

# SAFETY DATA SHEET

This Safety Data Sheet (SDS) is for welding consumables and related products and may be used to comply with OSHA's Hazard Communication standard, 29 CFR 1910.1200, and Superfund Amendments and Reauthorization Act (SARA) of 1986 Public Law 99-499 and Canadian Workplace Hazardous Materials Information System (WHMIS) per Health Canada administrative policy. The OSHA standard must be consulted for specific requirements. This Safety Data Sheet complies with ISO 11014-1 and ANSI Z400.1. This document is translated in several languages and is available on our website at [www.hobartbrothers.com](http://www.hobartbrothers.com), from your sales representative or by calling customer service at 1 (937) 332-4000.

## SECTION 1 – IDENTIFICATION

Manufacturer/Supplier  
Name: HOBART BROTHERS LLC  
Address: 101 TRADE SQUARE EAST, TROY, OH 45373  
Canadian Address: 2570 NORTH TALBOT ROAD, OLDCASTLE, ONTARIO, CANADA N0R1L0  
Website: [www.hobartbrothers.com](http://www.hobartbrothers.com)  
Telephone No: +1 (937) 332-4000  
Emergency No: +1 (800) 424-9300  
Canada: +1 (519) 737-3053

Products Type: FLUX FOR SUBMERGED ARC WELDING  
GROUP A: Trade Name: ---  
GROUP B: Trade Name: HF-N  
GROUP C: Trade Name: HA-495, HN-511, HN-590  
GROUP D: Trade Name: PF 201

AWS Specification: None

Recommended Use: FLUX FOR SUBMERGED ARC WELDING  
Restrictions on Use: Use only as indicated for welding operations

## SECTION 2 – HAZARDS IDENTIFICATION

### Group A

**HAZARD CLASSIFICATION** – This product as described in Section 1 is classified as hazardous according to applicable GHS hazard classification criteria as required and defined in OSHA Hazard Communication Standard (29 CFR Part 1910.1200).

- Acute Toxicity - Oral Category 4
- Acute Toxicity - Inhalation Category 4
- Specific Target Organ Toxicity (Repeated Exposure) Category 2
- Carcinogenicity Category 2

### LABEL ELEMENTS

#### Hazard Pictograms:



Signal Word – WARNING

#### Hazard Statements:

H302: Harmful if swallowed

H332: Harmful if inhaled

H351: Suspected of causing cancer through inhalation

H373: May cause damage to organs through prolonged or repeated exposure through inhalation

#### Precautionary Statements:

P201: Obtain special instructions before use.

P202: Do not handle until all safety precautions have been read and understood.

P260: Do not breathe dusts/fume/gas/mists/vapours/spray.

P264: Wash affected areas thoroughly after handling.

P270: Do not eat, drink or smoke when using this product.

P271: Use only outdoors or in a well-ventilated area.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

P301 + P312: IF SWALLOWED: Call a POISON CENTER

P330: Rinse mouth

P304 + P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P312: Call a POISON CENTER if you feel unwell.

P308 + P313: If exposed or concerned: Get medical advice/attention.

P314: Get medical advice/attention if you feel unwell.

P405: Store locked up.

P501: Dispose of contents and container in accordance with local and national regulations

### Group B

**HAZARD CLASSIFICATION** – This product as described in Section 1 is classified as hazardous according to applicable GHS hazard classification criteria as required and defined in OSHA Hazard Communication Standard (29 CFR Part 1910.1200).

- Acute Toxicity - Oral Category 4
- Acute Toxicity - Inhalation Category 4
- Specific Target Organ Toxicity (Repeated Exposure) Category 2
- Carcinogenicity Category 2

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## LABEL ELEMENTS

### Hazard Pictograms:



Signal Word – WARNING

### Hazard Statements:

H302: Harmful if swallowed

H332: Harmful If inhaled

H351: Suspected of causing cancer through inhalation

H373: May cause damage to organs through prolonged or repeated exposure through inhalation

### Precautionary Statements:

P201: Obtain special instructions before use.

P202: Do not handle until all safety precautions have been read and understood.

P260: Do not breathe dusts/fume/gas/mists/vapours/spray.

