A Subsidiary of:

UNION CARBIDE

UMETCO MINERALS CORPORATION

MATERIAL SAFETY DATA SHEET

Do Not Duplicate This Form, Request an Original

Union Carbide Corporation requests that users of Forsterite study this data sheet to become aware of the product's hazards, and promote safe handling of the product by making this information available to its employees, agents and contractors. If the materials is resold, Union Carbide requests that the purchaser be furnished a copy of this data sheet and advised to provide the information herein to its employees, agents and contractors.

PLAINTIFF'S EXHIBIT UC-793

SECTION I - IDENTIFICATION

PRODUCT NAME:	Forsterite	CASE NO.:	1317-71-1
CHEMICAL NAME:	Anhydrous Magnesium Silicate	FORMULAS:	Forsterite $2MgO-SiO2$
COMPOSITION:	Mixture of Forsterite, Enstatite, Magnetite		Enstatite $2MgO-SiO_2$
			Magnetite Fe_3O_4
		SYNONYMS:	Olivine Sand

SECTION II - PHYSICAL DATA

APPEARANCE:	Tan-brown Granules	SOLUBILITY:	Insoluble
ODOR:	None	VOLATILE CONTENT:	Absorbed $H_2O < 2\%$
SPECIFIC GRAVITY:	3.2 Approximately	DRY BULK DENSITY:	75-95 lb/cu ft

SECTION III - PERMISSIBLE EXPOSURE LIMITS

No specific PEL exists for Forsterite. Use PEL's for nuisance particulate <1% quartz.

	TWA mg/cu M	
	Respirable Fraction	Total Dust
OSHA:	5	15
MSHA:	-	10
ACGIH:	5	10

SECTION IV - FIRE AND EXPLOSIVE HAZARD

COMBUSTIBILITY:	Non-combustible. No fire hazard.
EXPLOSION HAZARD:	Non-explosive.

SECTION V - HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE:

ACUTE

SWALLOWING:	None known.
INHALATION:	Breathing of dust may cause irritation of nose, throat, and bronchial membranes.
EYES:	May cause irritation.
SKIN:	May cause irritation by abrasive action.

CHRONIC

SWALLOWING:	No effects expected.
INHALATION:	May cause foreign body-like reaction in the lungs that is reversible with removal from exposure.
EYES:	No chronic effects expected.
SKIN:	No chronic effects expected.

Union Carbide trial exhibit UC-793: Union Carbide Forsterite Material Safety Data Sheet, with D. F. Kapral Telecon... Published by AsbestosClaims.Law
ACL Doc 16016 · Page 1 of 4 asbestosclaims.law/library/16016/1

PRODUCT - FORSTERITE

EMERGENCY AND FIRST AID PROCEDURES

INHALATION: If breathing is labored, remove to fresh air, oxygen may be administered. If breathing stops start artificial respiration. Call a physician.

EYES: Flush with water for at least fifteen minutes. Call a physician.

SKIN: Wash with soap and water.

NOTES TO PHYSICIAN: This material closely resembles naturally occurring olivine and is expected to act in a like manner. There is no record that olivine has caused pneumoconiosis in man. In the lung, olivine has caused a foreign body reaction but no fibrosis in lab animals.

SECTION VI - REACTIVITY DATA

STABILITY:	Inert material.
CONDITIONS TO AVOID:	None.
HAZARDOUS DECOMPOSITION PRODUCTS:	None.
MATERIALS TO AVOID:	None.

SECTION VII - SPILL, LEAK, AND DISPOSAL INFORMATION

PROCEDURE FOR SPILLS: Fine material should be swept or vacuumed. Avoid maneuvering with compressed air or any other method that generates dust.

WASTE DISPOSAL: Forsterite may be disposed of in sanitary landfill in accordance with federal, state, and local regulations.

SECTION VIII - EMPLOYEE PROTECTION INFORMATION

RESPIRATORY PROTECTION: No standard exists for Forsterite. Where overexposure is anticipated, wear a NIOSH/MSHA approved respirator. For particulate concentrations of 50 mg/m^3 or less in the total dust of 25 mg/M^3 or less in the respirable dust use an approved particulate-filter respirator with quarter-mask or half-mask face-piece. For particulate concentrations greater than noted above, consult "American National Standards, Practices for Respiratory Protection (ANSI Z88-1980).

EYE PROTECTION: Goggles are recommended. Follow safety rules.

OTHER PROTECTION: Gloves are recommended. Avoid contamination of clothing with dust.

