, exhaust at the arc, or both, to keep fumes and gases from your breathing zone and the general area. Wear correct eye, ear, and body protection.. Do not touch live electrical parts. See American National Standard Z49.1, and OSHA Safety and Health Standards.

Carcinogenicity

NICKEL: The International Agency for Research on Cancer indicates nickel refining and "certain nickel compounds" were cancer-causing, but could not state with certainty which forms of nickel may be carcinogenic. The National Toxicology Program lists nickel powder, nickel subsulfide, nickel oxide, nickel carbonate, nickel carbonyl and nickelocene as substances "that may reasonably anticipated to be carcinogens." Because of this, the OSHA Hazard Communication Standard requires that everyone who manufactures or imports these substances or mixtures or alloys containing these substances must warn of a cancer hazard on their MSDS's and labels. This warning is mandated by OSHA even though studies have not demonstrated cancer risks associated with the use of nickel. Intramuscular injection and implantation of nickel powder produced localized tumors in rats and mice. Inhalation studies using animals showed no evidence of carcinogenicity.

CHROMIUM: The International Agency for Research on Cancer and The National Toxicology Program indicates there is sufficient evidence for carcinogenicity of chromium compounds both in humans and experimental animals. IARC notes that "the compounds responsible for the carcinogenic effect in humans cannot be specified." Studies with chromium metal and trivalent forms of chromium compounds have shown inadequate evidence for carcinogenicity in both animals and humans.

CRYSTALLINE SILICA: The National Toxicology Program indicates there is sufficient evidence for the carcinogenicity or respirable crystalline silica in experimental animals. Increases in incidence of lung cancers have been found in inhalation studies in rats. An IARC working group reported there is limited evidence for the carcinogenicity of crystalline silica in humans..

Other precautions: Electric shock from arc welding equipment can kill. When welding arc or torch flame may be a source of ignition of combustible.

Section IV – Emergency and first aid procedures

Remove from dust or fume exposure. If breathing has stopped perform artificial respiration. Summon medical aid immediately.

Inhalation: If breathing is difficult, provide fresh air and call physician.

For radiation burns due to arc flash, see physician.

Eye contact: For skin burns from arc radiation, see physician.

Move to fresh air and call for medical aid

Skin contact:

General:

Section V – Fire fighting measures

Flash Point (Method used)	Flammable Limits	LEL	UEL
non-flammable	N/A	N/A	N/A
Extinguishing Media	N/A		
Special fire fighting procedures:		N/A	
IMPORTANT! Product is non flammable! Welding arc and spark can ignite combustibles and flammables. Refer to ANSI/ASC Z 49.1-1983 Section 6 for fire prevention during the use of welding and allied products.			
Unusual fire and explosion hazards: N/A			
Section VI – Accidental release measures			
Personal precautions:		refer to section VIII	
Environmental precautions:		refer to section XIII	
Methods for cleaning up:		refer to section XIII	
Section VII – Handling and Storage			
Steps to be taken in case material is released or spilled N/A			
Precautions to be taken in handling and storing: Avoid humidity and temperature shocks.			
Other precautions: Electric shock from arc welding equipment can kill. When welding welding arc or torch flame may be a source of ignition of combustible.			
Keep separate from chemical substances like acids which could cause chemical reactions.			
Section VIII – Exposure Controls/Personal Protection			
Components with working place related limit values which must be supervised.			
Identification of the substance to the	CAS no.	Limit value according to the "Grenz werteverordnung 2003-GKV 2003" [Limit Value Ordinance] and/or Arbeitnehmer(Innen) schutzrahmen richtlinie RL 89/391/EWG [Frame directive for industrial safety]	
Nickel oxide	1313-99-1	E 0.5 mg/m ³ (TRK)	
Manganese oxide (Mn3O4)	1317-35-7	E 0.5 mg/m ³ (MAK)	
Chromium-VI compounds (Details see section XI)	13765-19-0	E 0.1 mg/m ³ (TRK) PEL=0.005mg/m ³ (OSHA value) TLV=0.1mg/m ³ (OSHA value)	
Fluorides:	—	E 2.5 mg/m ³ (MAK)	
Biologically inert suspended matter	—	E 15 mg/m ³ (MAK)	A 6 mg/m ³ (MAK) yearly average
Personal safety equipment			
General protection and hygienic			
Special protection information and precautions :			
Read and understand the manufacturer's instruction and the precautionary label on the product. See American National Standard Z49.1 and OSHA Publication (29 CFR 1910 Hazard Communication Standard for more detail on many of the following.			
<u>Ventilation:</u> Use enough ventilation, local exhaust at the arc, or both, to keep the fumes and gases from the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes. Keep exposures as low as possible			
<u>Respiratory Protection:</u> Use respirable fumes respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below the recommended exposure limit.			
<u>Hand protection:</u> Heat protection gloves (non-combustible)			
<u>Material for gloves:</u> Gloves made of leather			
<u>Eye Protection:</u> Wear helmet or use face shield with filter lens. Provide protective screens and flash goggles, if necessary, to shield others. As a rule of thumb, start with a shade that is too dark to see the weld zone. Then go the next lighter shade which gives sufficient view of the weld zone.			
<u>Protective Clothing:</u> Wear hand, head, 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, and well as dark substantial clothing. Train the welder not to touch live electrical parts and to insulate himself from work and ground.			
Section IX – Physical and Chemical Properties			
Boiling Point	N/A	Specific Gravity (H2O = 1)	N/A
Vapour Pressure (mm Hg.)	N/A	Melting Point	N/A
Vapour Density (air = 1)	N/A	Evaporation Rate (Butyl Acetate = 1)	N/A
Solubility in Water	insoluble		
Appearance and Odour	N/A		
Physical data such as odor, vapor pressure, density, evaporation rate and freezing or boiling points are not listed as they are not applicable to this product and its use.			
Section X – Stability and Reactivity			
Stability	Unstable	-	Conditions to avoid N/A
	Stable	X	
Incompatibility (Materials to avoid):			N/A