P264: Wash affected areas thoroughly after handling.

P270: Do not eat, drink or smoke when using this product.

P271: Use only outdoors or in a well-ventilated area.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

P301 + P312: IF SWALLOWED: Call a POISON CENTER

P330: Rinse mouth

P304 + P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P312: Call a POISON CENTER if you feel unwell.

P308 + P313: If exposed or concerned: Get medical advice/attention.

P314: Get medical advice/attention if you feel unwell.

P405: Store locked up.

P501: Dispose of contents and container in accordance with local and national regulations.

## GROUP C:

**CLASSIFICATION OF SUBSTANCE OR MIXTURE** – These products as described in Section 1 are classified as hazardous according to applicable GHS hazard classification criteria as required and defined in OSHA Hazard Communication Standard (29 CFR Part 1910.1200).

- Acute Toxicity - Oral Category 4
- Acute Toxicity - Inhalation Category 4
- Specific Target Organ Toxicity (Repeated Exposure) Category 2
- Carcinogenicity Category 2

## LABEL ELEMENTS

### Hazard Pictograms:



Signal Word – WARNING

### Hazard Statements:

H302: Harmful if swallowed

H332: Harmful If inhaled

H351: Suspected of causing cancer through inhalation

H373: May cause damage to organs through prolonged or repeated exposure through inhalation

### Precautionary Statements:

P201: Obtain special instructions before use.

P202: Do not handle until all safety precautions have been read and understood.

P260: Do not breathe dusts/fume/gas/mists/vapours/spray.

P264: Wash affected areas thoroughly after handling.

P270: Do not eat, drink or smoke when using this product.

P271: Use only outdoors or in a well-ventilated area.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

P301 + P312: IF SWALLOWED: Call a POISON CENTER

P330: Rinse mouth

P304 + P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P312: Call a POISON CENTER if you feel unwell.

P308 + P313: If exposed or concerned: Get medical advice/attention.

P314: Get medical advice/attention if you feel unwell.

P405: Store locked up.

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P501: Dispose of contents and container in accordance with local and national regulations.

## GROUP D:

**2.1 CLASSIFICATION OF SUBSTANCE OR MIXTURE** – The product described in Section 1 is classified as hazardous according to applicable GHS hazard classification criteria as required and defined in European Parliament and Council Regulations (EC) No 1907/2006 and (EC) No 1272/2008.

- Skin Corrosion/Irritation Category 2
- Serious Eye Damage/Eye Irritation Category 1
- Specific Target Organ Toxicity (Single Exposure) Category 3
- Carcinogenicity Category 2
- Specific Target Organ Toxicity (Repeated Exposure) Category 2

## 2.2 LABEL ELEMENTS

### Hazard Pictograms:



Signal Word – DANGER

### Hazard Statements:

- H315: Causes skin irritation  
H318: Causes serious eye damage  
H335: May cause respiratory irritation  
H351: Suspected of causing cancer through inhalation  
H373: May cause damage to organs through prolonged or repeated exposure through inhalation

### Precautionary Statements:

- P201: Obtain special instructions before use.  
P202: Do not handle until all safety precautions have been read and understood.  
P260: Do not breathe dusts/fume/gas/mists/vapours/spray.  
P264: Wash affected areas thoroughly after handling.  
P271: Use only outdoors or in a well-ventilated area.  
P280: Wear protective gloves/protective clothing/eye protection/face protection.  
P302+P352: IF ON SKIN: Wash with plenty of water.  
P304 + P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P308 + P313 IF exposed or concerned: Get medical advice/attention.  
P310: Immediately call a POISON CENTER or doctor/physician.  
P321: Specific treatment (see on this label).  
P332+P313 If skin irritation occurs: Get medical advice/attention.  
P362+P364 Take off contaminated clothing and wash it before reuse  
P308+P313: If exposed or concerned: Get medical advice/attention.  
P314: Get medical advice/attention if you feel unwell.  
P403+P233: Store in well-ventilated place. Keep container tightly closed.  
P405: Store locked up.  
P501: Dispose of contents and container in accordance with local and national regulations.

