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MATERIAL SAFETY DATA SHEET

For U.S. Manufactured or Distributed Welding Consumables and Related Products. 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. Standard must be consulted for specific requirements.

SECTION 1 - IDENTIFICATION

Manufacturer/Supplier Name: HOBART BROTHERS Telephone No: (937) 332-4000
Address: 400 TRADE SQUARE EAST, TROY, OH 45373 Emergency No: (800) 424-9300
Trade Name: 212A, Hobart 335A and 447A, Dry Flux Powder 447C, ECA 13, Hobart 418
Product Type For: SEBU FLUX

SECTION 2 - HAZARDOUS INGREDIENTS

IMPORTANT - This section covers the materials from which this product is manufactured. The term "hazardous" in this section should be interpreted as a term required and defined in OSHA Hazard Communication Standard (29 CFR Part 1910.1200).

HAZARDOUS INGREDIENTS	% WEIGHT	CAS NO.	EXPOSURE LIMIT (mg/m3) OSHA PEL	ACGIH TLV
TITANIUM DIOXIDE	35 - 60	13463-67-7	15 (Dust)	10 {A4}
SILICA ++ (Amorphous Silica Fume)	0 - 40	14808-60-7 69012-64-2	0.1 R* 0.8	0.025 R* {A2} 3 R*
ALUMINUM OXIDE##	< 5	1344-28-1	5 R*	1 R* {A4}
IRON +	0 - 10	1337-37-2	5 R*	5 R* (Fe ₂ O ₃) {A4}
IRON OXIDE	0 - 15	1309-37-1	10 (Oxide Fume)	5 R* (Fe ₂ O ₃) {A4}
CALCIUM CARBONATE	0 - 10	471-34-1	5 R*	3 R*
MAGNESIUM OXIDE	< 2	1309-48-4	15 R*	10 I* {A4}
CELLULOSE	10 - 20	9004-34-6	5 R*	10
ZIRCONIUM	< 2	7440-67-7	5, 10 STEL*** (Zr & Compounds)	5, 10 STEL*** (Zr & Compounds) {A4}
MANGANESE#	5 - 15	7439-96-5	1, 3 STEL***, 5 CL** (Fume)	0.2 (As inorganic Compounds of Mn)

R* - Respirable Fraction I* - Inhalable Fraction ** - Ceiling Limit *** - Short Term Exposure Limit +- As a nuisance particulate covered under "Particulates Not Otherwise Regulated" by OSHA or "Particulates Not Otherwise Classified" per 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 ### - Reportable material under Section 313 of SARA as dust or fume. {A1} - Confirmed Human Carcinogen per ACGIH {A2} - Suspected Human Carcinogen per ACGIH {A3} - Confirmed Animal Carcinogen with Unknown Relevance to Humans per ACGIH {A4} - Not Classifiable as a Human Carcinogen per ACGIH {A5} - Not Suspected as a Human Carcinogen per ACGIH

The exposure limit for welding fume has been established at 5 mg/m3 with OSHA's PEL and ACGIH's TLV. The individual complex compounds within the fume may have lower exposure limits than the general welding fume PEL/TLV. An Industrial Hygienist, the OSHA Permissible Exposure Limits for Air Contaminants (29 CFR 1910.1000), and the ACGIH Threshold Limit Values should be consulted to determine the specific fume constituents present and their respective exposure limits.

SECTION 3 - PHYSICAL/CHEMICAL CHARACTERISTICS

Appearance and Odor: mottled, solid powder, odorless
Melting Point: >1,300° C
Percent Volatile: not applicable
Water Solubility: insoluble

SECTION 4 - FIRE AND EXPLOSION HAZARD DATA

Flash Point: not applicable
Unusual Fire or Explosion Hazards: Dust may present fire or explosion hazard in confined areas. This is not expected under normal handling procedures.
Special Fire Fighting Procedures: Full protective clothing including self-contained breathing apparatus.
Extinguishing Media: Cover burning powder with dry sand or limestone to smother flames. If fire occurs in open drums, seal drum with lid to smother flames.

SECTION 5 - REACTIVITY DATA

Stability: Product is stable. However, fine powder (less than 1 micron in size) may ignite during mechanical treatment.
Incompatibility: Avoid contact with acids.
Hazardous Polymerization: Will not occur.