Hazardous Decomposition or by-products:

Important: Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, and 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, galvanising, or phosphate coatings on steels which would produce phosphine gas), the number of welders 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 vapours from cleaning and degreasing activities which may be decomposed by the arc into toxic gases such as phosgene).

When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in SECTION II. Fume and gas decomposition products, and not the ingredients in the electrode are important. The concentration of a given fume or gas component may decrease or increase by many times the original concentration in the electrode. Also, new compounds not in the electrodes may form. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in SECTION II, plus those from the base metal and coating, etc..., as noted above.

Reasonably expected fume constituents of this product would include: Example for Carbon dioxide shielded flux-cored electrode (AWS 5.20 E70-T-1): Reasonably expected fume constituents of this product would include: primarily oxides of Iron; secondarily complex oxides of Manganese, Silicon, Titanium and Sodium. The present ACGIH TLV for Manganese, 0.2 mg/m³ will result in a significant reduction from the 5 mg/m³ general welding fume (NOC) level. Example for Stainless Steel covered electrodes (AWS 5.4): Reasonably expected fume constituents of this product would include: primarily fluorides and complex oxides of Iron and Silicon, secondarily complex oxides of Manganese, titanium, chromium, nickel, sodium and potassium. The present 1995 OSHA PEL (Permissible Exposure Limit) for hexavalent Chromium (Cr⁺⁶) is 0.05 mg/m³ which will result in a significant reduction from the 5 mg/m³ general welding fume (NOC) level. The limit of 0.05 mg/m³ for hexavalent chromium from the decomposition products in these electrodes comes from the limit shown at the bottom of OSHA Table Z-2, which is for 0.1 mg of CrO₃- which calculates to 0.05 mg of Cr⁺⁶/m³. It applies to soluble chromates of the types found in covered stainless electrode fumes. Reasonably expected gaseous constituents would 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 from inside the welder's helmet if worn or in the worker's breathing zone. See ANSI/AWS F1.1 and ANSI/AWS F1.2-1992

Hazardous/Polymerisation	May occur	-	Conditions to avoid	N/A
	Will not occur	X		

Section XI – Toxicological Information**Acute lethality values:**

LC₅₀ means the concentration of a substance in air that when administered by means of inhalation over a specified length of time in an animal assay, is expected to cause the death of 50% of a defined animal population.

LD₅₀ means the single dose of a substance that, when administered by a defined route in an animal assay, is expected to cause the death of 50% of a defined animal population.

