



MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Name: **QSP MW PAPER**
 Chemical Name: Vitreous Silicate Fibers
 Synonym(s): Slag wool, mineral wool, rock wool, MMVF, SVF
 Grade(s): Not applicable

Manufacturer/Supplier: **Unifrax Corporation**
 2351 Whirlpool St.
 Niagara Falls, NY 14305-2413

Product Stewardship Information Hotline
 1-800-322-2293 (Monday - Friday 8:00 a.m. - 4:30 p.m. EST)

CHEMTREC Assist: 1-800-424-9300

Effective Date: 04/03/1998 Supersedes: N. App. Print Date: 06/10/2003

2. COMPOSITION / INFORMATION ON INGREDIENTS

| <u>COMPONENTS</u> | <u>CAS NUMBER</u> | <u>% BY WEIGHT</u> |
|--------------------|-------------------|--------------------|
| Mineral Wool Fiber | None Assigned | 86-94 |
| Acrylic latex | Mixture | 6-14 |

(See Section 8 "Exposure Controls / Personal Protection" for exposure guidelines)

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

WARNING! POSSIBLE CANCER HAZARD BY INHALATION. MAY CAUSE SKIN, EYE, AND RESPIRATORY TRACT IRRITATION. HAZARD DEPENDS ON DURATION AND LEVEL OF EXPOSURE. WHITE TO GRAY PAPER.

HAZARD RATINGS

HAZARDOUS MATERIALS INFORMATION SYSTEM (HMIS) RATINGS:

Health: 1* Flammability: 0 Reactivity: 0 Personal
 Protection Index: X

POTENTIAL HEALTH EFFECTS

TARGET ORGANS: Skin, eyes, and lungs.

INHALATION: If inhaled in sufficient quantity, may cause respiratory tract irritation. Symptoms may include scratchiness of the nose or throat, cough or chest discomfort.

EYE CONTACT: Slightly to moderately irritating. Fibers may be abrasive; prolonged contact may cause damage to the outer surface of the eye.

SKIN CONTACT: Slightly to moderately irritating. Exposure may result in

irritation, inflammation, rash or itching.

INGESTION: If ingested in sufficient quantity, may cause gastrointestinal disturbances. Symptoms may include nausea, vomiting, or abdominal pain.

CHRONIC EFFECTS: Studies to date, involving occupationally exposed workers, have not identified any clear relationship between respiratory disease and mineral wool exposure. Long-term, high-dose exposure to specially-sized, rodent respirable rock wool has resulted in the development of fibrosis in rats. See Sections 11 & 16 of this MSDS for more information.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing medical conditions, including dermatitis, asthma or chronic lung disease may be aggravated by exposure; individuals who are atopic (with a history of allergies) may experience greater amounts of skin and respiratory irritation.

HAZARD CLASSIFICATION: Although studies, involving occupationally exposed workers, have not identified any clear relationship between respiratory disease and mineral wool exposure, results from animal testing have been used as the basis for hazard classification:

The **International Agency for Research on Cancer (IARC)** has classified ceramic fiber, fibrous glasswool and mineral wool (rockwool & slagwool) as possible human carcinogens (Group 2b) based on sufficient evidence of carcinogenicity in animals, but insufficient data in humans.

The **Commission of The European Communities (DG XI)** has classified mineral wool among substances which should be regarded as if they are harmful to man.

The **American Conference of Governmental Industrial Hygienists (ACGIH)** has categorized rock wool and slag wool as animal carcinogens (A3).

4. FIRST AID MEASURES

FIRST AID PROCEDURES

INHALATION: If respiratory tract irritation occurs, relocate individual to a dust free environment. Get medical attention if irritation persists. See Section 8 for additional measures to reduce or eliminate exposure.