## HAZARDS NOT OTHERWISE CLASSIFIED

**WARNING! - Avoid breathing welding fumes and gases, they may be dangerous to your health. Always use adequate ventilation. Always use appropriate personal protective equipment.**

**PRIMARY ROUTES OF ENTRY:** Respiratory System, Eyes and/or Skin.

**ELECTRIC SHOCK:** Arc welding and associated processes can kill. See Section 8.

**ARC RAYS:** The welding arc can injure eyes and burn skin.

**FUMES AND GASES:** Can be dangerous to your health.

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. Most fume ingredients are present as complex oxides and compounds and not as pure metals. When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 3. Decomposition products of normal operation include those originating from the volatilization, reaction or oxidation, plus those from the base metal and coating, etc., of the materials shown in Section 3 of this Safety Data Sheet. Monitor for the component materials identified in the list in Section 3.

Fumes from the use of this product may contain complex oxides or compounds of the following elements and molecules: amorphous silica fume, calcium oxide, fluorspar or fluorides, manganese and silica. Other reasonably expected constituents of the fume would also include complex oxides of iron, titanium and silicon. Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc. 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 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 vapors from cleaning and degreasing activities). One recommended way to determine the composition and quantity of fumes and gases 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 and F1.3, available from the "American Welding Society", 8669 NW 36 Street, # 130, Miami, Florida 33166-6672, Phone: 800-443-9353 or 305-443-9353.

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## SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

### HAZARDOUS INGREDIENTS

**IMPORTANT** - This section covers the hazardous materials from which this product is manufactured. This data has been classified according to the criteria of the Globally Harmonized System of Classification and Labeling of Chemicals (GHS) as required and defined in OSHA Hazard Communication Standard (29 CFR Part 1910.1200). The fumes and gases produced during welding with normal use of this product are addressed in Section 8.

INGREDIENT	CAS NO.	EINECS <sup>1</sup>	GROUP AND %WEIGHT				GHS Classification(s)	GHS HAZARD STATEMENTS (See Section 16 for Complete Phrases)
			A	B	C	D		
ALUMINUM OXIDE	1344-28-1	215-691-6	20-30	10-20	15-45	10-20	NONE	
CALCIUM CARBONATE	471-34-1	207-439-9	---	---	---	<1	NONE	
CALCIUM CARBONATE	1317-65-3	215-279-6	5-10	---	<5	---	NONE	
CALCIUM OXIDE	1305-78-8	215-138-9	---	---	---	3-10	- Skin Corr. 2 <sup>(1)</sup> - Eye Irrit. 1 <sup>(2)</sup> - STOT SE 3 <sup>(3)</sup>	H315 H318 H335
FLUORSPAR	7789-75-5	232-188-7	5-10	25-35	3-10	10-20	NONE	
IRON	7439-89-6	231-096-4	<5	---	<5	<2	NONE	
IRON OXIDE	1309-37-1	215-168-2	---	---	---	0-5	NONE	
KAOLIN	1332-58-7	310-164-1	<5	---	0-10	---	NONE	
MAGNESIUM OXIDE	1309-48-4	215-171-9	20-30	25-35	0-30	3-10	NONE	
MANGANESE	7439-96-5	231-105-1	5-10	<5	0-10	---	- Acute Tox. 4 (Ora) <sup>(4)</sup> - Acute Tox. 4 (Inhalation) <sup>(4)</sup> - STOT RE 1 <sup>(5)</sup>	H302 H332 H372
MANGANOUS OXIDE	1344-43-0	215-695-8	---	---	---	20-30	NONE	
POTASSIUM SILICATE	1312-76-1	215-199-1	<1	1-3	1-3	---	NONE	
SILICA	14808-60-7	238-878-4	<7	3-10	15-25 <sup>(6)</sup>	30-40	- STOT RE 2 <sup>(5)</sup> - Carc. 2 <sup>(7)</sup>	H373 H351
(Amorphous Silica Fume)	69012-64-2	273-761-1	---	---	---	---	NONE	
SILICON	7440-21-3	231-130-8	<5	---	<5	---	NONE	
SODIUM SILICATE	1344-09-8	215-687-4	0-1	0-2	0-2	---	NONE	
TITANIUM DIOXIDE	13463-67-7	236-675-5	<5	---	<5	---	- Carc 2 <sup>(7)</sup>	H351
ZIRCONIUM	7440-67-7	231-176-9	<5	---	---	---	- Pyr. Sol. 1 <sup>(8)</sup> - Water-react. 1 <sup>(9)</sup>	H250 H260

