ROXUL®
The Better Insulation™

Material Safety Data Sheet

Material Name: Mineral Wool Insulation

1. Identification:

1.1 Product Generic Name: Mineral Wool Insulation

1.2 Product Use: Commercial, Industrial and Residential Insulation

1.3 Products:
CavityRock™, ConRock™, CurtainRock™, DrainBoard™, EnerWrap™, Flexibatt®, Noise Stop, RHF™, RHT™, ROXUL AFB™, ROXULPlus®, ROXUL® 1200, RXL™, RW™, SAFE, Safe'n'Sound™, Techton™ 1200

1.4 Company Address:
Roxul Inc.
551 Harrop Drive
Milton, Ontario
Canada
L9T 3H3

1.5 Web Site: www.roxul.com

1.6 If further information is required, please call or fax Roxul Inc.
Telephone: 1-800-265-6878 or 905-878-8474 Fax: 905-878-8077

2. Information on Ingredients:

Ingredient Name	CAS Number	%
Mineral Fiber	RN 65997-17-3	94-99
Cured Urea Extended Phenolic Formaldehyde Binder	25104-55-6	1-6

3. Hazards Identification:

3.1 Appearance and Odor: Grey, green fibrous batt or board.

3.2 Emergency Overview: Acrid smoke may be generated during a fire.

Exposure to dust may be irritating to the eyes, nose and throat.

3.3 Potential Health Effects:

3.3.1 Inhalation: Temporary mechanical irritation of the upper respiratory tract (scratchy throat, coughing, congestion) may result from exposures to dusts and fibers in excess of applicable exposure limits.

3.3.2 Skin Contact: Dusts and fibers may cause temporary mechanical irritation (itching) or redness to the skin.

3.3.3 Eye Contact: Dusts and fibers may cause temporary mechanical irritation (itching) or redness to the eyes.

3.3.4 Ingestion: Ingestion of this product is unlikely and not intended under normal conditions of use. Ingestion of this product may cause gastrointestinal irritation.

3.3.5 Existing Medical Conditions: Pre-existing chronic eye, skin and respiratory conditions may temporarily worsen due to exposure to dusts and fibers.

4. First-Aid Measures:

4.1 Inhalation: If irritation occurs, remove the affected person to fresh air. Drink water, and blow nose, to clear dusts and fibres from throat and nose. If irritation persists, consult a physician.

4.2 Skin: If irritation occurs, do not rub or scratch. Rinse under running water prior to washing with mild soap and water. Use a washcloth to help remove fibres. If irritation persists, consult a physician.

4.3 Eyes: If irritation occurs, flush eyes with plenty of water for at least 15 minutes. Do not rub the eyes. Consult a physician if irritation persists.

4.4 Ingestion: Ingestion of this product is unlikely and not intended under normal conditions of use. If it does occur, rinse mouth with plenty of water to help remove dust and fibres, and drink plenty of water to help reduce potential gastrointestinal irritation. Do not induce vomiting unless directed to do so by a physician.

5. Fire-Fighting Measures:

The products are non-combustible and do not pose a fire hazard. However, packaging material may burn.

5.1. Suitable extinguishing media: Water, foam, carbon dioxide or dry powder

5.2 Extinguishing media which must not be used for safety reasons: None

5.3 Combustion products: Carbon dioxide, carbon monoxide and trace gases

5.4 Special protective equipment for fire-fighters: Observe normal fire fighting procedures

5.5 Flash point: None

Flash Point Method Used: Not Applicable

Upper Flammable Limit (UFL): Not Applicable

Lower Flammable Limit: Not Applicable

Autoignition: Not Applicable

Explosive Properties: Not Applicable

6. Accidental Release Measures:

6.1 Containment Procedures: Pick up large pieces and scoop up dusts and fibers after they have settled out of air. These materials will disperse and settle along the bottom of waterways and ponds. It cannot easily be removed once it is waterborne, but is considered non-hazardous in water.

6.2 Cleanup Procedures: Use OSHA-recommended work practices and protective equipment as described in Section 8 of this Material Safety Data Sheet. Avoid generating airborne dusts and fibers during cleanup. Do not use compressed air. Vacuum dusts and fibers. Place material in an appropriate container for disposal as non-hazardous waste.

6.3 Response Procedures: Isolate area. Keep unnecessary personnel away. If dry methods or compressed air are used to collect dusts and fibers, all personnel in the area should wear OSHA-approved protective equipment (see Section 8 of this Material Safety Data Sheet).

7. Handling and Storage:

7.1 General Precautions:

- Utilize OSHA-recommended work practices and protective equipment when using the products (see Section 8 of this Material Safety Data Sheet).