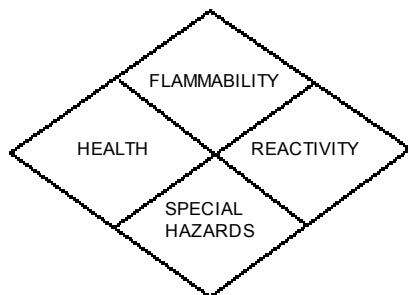
EYE CONTACT: If eyes become irritated, flush immediately with large amounts of lukewarm water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Do not rub eyes. Get medical attention if irritation persists.

SKIN CONTACT: If skin becomes irritated, remove contaminated clothing. Do not rub or scratch exposed skin. Wash area of contact thoroughly with soap and water. Using a skin cream or lotion after washing may be helpful.

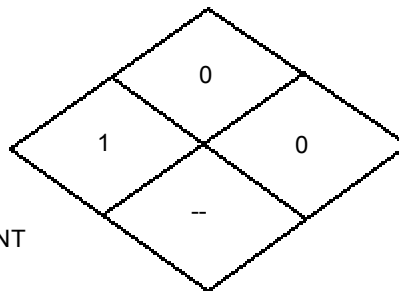
INGESTION: If gastrointestinal irritation occurs, relocate individual to a dust free environment. Seek medical attention if symptoms persist.

NOTES TO PHYSICIANS: Skin and respiratory effects are the result of mechanical irritation; fiber exposure does not result in allergic manifestations.

5. FIRE FIGHTING MEASURES



4 -- EXTREME
3 -- HIGH
2 -- MODERATE
1 -- SLIGHT
0 -- INSIGNIFICANT



NFPA Unusual Hazards: None

Flammable Properties:

Flashpoint: None.
Method: N. App

Flammable Limits:

Lower Flammable Limit: N. App.
Upper Flammable Limit: N. App.

Autoignition Temperature: None.

Hazardous Decomposition Products: Thermal decomposition of binder from fires or from first heat of product may release vapors of smoke, carbon monoxide, carbon dioxide, oxides of nitrogen and small amounts of aromatic and aliphatic hydrocarbons. Use adequate ventilation or other precautions to eliminate exposure to vapors resulting from thermal decomposition of binder. Exposure to thermal decomposition fumes may cause respiratory tract irritation, bronchial hyper-reactivity or an asthmatic-type response.

Extinguishing Media: Use extinguishing media suitable for type of surrounding fire.

Fire Fighting Instructions: See "Extinguishing Media" above.

Unusual Fire and Explosion Hazard: None.

6. ACCIDENTAL RELEASE MEASURES

SPILL PROCEDURES

Use vacuum suction with HEPA filters to clean up spilled material. Use wet sweeping or a dust suppressant where sweeping is necessary.

7. HANDLING AND STORAGE

HANDLING AND STORAGE

Handle mineral wool with caution. Minimize airborne dusts by avoiding the unnecessary disturbance of materials.

Clean Up

Dust suppressing cleaning methods such as wet sweeping or vacuuming should be used to clean the work area. If vacuuming is used the vacuum must be equipped with a HEPA filter. Compressed air or dry sweeping should not be used for cleaning. Dust suppressing compounds may be used to clean up light dust.

For additional information regarding the use and handling of mineral wool, contact the Unifrax Corporation Product Stewardship Information Line at 1-800-322-2293 (See Section 16).

EMPTY CONTAINERS: Product packaging may contain residue. Do not reuse.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES

| Components | <u>OSHA (PEL)</u> | <u>ACGIH (TLV)</u> | <u>SUPPLIER</u> |
|---------------|--|------------------------|------------------------|
| Mineral Wool | 15 mg/m ³ (Total Dust) 5 mg/m ³ (Respirable Dust) | 1 fiber/cc 8-hr TWA | 1 fiber/cc 8-hr TWA |
| Acrylic latex | None established | None established | None established |

ENGINEERING CONTROLS

Dust suppressing control technologies such as local exhaust ventilation, point of generation dust collection, down draft work stations, emission controlling tool designs, and materials handling equipment are effective means of minimizing airborne fiber emissions. For additional information, contact the Unifrax Corporation Product Stewardship Information Line at 1-800-322-2293 (See Section 16).