--- Dashes indicate the ingredient is not present within the group of products. E – European Inventory of Existing Commercial Chemical Substances. (1) Skin corrosion/irritation (Categories 1, 1A, 1B, 1C and 2) (2) Serious eye damage/eye irritation (Cat. 1 and 2) (3) Specific target organ toxicity (STOT) – single exposure (Cat. 1, 2 and 3) (4) Acute toxicity (Cat. 1, 2, 3 and 4) (5) Specific target organ toxicity (STOT) – repeated exposure (Cat. 1 and 2) (6) – Group C – Not Present in HA-495 (7) Carcinogenicity (Cat. 1A, 1B and 2) (8) Pyrophoric solid (Cat. 1) (9) Substance or mixture which in contact with water emits flammable gases (Cat. 1, 2 and 3)

## SECTION 4 – FIRST AID MEASURES

**INGESTION:** Not an expected route of exposure. Do not eat, drink, or smoke while welding; wash hands thoroughly before performing these activities. If symptoms develop, seek medical attention at once.

**INHALATION during welding:** If breathing is difficult, provide fresh air and contact physician. If breathing has stopped, perform artificial respiration and obtain medical assistance at once.

**SKIN CONTACT during welding:** Remove contaminated clothing and wash the skin thoroughly with soap and water. If symptoms develop, seek medical attention at once.

**EYE CONTACT during welding:** Dust or fume from this product should be flushed from the eyes with copious amounts of clean, tepid water until victim is transported to an emergency medical facility. Do not allow victim to rub or keep eyes tightly closed. Obtain medical assistance at once.

Arc rays can injure eyes. If exposed to arc rays, move victim to dark room, remove contact lenses as necessary for treatment, cover eyes with a padded dressing and rest. Obtain medical assistance if symptoms persist.

Section 11 of this SDS covers the acute effects of overexposure to the various ingredients within the welding consumable. Section 8 of this SDS lists the exposure limits and covers methods for protecting yourself and your co-workers.

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## SECTION 5 – FIRE-FIGHTING MEASURES

**Fire Hazards:** Welding consumables applicable to this sheet as shipped are nonreactive, nonflammable, non-explosive and essentially nonhazardous until welded.

Welding arcs and sparks can ignite combustibles and flammable products. If there are flammable materials, including fuel or hydraulic lines, in the work area and the worker cannot move the work or the flammable material, a fire-resistant shield such as a piece of sheet metal or fire resistant blanket should be placed over the flammable material. If welding work is conducted within 35 feet or so of flammable materials, station a responsible person in the work zone to act as fire watcher to observe where sparks are flying and to grab an extinguisher or sound the alarm if needed.

Unused welding consumables may remain hot for a period of time after completion of a welding process. See American National Standard Institute (ANSI) Z49.1 for further general safety information on the use and handling of welding consumables and associated procedures.

**Suitable Extinguishing Media:** This product, as shipped, is essentially nonhazardous until welded; therefore, use a suitable extinguishing agent for a surrounding fire.

**Unsuitable Extinguishing Media:** None known.

## SECTION 6 - ACCIDENTAL RELEASE MEASURES

In the case of a release of solid welding consumable products, granular flux objects can be swept up and placed into a disposal container. If airborne dust and/or fume is present, use adequate engineering controls and, if needed, personal protection to prevent overexposure. Refer to recommendations in Section 8. Wear proper personal protective equipment while handling. Do not discard as general trash.

## SECTION 7 - HANDLING AND STORAGE

**HANDLING:** No specific requirements in the form supplied. Handle with care to avoid cuts. Wear gloves when handling welding consumables. Avoid exposure to dust. Do not ingest. Some individuals can develop an allergic reaction to certain materials. Retain all warning and product labels.

