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MATERIAL SAFETY DATA SHEET

For U.S. Manufactured Welding Consumables and Related Products
May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910. 1200.
Standard must be consulted for specific requirements.

SECTION 1 — IDENTIFICATION

Manufacturer/Supplier Name: HOBART BROTHERS COMPANY	Telephone No: 1-513-339-6000
Address: 600 W. MAIN STREET, TROY, OHIO 45373	Emergency No: 1-513-339-6000
Trade Name: 18, 418, 718, 718LMP, 718MC, 18AC, 418SR; S-718, S-8AC	Classification: AWS A5.1 E7018

Product Type: SHIELDED METAL ARC WELDING (SMAW) LOW HYDROGEN MILD STEEL

SECTION 2 — HAZARDOUS MATERIALS

IMPORTANT

This section covers the materials from which this product is manufactured. The fumes and gases produced during welding with normal use of this product are covered by Section 5.

The term "hazardous" in "Hazardous Materials" should be interpreted as a term required and defined in OSHA Hazard Communication Standard (29 CFR Part 1910.1200).

Ingredient	CAS No.	Exposure Limit (mg/m ³)	
		OSHA PEL	ACGIH TLV
IRON	7439-89-6	5	Not Reported
MANGANESE	7439-96-5	5 CL*	1 CL*
TITANIUM OXIDE	13463-67-7	15	10, 20 STEL**
FLUORSPAR	7789-75-5	2.5 (as F)	2.5 (as F)
POTASSIUM SILICATE	1312-76-1	Nothing Found	Nothing Found
SODIUM SILICATE	1344-09-8	Nothing Found	Nothing Found

*CL — Ceiling Limit

**STEL — Short Term Exposure Limit

SECTION 3 — PHYSICAL/CHEMICAL CHARACTERISTICS

Not Applicable

SECTION 4 — FIRE AND EXPLOSION HAZARD DATA

Non Flammable: Welding arc and sparks can ignite combustibles. See Z49.1 referenced in Section 7.

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. 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).

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., as noted above.

It is understood, however, that the elements and or oxides to be mentioned are virtually always present as complex oxides and not as metals. [Characterization of Arc Welding Fume: American Welding Society] The elements or oxides listed below correspond to the ACGIH categories located in [TLV Threshold Limit Values for Chemical Substances and Physical Agents in the Workroom Environment].

Reasonably expected constituents of the fume would include: complex oxides of iron, manganese, silicon, titanium. Fluorides would also be present.

Substance	CAS No.	Exposure Limit (mg/m ³)	
		OSHA PEL	ACGIH TLV
IRON OXIDE	7439-89-6	5	Not Reported
MANGANESE	7439-96-5	5 CL*	1 CL* (Fume)
SILICON OXIDE	7621-84-7	15	3
TITANIUM OXIDE	13463-67-7	15	10, 20 STEL**
FLUORIDES			2.5 (as F)

*CL — Ceiling Limit

**STEL — Short Term Exposure Limit

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Gaseous reaction products may 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 inside the welder's helmet if worn or in the worker's breathing zone. [See ANSI/AWS F1.1, available from the "American Welding Society," P.O. Box 351040, Miami, FL 33135. Also, from AWS is F1.3 "Evaluating Contaminants in the Welding Environment — A Sampling Strategy Guide," which gives additional advice on sampling]. At a minimum, materials listed in this section should be analyzed.

SECTION 6 — HEALTH HAZARD DATA

Threshold Limit Value:

The ACGIH recommended general limit for Welding Fume NOC (Not Otherwise Classified) is 5 mg/m³. ACGIH-1985 or latest date) preface states "The TLV-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.

Effects of Overexposure

Electric arc welding may create one or more of the following health hazards:

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.

LONG-TERM (CHRONIC) OVEREXPOSURE may lead to siderosis (iron deposits in lungs) and is believed by some investigators to affect pulmonary functions.

ARC RAYS can injure eyes and burn skin.

ELECTRIC SHOCK can kill.

See Section 7.

Emergency and First Aid Procedures

Call for medical aid. Employ first aid techniques recommended by the American Red Cross.

Eyes & Skin: If irritation or flash burns develop after exposure, consult a physician.

Carcinogenicity

These products do not contain ingredients that are defined as carcinogenic per 29CFR 1910.1200 - Hazard Communication Standard.

SECTION 7 — PRECAUTIONS FOR SAFE HANDLING AND USE/APPLICABLE CONTROL MEASURES

Read and understand the manufacturer's instructions and the precautionary label on the product. (See American National Standard Z49.1, Safety in Welding and Cutting published by the American Welding Society, P.O. Box 351040, Miami, FL 33135 and OSHA Publication 2206 (29CFR1910), U.S. Government Printing Office, Washington, D.C. 20402. For more detail on many of the following:)

VENTILATION: Use enough ventilation, local exhaust at the arc, or both, to keep the fumes and gases below TLV's 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 TLV.

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.

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 substantial 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

WASTE DISPOSAL: Prevent waste from contaminating surrounding environment. Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with federal, state and local regulations.

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.

ANSI Z49.1 The American Welding Society, P.O. Box 351040, Miami, FL 33135 — OSHA (29CFR1910) U.S. Dept. of Labor, Washington, DC 20210.

Hobart Brothers believes this data to be accurate and to reflect qualified expert opinion regarding current research. However, Hobart Brothers cannot make any express or implied warranty as to this information.