PERSONAL PROTECTION EQUIPMENT

Respiratory Protection: Mineral Wool

When engineering and/or administrative controls are insufficient, the use of appropriate respiratory protection, pursuant to the requirements of OSHA 1910.134 AND 29 CFR 1926.103, is recommended. The following information is provided as an example of appropriate respiratory protection for mineral wool. The evaluation of workplace hazards and the identification of appropriate respiratory protection is best performed, on a case by case basis, by a qualified Industrial Hygienist.

| SUPPLIERS' RESPIRATORY PROTECTION RECOMMENDATIONS (WHEN HANDLING MINERAL WOOL PRODUCTS) | |
|--|--|
| <u>Respirable Airborne Fiber Concentration</u> | <u>Respirator Recommendation</u> |
| Less than 1 f/cc | No specific recommendation. User preference based upon conditions present |
| 1 f/cc to 10 f/cc | Half-face, air purifying respirator equipped with a high-efficiency particulate air (HEPA) filter cartridge |
| 10 f/cc to 50 f/cc | Full-facepiece, air purifying respirator equipped with a high-efficiency particulate air (HEPA) filter cartridge |
| More than 50 f/cc | Full-facepiece, positive pressure supplied air respirator |

OTHER INFORMATION:

- (1) Concentrations based upon an eight hour time weighted average (TWA) as determined by air samples collected and analyzed pursuant to NIOSH method 7400 (B) for airborne fibers.
- (2) In the absence of other objective data or when concentrations are unknown, the manufacturer recommends the use of half-face, air purifying respirator equipped with a high-efficiency particulate air (HEPA) filter cartridge.

- (3) Situations involving a potential exposure to airborne contaminants should be evaluated by a qualified industrial hygienist for the selection of appropriate respiratory protection and air monitoring.

SKIN PROTECTION: Wear gloves, head coverings and full body clothing as necessary to prevent skin irritation. Washable or disposable clothing may be used. If possible, do not take unwashed clothing home. Work clothes should be washed separately from other clothing and the washing machine rinsed thoroughly following use. Inform the launderer of the proper procedures. Store work clothes and street clothes separately to prevent contamination.

EYE PROTECTION: Wear safety glasses or chemical goggles to prevent eye contact. Do not wear contact lenses unless chemical goggles are also worn. Do not touch eyes with contaminated body parts or materials. Have eye washing facilities readily available where eye contact can occur.

9. PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|--------------------------|--------------------------|------------------------|------------|
| Odor and Appearance: | White to gray paper | | |
| Chemical Family: | Vitreous Silicate Fibers | | |
| Boiling Point: | N/A | % Solubility in Water: | Negligible |
| Melting Point: | >2200°F | Specific Gravity: | 0.16 |
| Vapor Pressure: | N/A | pH: | N/A |
| Vapor Density (Air = 1): | | N/A % Volatile: | 0 |
| Molecular Weight: | N/A | Molecular Formula: | N/A |

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under conditions of normal use.

INCOMPATIBILITY: Soluble in hydrofluoric acid, phosphoric acid, and concentrated alkali.

CONDITIONS TO AVOID: None.

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition of binder from fires or from first heat of product may release vapors of smoke, carbon monoxide, carbon dioxide, oxides of nitrogen and small amounts of aromatic and aliphatic hydrocarbons. Use adequate ventilation or other precautions to eliminate exposure to vapors resulting from thermal decomposition of binder. Exposure to thermal decomposition fumes may cause respiratory tract irritation, bronchial hyper-reactivity or an asthmatic-type response.

HAZARDOUS POLYMERIZATION: Not Applicable.

11. TOXICOLOGICAL INFORMATION

EPIDEMIOLOGY

The most comprehensive morbidity study of U. S. rock and slag wool workers was conducted by researchers at Tulane University who reported that the "prevalence of respiratory symptoms are not increased" and there was "no coherent pattern of symptoms

in relation to exposure" (Weill 1983). An update of this study (Hughes 1993) found no lung abnormalities that could be attributed to rock and slag wool fiber exposure. In a European study, Skuric and Stahuljak-Beritic (1984) observed no excess change in lung function that could be associated with worker exposure to rock wool fibers for at least five years. Malmberg (1984) similarly observed no abnormalities in lung function and found normal chest X-rays among workers with more than ten years of experience in rock wool production.