**STORAGE:** Keep separate from acids and strong bases to prevent possible chemical reactions

## SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

Read and understand the instructions and the labels on the packaging. Welding fumes do not have a specific OSHA PEL (Permissible Exposure Limit) or ACGIH TLV (Threshold Limit Value). The OSHA PEL for Particulates – Not Otherwise Regulated (PNOR) is 5 mg/m<sup>3</sup> – Respirable Fraction, 15 mg/m<sup>3</sup> – Total Dust. The ACGIH TLV for Particles – Not Otherwise Specified (PNOS) is 3 mg/m<sup>3</sup> – Respirable Particles, 10 mg/m<sup>3</sup> – Inhalable Particles. The individual complex compounds within the fume may have a lower OSHA PEL or ACGIH TLV than the OSHA PNOR and ACGIH PNOS. An Industrial Hygienist, the OSHA PELs for Air Contaminants (29 CFR 1910.1000), and the ACGIH TLVs should be consulted to determine the specific fume constituents present and their respective exposure limits. All exposure limits are in milligrams per cubic meter (mg/m<sup>3</sup>).

INGREDIENT	CAS	EINECS	OSHA PEL	ACGIH TLV
ALUMINUM###	7429-90-5	231-072-3	5 R*, 15 (Dust)	1 R* {A4}
CALCIUM CARBONATE	471-34-1	207-439-9	5 R*, 5 (as CaO)	5 (Welding fumes, as Al)
CALCIUM CARBONATE	1317-65-3	215-279-6	5 R*, 5 (as CaO)	3 R*, 2 (as CaO)
CALCIUM OXIDE	1305-78-8	215-138-9	5, 2■	3 R*, 2 (as CaO)
CERIUM OXIDE	1306-38-3	215-150-4	5 R*, 15 (Dust)	2
FLUORSPAR	7789-75-5	232-188-7	2.5 (as F)	3 R*, 10 I*
IRON+	7439-89-6	231-096-4	5 R*	2.5 (as F) {A4}
IRON OXIDE	1309-37-1	215-168-2	10 (Oxide Fume)	5 R* (Fe <sub>2</sub> O <sub>3</sub> ) {A4}
KAOLIN	1332-58-7	310-164-1	5 R*	5 R* (Fe <sub>2</sub> O <sub>3</sub> ) {A4}
MAGNESIUM OXIDE	1309-48-4	215-171-9	15 (Fume, Total Part)	2 R*
MANGANESE#	7439-96-5	231-105-1	5 CL ** (Fume)	10 I* {A4}
MANGANOUS OXIDE	1344-43-0	215-171-9	1, 3 STEL*** ■	0.1 I* {A4} ◆
POTASSIUM SILICATE	1312-76-1	215-199-1	5 CL ** (Fume)	0.02 R* ◆◆
SILICA++	14808-60-7	238-878-4	1, 3 STEL*** ■	0.1 I* {A4} ◆
(Amorphous Silica Fume)	69012-64-2	273-761-1	Not established	0.02 R* ◆◆
SILICON+	7440-21-3	231-130-8	0.05 R*	Not established
SODIUM SILICATE	1344-09-8	215-687-4	5 R*	0.025 R* {A2}
TITANIUM DIOXIDE	13463-67-7	236-675-5	Not established	2 R*
ZIRCONIUM	7440-67-7	231-176-9	15 (Dust)	3 R*
			5 (Zr Cpnds)	Not established
			5, 10 STEL*** ■(Zr Cpnds)	10 {A4}
				5, 10 STEL*** (Zr Cpnds) {A4}

PEL – Permissible Exposure Limit TLV – Threshold Limit Value R\* – Respirable Fraction R\*\*\* – Respirable Fraction – Short Term Exposure Limit I\* – Inhalable Fraction I\*\*\* – Inhalable Fraction - Short Term Exposure Limit \*\* - Ceiling Limit \*\*\* - Short Term Exposure Limit +- 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 ## - Reportable material under Section 313 of SARA only in fibrous form ■ - NIOSH REL TWA and STEL ◆ - Limit of 0.1 mg/m<sup>3</sup> is for Inhalable Mn in 2013 by ACGIH ◆◆ - Limit of 0.02 mg/m<sup>3</sup> is for Respirable Mn in 2013 by ACGIH Cpnds – Compounds NOS – Not Otherwise Specified {A2} - Suspected Human Carcinogen per ACGIH {A4} - Not Classifiable as a Human Carcinogen per ACGIH ACGIH - American Conference of Governmental Industrial Hygienists OSHA – Occupational Safety and Health Administration (USA) EINECS – European Inventory of Existing Commercial Chemical Substances.