7.2 Handling:

- Unpack material at application site to avoid unnecessary handling of product.
- Keep work areas clean. Avoid unnecessary handling of scrap material and debris by placing such materials in suitable containers, which should be kept as close to the work area as possible.
- Ensure good ventilation. Local exhaust ventilation may be required if the method of use produces dust levels which exceed applicable exposure limits (see Section 8 of this Material Safety Data Sheet).
- Avoid excessive eye and skin contact with dusts and fibers.
- Use recommended cleanup procedures to avoid buildup of dusts and fibers in the work area.

7.3 Storage:

- Keep material in original packaging until it is to be used.
- Store material to protect against adverse conditions including precipitation.

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8. Exposure Controls/Personal Protection:

8.1 Exposure Guidelines:

8.1.1 General Product Information: Follow all applicable exposure limits. Local regulations may apply. Roxul recommends that users of the products adhere to the OSHA-recommended PEL of 1 f/cc TWA (fibers longer than 5 μm with diameters less than 3 μm). This recommended PEL, together with recommended work practices and personal protective equipment, were adopted in a Health and Safety Partnership Program (HSPP) agreement in 1999 between OSHA and the North American Insulation Manufacturers Association (NAIMA), of which Roxul is a member. Adherence to the OSHA-recommended PEL, work practices and protective equipment in the HSPP is expected to provide appropriate protection against all inhalation-related health risks that may be associated with exposures to mineral wool fibers (ACGIH 1997; NAIMA 1999; OSHA 1999; National Research Council 2000, IARC 2001), and to minimixe eye and skin irritation.

8.1.2 Component Exposure Limits:

Source	Legal or Recommended Exposure Limit	Exposure
OSHA	1 f/cc TWA (recommended)	Synthetic Vitreous Fibers, > 5 μm length, < 3 μm diameter
ACGIH	1 f/cc TWA (threshold limit value – TLV)	Synthetic Vitreous Fibers, > 5 μm length, < 3 μm diameter
OSHA	15 mg/m^3 TWA-PEL (total particulate) 5 mg/m^3 TWA-PEL (respirable particulate)	Inert dust and particulates not otherwise regulated
ACGIH	10 mg/m^3 TWA-TLV (inhalable particulate) 3 mg/m^3 TWA-TLV (respirable particulate)	Particulates not otherwise classified, containing no asbestos and <1% crystalline silica

8.2 Equipment and Work Practices: Follow OSHA-recommended equipment and work practices. A complete copy of these practices can be obtained from Roxul Inc. (see Section 1 of this Material Safety Data Sheet), and is available on the OSHA website (http://www.osha.gov/SLTC/syntheticmineralfibers/app_1.html).

8.2.1 Follow OSHA-recommended safe handling practices listed in Section 7.2 above.

8.2.2 Where feasible, general dilution ventilation or local exhaust ventilation should be used as necessary to maintain exposures below applicable exposure limits. Dust collection systems should be used in cutting or machining operations and may be needed when using power tools.

8.2.3 Follow OSHA-recommended work practices when fabricating, installing or removing product.

8.3 Personal Protective Equipment::

8.3.1 Respiratory:

8.3.1.1 General:
If dust levels exceed applicable exposure limits, wear a NIOSH certified dust respirator with an efficiency rating of N95 or higher. Use disposable face masks complying with NIOSH respirator standards, such as a 3M Model 8210 (or 8710) (3M Model 9900 in high humidity environments) or equivalent. For exposures up to five times the established exposure limits use a quarter-mask respirator, rated N95 or higher; and for exposures up to ten times the established exposure limits use a half-mask respirator (e.g. MSA's DM-11, Racal's Delta N95, 3M's 8210), rated N95 or higher. For exposures up to 50 times the established exposure limits use a full-face respirator, rated N99 or higher.

8.3.1.2 Specific Operations:
Wear a NIOSH certified dust respirator with an efficiency rating of N95 or higher, such as a 3M Model 8210 (or 8710) (3M Model 9900 in high humidity environments) or equivalent, when fabricating, installing or removing product.