SECTION 6 - HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE:
PRIMARY ROUTES OF ENTRY are the respiratory system, eyes and/or skin.

SHORT-TERM (ACUTE) OVEREXPOSURE EFFECTS:

Welding Fumes - may result in discomfort such as dizziness, nausea or dryness or irritation of nose, throat or eyes. **Titanium Dioxide** - Irritation of the respiratory system. **Silica (Crystalline Quartz)** - Irritation of the respiratory system, skin, and eyes. **Aluminum Oxide** - Irritation of the Respiratory system. **Iron, Iron Oxide** - None are known. Treat as nuisance dust or fume. **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. **Zirconium** – May cause irritation of the eyes, nose and throat due to mechanical effects. **Manganese** – Metal fume fever characterized by chills, fever, upset stomach, vomiting, irritation of the throat and aching of the body. Recovery is generally complete within 48 hours of overexposure.

LONG-TERM (CHRONIC) OVEREXPOSURE EFFECTS:

Welding Fumes – Excess Levels may cause bronchial asthma, lung fibrosis, pneumoconiosis or “siderosis”. **Titanium Dioxide** - Pulmonary irritation and slight fibrosis. **Silica (Crystalline Quartz)** - Overexposure can cause silicosis. IARC studies indicate sufficient evidence for carcinogenicity in humans. **Aluminum Oxide** – Pulmonary fibrosis and emphysema. **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 (Fe₃O₄) are not regarded as fibrogenic materials. **Magnesium Oxide** – No adverse long-term health effects have been reported in the literature. **Zirconium** – May cause pulmonary fibrosis and pneumoconiosis. **Manganese** – 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.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Persons with pre-existing impaired lung functions (asthma-like conditions).

EMERGENCY AND FIRST AID PROCEDURES: Call for medical aid. Employ basic first aid techniques recommended by the American Red Cross. Remove from exposure and treat symptomatically.

Inhalation: If pulmonary symptoms develop (coughing, wheezing, shortness of breath), remove from exposure and seek medical attention.

Skin Contact: If contact occurs, wash thoroughly with soap and water. If irritation develops, seek medical attention.

Eye Contact: Flush with large amounts of water for at least ten (10) minutes. If irritation develops, seek medical attention.

Ingestion: Drink large amounts of water and induce vomiting and seek medical attention.

CARCINOGENICITY: Silica (crystalline quartz) must be considered as a carcinogen under OSHA (29 CFR 1910.1200). Silica (crystalline quartz) is classified as an IARC Group 1 and NTP Group 2 carcinogen.

CALIFORNIA PROPOSITION 65: WARNING: This product contains or produces chemicals known to the State of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code Section 25249.5 et seq.).

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.

VENTILATION: Use enough general ventilation and/or local exhaust to keep the dust below PEL/TLVs in the worker’s breathing zone and the general area.

RESPIRATORY PROTECTION: Use a properly fitted NIOSH approved or equivalent fume respirator or air supplied respirator when handling this material in a confined space or where local exhaust or ventilation does not keep exposure below PEL/TLVs. Refer to OSHA Standard 29 CFR 1910.134 on respiratory protection.

EYE PROTECTION: Use NIOSH approved safety glasses.

PROTECTIVE CLOTHING: Wear hand and body protection, as necessary, to avoid prolonged skin exposure.

PROCEDURE FOR CLEANUP OF SPILLS OR LEAKS: Remove all sources of ignition. Ventilate area of spill. Use cleanup methods, which minimize dust generation such as vacuuming (with appropriate filter to prevent airborne dust levels, which exceed applicable PEL/TLVs). If airborne dust is generated, use an appropriate NIOSH approved respirator.

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.

HANDLING AND STORAGE PRECAUTIONS: Keep container closed when not in use. Store in dry, cool place. Maintain good housekeeping to prevent accumulation of dust. Use cleanup methods, which minimize dust generation such as vacuuming or wet mopping. Wash thoroughly after handling and before eating, smoking or at end of work shift. Do not shake clothing to remove dust. Avoid inhalation and skin contact.

HAZARDOUS TRANSPORTATION REGULATIONS: Not hazardous per US DOT regulations.

SPECIAL PRECAUTIONS (IMPORTANT): Maintain exposure below the PEL/TLVs. Use industrial hygiene monitoring to ensure that your use of this material does not create exposures, which exceed PEL/TLVs. Always use adequate exhaust ventilation.

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