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

**RESPIRATORY PROTECTION:** Use NIOSH approved or equivalent fume respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below the regulatory limits.

**EYE PROTECTION:** Wear helmet or use face shield with filter lens. As a rule of thumb begin with Shade Number 14. Adjust if needed by selecting the next lighter and/or darker shade number. Provide protective screens and flash goggles, if necessary, to shield others from the weld arc flash.

**PROTECTIVE CLOTHING:** 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 as well as dark non synthetic clothing. Train the welder not to touch live electrical parts and to insulate himself from work and ground.

**PROCEDURE FOR CLEANUP OF SPILLS OR LEAKS:** Not applicable

**SPECIAL PRECAUTIONS (IMPORTANT):** Maintain exposure below the 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: American National Standard Institute (ANSI) Z49.1; Safety in Welding and Cutting published by the American Welding Society, 8669 NW 36 Street, # 130, Miami, Florida 33166-6672 and OSHA Publication 2206 (29 CFR 1910), U.S. Government Printing Office, Washington, DC 20402.

## SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Welding consumables applicable to this sheet as shipped are nonreactive, nonflammable, non-explosive and essentially nonhazardous until welded.

**PHYSICAL STATE:** Solid



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**APPEARANCE:** Granular  
**COLOR:** Varies by product  
**ODOR:** Not Applicable  
**ODOR THRESHOLD:** Not Applicable  
**pH:** Not Applicable  
**MELTING POINT/FREEZING POINT:** Not Available  
**INITIAL BOILING POINT AND BOILING RANGE:** Not Available  
**FLASH POINT:** Not Available  
**EVAPORATION RATE:** Not Applicable  
**FLAMMABILITY (SOLID, GAS):** Not Available  
**UPPER/LOWER FLAMMABILITY OR EXPLOSIVE LIMITS:** Not Available  
**VAPOR PRESSURE:** Not Applicable  
**VAPOR DENSITY:** Not Applicable  
**RELATIVE DENSITY:** Not Available  
**SOLUBILITY:** Not Available  
**PARTITION COEFFICIENT: N-OCTANOL/WATER:** Not Applicable  
**AUTO-IGNITION TEMPERATURE:** Not Available  
**DECOMPOSITION TEMPERATURE:** Not Available  
**VISCOSITY:** Not Applicable  
**EXPLOSIVE PROPERTIES:** Not Available  
**OXIDIZING PROPERTIES:** Not Available

## SECTION 10 – STABILITY AND REACTIVITY

**GENERAL:** Welding consumables applicable to this sheet are solid and nonvolatile as shipped. This product is only intended for use per the welding parameters it was designed for. When this product is used for welding, hazardous fumes may be created. Other factors to consider include the base metal, base metal preparation and base metal coatings. All of these factors can contribute to the fume and gases generated during welding. The amount of fume varies with the welding parameters.