8.3.2 Skin:
Wear loose fitting, long sleeved and long-legged clothing to prevent irritation. A head cover is also recommended, especially when working with material overhead. The use of suitable gloves is also recommended. Skin irritation cannot occur if there is no contact with the skin. Do not tape sleeves or pants at wrists or ankles. Remove fibers from the work clothes, before leaving work to reduce potential skin irritation. If working in a very dusty environment it is advisable to shower and change clothes

8.3.3 Eyes/Face:
Wear safety goggles or safety glasses with side shields.

9. Physical and Chemical Properties:

9.1	Appearance:	Grey, green fibrous batt or board
9.2	State:	Solid
9.3	Odor:	May have slight resin odour
9.4	Boiling point::	n.a.
9.5	Melting point:	Approximately 2150 °F (1177 °C)
9.6	Vapour pressure:	n.a.
9.7	Vapour Density:	n.a.
9.8	Specific Gravity:	n.a.
9.9	Evaporation Rate:	n.a.
9.10	Freezing Point:	n.a.
9.11	Viscosity:	n.a.
9.12	Solubility:	Insoluble (H_2O)
9.13	Partition coefficient:	n.a.

n.a. = not applicable

10. Stability and Reactivity:

10.1 Stability: Stable

10.2 Reactivity: Not reactive

10.3 Thermal decomposition products:
Primary combustion products of the cured urea extended phenolic formaldehyde binder, when heated above 390 °F (200 °C), are carbon monoxide, carbon dioxide, ammonia, water and trace amounts of formaldehyde. Other undetermined compounds could be released in trace quantities. Emission usually only occurs during the first heating. The released gases may be irritating to the eyes, nose and throat during initial heat-up. Use appropriate respirators (air supplied) particularly in tightly confined or poorly ventilated areas during initial heat-up.

10.4 Hazardous Polymerization: Will not occur

10.5 Incompatible Materials: This product reacts with hydrofluoric acid.

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11. Toxicological Information:

11.1 Acute Toxicity:
Coarse fibers and dust from mineral wool prodcuts can cause temporary mechanical irritation (itching, redness) of the skin, and of the mucous membranes in the eyes and in the upper respiratory tract (nose and throat). The itching and possible inflammation are a mechanical reaction to dust and coarse fibers (of more than about 5 µm in diameter), and are not damaging in the way chemical irritants may be. They generally abate within a short time after the end of exposure. When products are handled continually, the skin itching generally diminishes.

11.2 Chronic Toxicity:

11.2.1 Summary: In October 2001, IARC completed a re-evaluation of respirable mineral wool fibers and classified them in Group 3 (not classifiable as to their carcinogenicity to humans). A summary of the most important scientific studies appears below:

11.2.2 Human Data:

11.2.2.1 The possible carcinogenic effects of exposure to mineral wool fibers has been evaluated in a number of epidemiological (human) studies. Most of this research, including large long-tem studies of mineral wool production workers in the U.S. and Europe, has been sponsored or supported by the North American and International thermal insulation industries, including Roxul Inc. Published reports of the early results of these studies identified significantly elevated rates of respiratory cancer in several subcohorts of the worker populations under evaluation (e.g., Simonato et al. 1987; Enterline et al. 1987). However, the studies had several methodological limitations, including failure to control for confounding exposures to other possible causes of the elevated cancer risk, including tobacco use and occupational exposures to recognized carcinogens such as asbestos. For these reasons, the authors of these reports did not interpret the results as establishing an association between exposure to mineral wool fibers and an increased risk of cancer. Several of these earlier reports formed part of the basis for IARC's previous classification of mineral wool fibers in Group 2B (possibly carcinogenic to humans) (IARC 1987).

11.2.2.2 Follow-up studies, including case-control studies designed to exclude the contribution of confounding exposures to the cancer experience of the study populations, found no evidence that mineral wool fibers are associated with an increased cancer risk (Marsh et al. 1996; Wong, et al. 1991; Kjaerheim et al. 2001). In announcing the new Group 3 classification for mineral wool fibers, IARC stated: "Epidemiologic studies published during the 15 years since the previous IARC Monographs review of these fibers in 1988 provide no evidence of increased risks of lung cancer or of mesothelioma (cancer of the lining of the body cavities) from occupational exposures during manufacture of these materials" (IARC 2001).

11.2.3 Animal Data:

11.2.3.1 Several studies of intraperitoneal injection of high doses of mineral wool fibers have produced significant increases in the incidence of mesothelioma (IARC 2002). The intraperitoneal injection studies formed part of the basis for IARC's previous (IARC 1987) Group 2B classification for mineral wool fibers. Leading scientists agree that intraperitoneal injection studies (i.e., surgical implantation or injection into the chest or abdomen) are the least relevant type of animal study for evaluating potential human risk for fiber exposures, because such studies bypass the animals' natural defense mechanisms and involve a type and pattern of exposure (implantation of a high dose early in life) that

does not mimic human patterns of exposure (inhalation of much lower doses over a lifetime) (National Research Council 2000).