In both the U.S. and Europe, mortality studies of rock and slag wool manufacturing workers have been periodically updated over the past decade. The most recent U. S. study (Marsh 1996) summarized the 1946 through 1989 mortality data of more than 3,400 workers at six rock and slag wool plants. No increased mesothelioma was observed in this population. Small, but statistically insignificant, increases in respiratory system cancer and non-malignant respiratory diseases were observed among workers from the five plants on whom full employment information was available. In the sixth plant, which had a long and extensive history of asbestos use, statistically significant increases were observed for both these causes of death. The authors reported that these increases "may be associated with asbestos use in the plant."

A European mortality study of seven rock and slag plants (Simonato 1987) was recently updated through 1990 (Bofetta 1997). As in prior reports on this population, no associations were found between employment in these plants and non-cancer causes of death, nor with any cancers other than of the lung and pleura. The authors did report among rock/slag workers an increased risk of lung cancer associated with time since first employment and duration of employment, as well as four deaths due to pleural mesothelioma.

TOXICOLOGY

Man-made vitreous fiber (MMVF) based products, including mineral wool, contain fibers of different sizes, some of which are small enough to be respirable by humans. Scientists have been conducting research since the 1940's to determine the potential risks for adverse health effects which may result from fiber inhalation.

In 1987 the International Agency for Research on Cancer (IARC) classified man-made vitreous fibers including glasswool, rockwool, slagwool, and RCF as possible human carcinogens (2B).

To date, a number of toxicological studies have been conducted which utilize non-physiological exposure methods such as intrapleural, intraperitoneal and intratracheal implantation or injection. One injection test of slag wool at high concentration produced significant tumors. Some experts, however, suggest that these tests have limited relevance because they bypass many of the biological mechanisms which prevent fiber deposition or facilitate fiber clearance.

Other toxicological studies utilizing a physiological exposure method, inhalation, have produced findings of respiratory disease in rodents. The most recent mineral wool inhalation study was conducted at the Research and Consulting Company, Geneva, Switzerland. Rats were exposed, using a nose-only inhalation system, to specially-prepared rock and slag wool at concentrations of 3, 16 and 30 mg/m³ for 6 hours/day, 5 days/week, for up to 24 months.

Rats exposed for 18 months to rock wool at the mid-and high dose levels showed minimal fibrosis (scarring of the lung). After 24 months of exposure, the minimal fibrosis had not progressed. For slag wool, no fibrosis occurred at any exposure level although minimal progressions of reversible pulmonary alterations occurred between six and 24 months. Between the 24-month sacrifice, when exposure was stopped, and the terminal sacrifice (at 29 months), these non-specific inflammatory responses had disappeared.

To obtain more epidemiology or toxicology information, please call the toll free telephone number for the Unifrax Corporation Product Stewardship Program found in Section 16 - Other Information.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information: No data available.

Distribution: No data available.

Chemical Fate Information: No data available.

13. DISPOSAL CONSIDERATIONS

DISPOSAL: Mineral wool fiber is not classified as a hazardous waste according to Federal regulations (40 CFR 261). Check local, regional, state or provincial regulations for applicable requirements for disposal. Any processing, use, alteration or chemical additions to the product, as purchased, may alter the disposal requirements. Under Federal regulations, it is the waste generator's responsibility to properly characterize a waste material, to determine if it is a "hazardous" waste.

EMPTY CONTAINERS: Product packaging may contain product residue. Do not reuse.

14. TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION (DOT)

BILL OF LADING DESCRIPTION (49 CFR 172.202): QSP MW PAPER (NON-REGULATED)

UNITED NATIONS (UN) NUMBER: NOT APPLICABLE

NORTH AMERICA (NA) NUMBER: NOT APPLICABLE

15. REGULATORY INFORMATION

Key statutory and regulatory classifications or listings for the product, as manufactured, which may impact product storage, use, handling or disposal:

U.S. FEDERAL REGULATIONS

Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA):

Constituents regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA 40 CFR 302):

| <u>Constituent</u> | <u>RQ in Pounds</u> |
|--------------------|---------------------|
| NONE | |

Most mineral wool products, including this product, are composed of mineral wool with an average diameter greater than 1 micron, and therefore are not considered CERCLA hazardous substances. See 60 FR 30934 (June 12, 1995).

INTERNATIONAL REGULATIONS**Canadian Workplace Hazardous Materials Information System (WHMIS):**

The following Canadian Workplace Hazardous Materials Information System (WHMIS) categories apply to this product:

Compressed Gas: -- Flammable/Combustible: -- Oxidizer: --
 Acutely Toxic: --
 Other Toxic Effects: X Biohazardous: -- Corrosive: ---
 Dangerously Reactive: --

Canadian Environmental Protection Act (CEPA):

All substances in this product are listed, as required, on the Domestic Substances List (DSL).

Chemical(s) which are listed on the Non-Domestic Substances List:

| <u>Chemical Name</u> | <u>CAS Number</u> |
|----------------------|-------------------|
| NONE | |

16. OTHER INFORMATION**Product Stewardship Program**

The Unifrax Corporation has established a program to provide customers with up-to-date information regarding the proper use and handling of mineral wool. In addition, Unifrax Corporation has also established a program to monitor airborne fiber concentrations at customer facilities. If you would like more information about this program, please call the Unifrax Corporation Product Stewardship Information Hotline at 1-800-322-2293.

Definitions:

| | |
|--------------------------|---|
| ACGIH: | American Conference of Governmental Industrial Hygienists |
| CAS: | Chemical Abstracts Service |
| EPA: | Environmental Protection Agency |
| f/cc: | Fibers per cubic centimeter |
| HEPA: | High Efficiency Particulate Air |
| HMIS: | Hazardous Materials Information System |
| mg/m³: | Milligrams per cubic meter of air |
| NFPA: | National Fire Protection Association |
| NIOSH: | National Institute for Occupational Safety and Health |
| OSHA: | Occupational Safety and Health Administration |
| | 29 CFR 1910.134 & 1926.103: OSHA Respiratory Protection Standard |
| | 29 CFR 1910.1200 & 1926.59: OSHA Hazard Communication Standard |
| PEL: | Permissible Exposure Limit |
| RCRA: | Resource Conservation and Recovery Act |
| SARA: | Superfund Amendments and Reauthorization Act |
| Title III: | Emergency Planning and Community Right to Know Act |
| Section 302: | Extremely Hazardous Substances |
| Section 304: | Emergency Release |
| Section 311: | MSDS/List of Chemicals and Hazardous Inventory |
| Section 312: | Emergency and Hazardous Inventory |
| Section 313: | Toxic Chemicals and Release Reporting |
| SVF: | Synthetic Vitreous Fiber |
| TLV: | Threshold Limit Value (ACGIH) |
| TSCA: | Toxic Substances Control Act |

Revision Summary: Not applicable.

MSDS Prepared By: UNIFRAX HSEQ DEPARTMENT

DISCLAIMER

The information presented herein is based on data considered to be accurate as of the date of preparation of this Material Safety Data Sheet. However, no warranty or representation, express or implied, is made as to the accuracy or completeness of the foregoing data and safety information. In addition, no responsibility can be assumed by vendor for any damage or injury resulting from abnormal use, from any failure to adhere to recommended practices, or from any hazards inherent in the nature of the product.



More **Unifrax** High Temperature Insulation Information On The Web:

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| Official Unifrax High Temperature Insulation Website | http://www.unifrax.com |
| Unifrax High Temperature Insulation Information | http://www.high-temperature-insulation.com |
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