**STABILITY:** This product is stable under normal conditions.

**REACTIVITY:** Contact with acids or strong bases may cause generation of gas.

## SECTION 11 – TOXICOLOGICAL INFORMATION

**SHORT-TERM (ACUTE) OVEREXPOSURE EFFECTS:** **Welding Fumes** - May result in discomfort such as dizziness, nausea or dryness or irritation of nose, throat or eyes. **Aluminum Oxide, Kaolin** - Irritation of the respiratory system. **Calcium Oxide** - Dust or 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. **Magnesium, Magnesium Oxide** - Overexposure to the oxide may cause metal fume fever characterized by metallic taste, tightness of chest and fever. Symptoms may last 24 to 48 hours following overexposure. **Manganese, Manganous Oxide** - Metal fume fever characterized by chills, fever, upset stomach, vomiting, irritation of the throat and aching of body. Recovery is generally complete within 48 hours of the overexposure. **Nickel, Nickel Compounds** - Metallic taste, nausea, tightness in chest, metal fume fever, allergic reaction. **Potassium 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. **Silica (Crystalline Quartz)** - Irritation of the respiratory system, skin, and eyes. **Sodium Oxide** - Dust or fumes may cause irritation of the respiratory system, skin and eyes. **Titanium Dioxide** - Irritation of respiratory system. **Zirconium** - May cause irritation of the eyes, nose and throat due to mechanical effects.

**LONG-TERM (CHRONIC) OVEREXPOSURE EFFECTS:** **Welding Fumes** - Excess levels may cause bronchial asthma, lung fibrosis, pneumoconiosis or "siderosis." Studies have concluded that there is sufficient evidence for ocular melanoma in welders. **Aluminum Oxide, Kaolin** - Pulmonary fibrosis and emphysema. **Calcium Oxide** - Prolonged overexposure may cause ulceration of the skin and perforation of the nasal septum, dermatitis and pneumonia. **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 (Fe<sub>3</sub>O<sub>4</sub>) are not regarded as fibrogenic materials. **Magnesium, Magnesium Oxide** - No adverse long term health effects have been reported in the literature. **Manganese, Manganous Oxide** - Long-term overexposure to manganese compounds may affect the central nervous system. Symptoms may be similar to Parkinson's disease and can include slowness, changes in handwriting, gait impairment, muscle spasms and cramps and less commonly, tremor and behavioral changes. Employees who are overexposed to manganese compounds should be seen by a physician for early detection of neurologic problems. Overexposure to manganese and manganese compounds above safe exposure limits can cause irreversible damage to the central nervous system, including the brain, symptoms of which may include slurred speech, lethargy, tremor, muscular weakness, psychological disturbances and spastic gait. **Potassium 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. **Silica (Crystalline Quartz)** - Overexposure can cause silicosis. IARC studies indicate sufficient evidence for carcinogenicity in humans. **Sodium Oxide** - Prolonged overexposure may cause ulceration of the skin and perforation of the nasal septum, dermatitis and pneumonia. **Titanium Dioxide** - Pulmonary irritation and slight fibrosis. **Zirconium** - May cause pulmonary fibrosis and pneumoconiosis.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** Persons with pre-existing impaired lung functions (asthma-like conditions). Persons with a pacemaker should not go near welding and cutting operations until they have consulted their doctor and obtained information from the manufacturer of the device. Respirators are to be worn only after being medically cleared by your company-designated physician.

**EMERGENCY AND FIRST AID PROCEDURES:** Call for medical aid. Employ first aid techniques recommended by the International Red Cross. If irritation or flash burns develop after exposure, consult a physician.

**CARCINOGENICITY:** Silica (crystalline quartz) is classified as IARC Group 1 and NTP Group K carcinogen. Titanium dioxide and welding fumes are classified as IARC Group 2B carcinogens.

### CALIFORNIA PROPOSITION 65:

**⚠️ WARNING:** These products can expose you to chemicals, including crystalline silica, which are known to the State of California to cause cancer, and to carbon monoxide, which is known to the State of California to cause birth defects or other reproductive harm. For more information, go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

INGREDIENT	CAS	IARC <sup>e</sup>	NTP <sup>z</sup>	OSHA <sup>h</sup>	65 <sup>o</sup>
ALUMINUM OXIDE	1344-28-1	---	---	---	---
CALCIUM CARBONATE	471-34-1	---	---	---	---
CALCIUM CARBONATE	1317-65-3	---	---	---	---
CALCIUM OXIDE	1305-78-8	---	---	---	---
FLUORSPAR	7789-75-5	---	---	---	---
IRON	7439-89-6	---	---	---	---
IRON OXIDE	1309-37-1	3	---	---	---
KAOLIN	1332-58-7	---	---	---	---
MAGNESIUM OXIDE	1309-48-4	---	---	---	---
MANGANESE	7439-96-5	---	---	---	---