11.2.3.2 A well-designed long-term inhalation study in rats exposed to mineral wool fibers found no significant increase in lung tumor incidence, and no mesotheliomas (IARC 2002). Likewise, in two intratracheal instillation studies of mineral wool fibers, no significant increase in the incidence of lung tumors or mesotheliomas was found (IARC 2002). Inhalation studies are regarded as the most relevant type of animal data for evaluating potential human risk, and intratracheal instillation studies, while less relevant, are considered valuable for the initial screening of fibrous compounds (National Research Council 2000). Thus, evaluating all the available animal studies in conjunction with the human data, IARC's most recent review finds "inadequate evidence overall for any cancer risk" from mineral wool fibers (IARC 2001).

11.3 Evaluations of Potential Carcinogenicity:

Source	Classification	Description
IARC	Group 3	Not Classifiable as a Human Carcinogen
ACGIH	Group A3	Confirmed Animal Carcinogen with Unknown Relevance to Humans

12. Ecological Information:

12.1 Ecotoxicity: No data available for the products. The products are stable, are not expected to cause harm to animals, plants or fish, and have no other known adverse environmental effects.

12.2 Environmental Fate: No data available for the products.

13. Disposal Considerations:

13.1 US EPA Waste Number & Descriptions:

13.1.1 General Product Information: The products, as supplied, are not expected to be a characteristic hazardous waste under RCRA if discarded.

13.1.2 EPA Waste Numbers: No EPA Waste Numbers are applicable for this product's components.

13.2 Disposal Instructions: Product is not considered a hazardous waste. Dispose of waste material according to Federal, State, Provincial, and Local environmental regulations.

14. Transport Information:

14.1 General: No special precautions.

14.2 US DOT Information: This product is not classified as a hazardous material for transport.

15. Regulatory Information:

15.1 U.S. Regulations:

15.1.1 Toxic Substances Control Act (TSCA): All components in this product are listed, as required, on the US EPA TSCA inventory, or are not required to be listed

15.1.2 CERCLA: Includes mineral fiber emissions from facilities manufacturing or processing glass rock or slag fibers (or other mineral derived fibers) of average diameter 1 micrometer or less; Statutory RQ = 1 pound (.454 kg); no final RQ is being assigned to the generic or broad class (related to Fine mineral fibers).

15.1.3 Clean Air Act: Mineral wool fiber appears on the Clean Air Act-1990 Hazardous Air Pollutants List.

15.2 State and Local Regulations: State, Provincial, and Local regulations not identified in this Material Safety Data Sheet may apply.

15.3 WHMIS: The products have been classified in accordance with the hazard criteria of the Controlled Product Regulations and this Material Safety Data Sheet contains all the information required by the Controlled Product Regulations

15.3.1:	WHMIS IDL:	No components are listed on the IDL
15.3.2:	WHMIS Classification:	No components are classified as controlled products.

16. Further Information:

16.1 Potential Health Effects:

IARC Monograph Man-made Vitreous Fibres, press release October 2001

Safety in the Use of Mineral and Synthetic Fibers, Occupational Safety and Health Series. International Labor Office (ILO).

Information about "Health and Safety Research on Rock- and Slag-wool" can be obtained from the North American Insulation Manufacturers Association (NAIMA), 44 Canal Center Plaza, Suite 310, Alexandria, VA 22314, USA). Home-page: http://www.naima.org

16.2 Key/Legend:

ACGIH = American Conference of Governmental Industrial Hygienists; CAA = Clean Air Act; CAS = Chemical Abstracts Service; CERCLA = Comprehensive Environmental Response, Compensation and Liability Act; DOT = Department of Transportation; EPA = Environmental Protection Agency; HMIS = Hazardous Material Identification System; HSPP = Health and Safety Partnership Program; IARC = International Agency for Research on Cancer; MSDS = Material Safety Data Sheet; NAIMA = North American Insulation Manufacturers Association; NFPA = National Fire Protection Association; NIOSH = National Institute for Occupational Safety and Health; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit; RCRA = Resource Conservation and Recovery Act; RQ = Reportable Quantity; SVF = synthetic vitreous fibers; TSCA = Toxic Substances Control Act; TWA = time-weighted average; WHMIS = Workplace Hazardous Materials Information System.

16.3 References: Complete citations, or copies, of all references cited in this Material Safety Data Sheet can be obtained from Roxul Inc. (see Section 1).

16.4 Accuracy: The information contained herein is based upon data considered to be accurate. However, no warranty is expressed or implied regarding the accuracy of these data, the results to be obtained from the use thereof, or that any such use will not infringe upon any patent. This information is furnished as a guide only and upon the condition that the person receiving it shall make tests to determine the accuracy and suitability for his or her own purpose.