VENTILATION: Local exhaust ventilation for dust operations per local, state and federal regulations.

SECTION IX - ADDITIONAL INFORMATION

PRECAUTIONARY STATEMENT: CAUTION: Overexposure to dust may cause irritation to eyes, nose, throat, and bronchial membranes. Avoid breathing dust. Wash hands thoroughly after handling. Wear an approved respirator in dust areas.

LABELING: No DOT precautionary labeling required.

USE: For experimental use only.

HANDLING AND STORAGE: Material should be stored in closed containers and kept dry.

Effective Date: May 1, 1984

Union Carbide Corporation believes that the data herein are current as of the effective date of this data sheet, and that the opinions herein are those of qualified experts. Since the product and the information herein will be used outside the control of Union Carbide Corporation, it is the user's responsibility to establish conditions for safe use of the product.

EMERGENCY HELP TELEPHONE 304-744-3487

TELECON REPORT

TO:	Mr. James Rickey	DATE:	April 5, 1984
LOCATION:	American Colloid Co.	PHONE NO:	(312) 966-5720
FROM:	Mr. D. F. Kapral	FILE NO.:	14530-10971
LOCATION:	Niagara Falls, NY	DISTRIBUTION:	B. L. Ingalls R. J. Klotzbach W. C. Thurber R. G. Woolery F. T. Temple R. G. Legg W. G. Beattie
SUBJECT:	Evaluation of Forsterite and FeV Slags as Refractory Components		

American Colloid Company is a marketer of bentonite clays and binding systems for use in the foundry industry. They have an interest in evaluating our forsterite materials as a replacement for zircon sands or chromite sands. American Colloid would like to take advantage of some marketing synergism in that they could market the casting sands when they are making sales calls for their bentonite clay systems.

Mr. Rickey indicated that the market for chromite sands, which are really chromite ores, is 60,000-80,000 tons per year. The market for zirconite sands is also in the range or 60,000-80,000 tons per year.

Mr. Rickey indicated that a nominal selling price for bagged forsterite in this market place would be $150-175 per ton.

Mr. Rickey requested a coffee-can sized sample of forsterite for feasibility testing. The partcile size distribution of interest to American Colloid would be material sized 60 x 140 mesh. They have the ability to size a material which we send to them.

Mr. Rickey is also interested in evaluating our ferrovanadium slags as a refractory material. He indicated that a 5 gallon sample would be sufficient for laboratory testing purposes.

Samples are being prepared for shipment.

UNION CARBIDE CORPORATION P. O. BOX 579, · 4625 ROYAL AVE., NIAGARA FALLS, N. Y. 1430:
METALS DIVISION

May 1, 1984

Mr. James Rickey
American Colloid Company
50100 Suffield Court
Skokie, IL 60077

Subject: Sample of Forsterite for Foundry Sand Characterization Studies

Dear Mr. Rickey:

We are sending under separate cover two five pound containers of a material identified as Forsterite. The material is a mixture of Forsterite ($2MgO-SiO_2$), Enstatite ($MgO-SiO_2$) and free Magnetite (Fe_3O_4). In our phone conversation you had indicated that material sized at ~60 x 140 Mesh would be of interest, and that you had the ability to perform some sizing and screening of the material.

Accordingly, we have sent 5 pounds of material sized 60 x 140 and 5 pounds of courser material. You will note that the course material is quite friable and readily attrites to a particle size approaching commercial olivine flour.

I have enclosed a Material Safety Data Sheet for this experimental product. The information displayed in this data sheet represents our knowledge to date concerning the material. For the characterization work that is contemplated the material should be treated in like manner as foundry sands or olivine.

While the material has approximately 8% Fe as Fe_3O_4 the iron can be reduced to approximately 2% if this will enchance the attractiveness of the material for the application that you are investigating. Please let me know if you would like to characterize a sample with lower iron content.

We also have the ability to alter the size distribution of the Forsterite and perhaps reduce the friability of the granules via the use of additives prior to a sintering step. Therefore, we would be interested in knowing of any alterations you might suggest in physical characteristics or chemical composition of the material that would enchance its applicability to foundry use.

If you have questions concerning the data sheets or the material please feel free to call me at 716-278-3283 or after working hours at 716-773-1303..

Very truly yours,

D. F. Kapral

/mau
Enclosure

Blind Copies: American Colloid: HBRhodes: RJKlotzbach: ~~WCThurber~~: BLIngalls: JTKelly: File No. 10971