Threshold Limit Value: The ACGIH recommended general limit for Welding Fume NOC – (Not Otherwise Classified) is 5 mg/m³. The TLV-TWA is the time weighted average concentration for a normal 8-hour workday and a 40 hour workweek, to which nearly all workers may be repeatedly exposed, day after day, without adverse effect. See Section X for specific fume constituents which may modify this TLV. Threshold Limit Values are figures published by the American Conference of Government Industrial Hygienists.

Route(s) of entry Inhalation (**), Skin (***) Ingestion (not likely)
**** Inhalation of fume.**

***** Rays from welding operations can injure eyes and burn skin.**

Workers exposed to hexavalent chrome (Cr+6) are at an increased risk of developing lung cancer. It is also possible that occupational exposure to (Cr+6) may result in asthma, and damage to the nasal epithelia and skin. To avoid any risk follow the requirements of the

OSHA rule for hexavalent chromium published on February 28, 2006 in the U.S. Federal Register, pages:10099-10385 which established an 8-hour time-weighted average (TWA) exposure limit of 5 micrograms of hexavalent chrome per cubic meter of air (5 µg/m³). This is a considerable reduction from the previous PEL of 1 milligram per 10 cubic meters of air (1 mg/10 m³, or 100 µg/m³) reported as CrO₃, which is equivalent to a limit of 52 µg/m³ as (Cr+6). This rule also contains ancillary provisions for worker protection such as requirements for exposure determination, preferred exposure control methods, including a compliance alternative for a small sector for which the new PEL is infeasible, respiratory protection, protective clothing and equipment, hygiene areas and practices, medical surveillance, recordkeeping, and start-up dates that include four years for the implementation of engineering controls to meet the PEL.

Section XII – Ecological Information

Welding consumables and materials could degrade/weather into components originating from the consumables or from the materials used in the welding process. Avoid exposure to conditions that could lead to accumulation in soils or groundwater.

Section XIII – Disposal Considerations

Waste Disposal Method: 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, state and local regulations

Section XIV – Transport Information

No international regulations or restrictions are applicable

Section XV – Regulatory Information

This product has been classified in acc. with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulation.
Read and understand the manufacturer's instructions, your employer's safety practices and the health and safety instructions on the label. Observe any federal and local regulations. Take precautions when welding and protect yourself and others.

In this publication, reference is made to the standards listed below. Copies are available from the indicated sources.

American Welding Society, Inc.

550 N.W. LeJeune Road

Miami, FL 33126

AWS F1.1-1992

Methods for Sampling Airborne Particulates Generated by Welding and Allied Processes

AWS F1.2-1992

Laboratory Method for Measuring Fume Generation Rates and Total Fume Emission for Welding and Allied Processes

American National Standards Institute

11 West 42nd Street

New York, NY 10036

ANSI Z49.1-1994 Safety in Welding, Cutting and Allied Processes

Superintendent of Documents Administration

U.S. Government Printing Office

Washington, DC 20402

OSHA Standard 29 CFR 1910 Toxic and Hazardous Substances

Subpart Z

1910.1000 Air Contaminants Table Z-2

U.S. Department of Labor

Occupational Safety and Health Administration

200 Constitution Avenue

Room N-3101

Washington, DC 20210

OSHA Standard 29 CFR

Material Safety Data Sheet (Non-Mandatory Form) 1910.1200

Environmental Protection Agency

401 M Street, S.W.

Washington, DC 20460

Sections 311, 312, 313

Emergency Planning and Community Right-To-Know Act of 1986 (EPCRA)

American Conferencel of Governmental Inpoussièerial Hygienists

Technical Affairs Office

Kemper Woods Center

1330 Kemper Meadow Drive

Cincinnati, OH 45240

Threshold Limit Values (TLVs) for Chemical Substances and Physical Agents and Biological Exposure Indices (BEIs)

Guide to the adjustment of permissible exposure values (PEVs) for unusual work schedules

Reference manual for the WHMIS requirements of the hazardous products act and controlled products regulations.

Section XVI – Other Information

The information of this MSDS was obtained from sources we believe are reliable. However, this information is provided without any representation of warranty, expressed or implied, regarding accuracy or correctness.

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