



# MATERIAL SAFETY DATA SHEET

## SECTION I - CHEMICAL PRODUCT AND COMPANY INFORMATION

Material Name / Identifier: **QUICKLIME** **WHMIS CLASS E : CORROSIVE MATERIAL**

MANUFACTURER'S AND SUPPLIER'S NAME:

|                                       |   |
|---------------------------------------|---|
| <b>GRAYMONT (NB) INC</b>              | 4634, Route 880, Havelock, New Brunswick, E4Z 5K8.          |
| <b>GRAYMONT (QC) INC.</b>             | 25, rue De Lauzon, Boucherville (Québec), J4B 1E7.          |
| <b>GRAYMONT (PA) INC.</b>             | 965, East College avenue, Pleasant Gap, PA 16823            |
| <b>GRAYMONT (WESTERN CANADA) INC.</b> | 190 – 3025, 12 Street N.E., Calgary, Alberta, T2E 7J2       |
| <b>GRAYMONT (WESTERN US) INC.</b>     | 3950 South, 700 East, Suite 301, Salt Lake City, Utah 84107 |

**EMERGENCY TEL. No.: (613) 996 – 6666 CANUTEC (Canada) (800) 424 – 9300 CHEMTREC (US)**

|  |   |   |
|--|---|---|
| Chemical Name<br><b>Calcium oxide</b>  | Chemical Family<br><b>Alkaline earth oxide</b>  | Chemical Formula<br><b>Complex mixture - mostly CaO</b>                                     |
| Molecular Weight<br><b>CaO = 56.08</b> | Trade Name and Synonyms<br><b>High Calcium Quicklime, Lime, Quicklime, Calcium Oxide, Burnt Lime, Fluxing Lime.</b> | Material Use<br><b>Neutralization, Flocculation, Flux (met.), Caustic agent, absorption</b> |

## SECTION II - COMPOSITION AND INFORMATION ON INGREDIENTS

| Hazardous Ingredients             | Approximate Concentration | C.A.S. Number     | Exposure limits<br>(mg/m <sup>3</sup> )                 |                                     |                                     |   |                                      |            |
|-----------------------------------|---------------------------|-------------------|---|-------------------------------------|-------------------------------------|---|--------------------------------------|------------|
|                                   |                           |                   | OSHA PEL  | ACGIH TLV                           | RSST VEMP                           | MSHA PEL (Note2)  | NIOSH REL                            | NIOSH IDLH |
| (Complex Mixture)                 | (% by weight)             |                   | (TWA) 8/40h   | (TWA) 8/40h                         | (TWA) 8/40h                         | (TWA) 8/40h   | (TWA) 10/40h                         |            |
| <b>Calcium Oxide</b>              | <b>90 to 100</b>          | <b>1305-78-8</b>  | <b>5</b>  | <b>2</b>                            | <b>2</b>                            | <b>5</b>  | <b>2</b>                             | <b>25</b>  |
| <b>Crystalline Silica, Quartz</b> | <b>0.1 to 1</b>           | <b>14808-60-7</b> | <b>10/(%SiO<sub>2</sub>)+2 (respirable silica dust)</b> | <b>0.1 (respirable silica dust)</b> | <b>0.1 (respirable silica dust)</b> | <b>10/(%SiO<sub>2</sub>)+2 (respirable silica dust)</b> | <b>0.05 (respirable free silica)</b> | <b>50</b>  |
| <b>Crystalline Silica, Quartz</b> | <b>0 to 0.1 (Note 1)</b>  | <b>14808-60-7</b> | <b>10/(%SiO<sub>2</sub>)+2 (respirable silica dust)</b> | <b>0.1 (respirable silica dust)</b> | <b>0.1 (respirable silica dust)</b> | <b>10/(%SiO<sub>2</sub>)+2 (respirable silica dust)</b> | <b>0.05 (respirable free silica)</b> | <b>50</b>  |

(Note 1) : Concentration of crystalline silica in a series of lime products will vary from source to source. It was not detected on some samples (< 0.1% w/w). Therefore two ranges are being disclosed. (Note 2) : ACGIH TLV Version 1973 has been adopted by the Mine Safety Health Administration (MSHA) as the regulatory Exposure Standard.

| SECTION III - PHYSICAL AND CHEMICAL DATA   |  |  |  |  |
|--|--|--|--|--|
| Physical State<br>Gas <input type="checkbox"/> Liquid <input type="checkbox"/> Solid <input checked="" type="checkbox"/> | Odor and Appearance<br><b>Slight earthy odor - White crystalline substance</b> |  | Odor Threshold (p.p.m.)<br><b>Not applicable</b>       | Specific Gravity<br><b>3.2 - 3.4</b>                           |
| Vapor Pressure (mm)<br><b>Not applicable</b>   | Vapor Density (Air = 1)<br><b>Not applicable</b>                               | Evaporation Rate<br><b>Not applicable</b>    | Boiling Point (°C)<br><b>2850</b>                      | Melting Point (°C)<br><b>2580</b>                              |
| Solubility in Water (20°C)<br><b>0.125g/100g Sat.soln</b>  | Volatiles (% by volume)<br><b>Not applicable</b>                               | pH (25 °C)<br><b>Sat. soln CaO<br/>12.45</b> | Bulk Density (kg/m <sup>3</sup> )<br><b>720 - 1130</b> | Coefficient of water/oil distribution<br><b>Not applicable</b> |

| SECTION IV - FIRE OR EXPLOSION HAZARD DATA   |  |  |  |
|--|--|--|--|
| Flammability<br>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, under which conditions?  |  |  |  |
| Extinguishing Media<br><b>Quicklime does not burn. Use extinguisher appropriate for material burning.</b>  |  |  |  |
| Special Fire Fighting Procedures<br><b>Avoid using water unless necessary for other materials, in which case, flood to absorb heat generated. (Contact with water will evolve heat and could cause ignition of paper, cardboard, etc.). Wear self-contained breathing equipment approved by NIOSH.</b> |  |  |  |
| Flash point (°C) and Method<br><b>Not applicable</b>   | Upper flammable limit (% by volume)<br><b>Not applicable</b> | Lower flammable limit (% by volume)<br><b>Not applicable</b> |  |
| Auto Ignition Temperature (°C)<br><b>Not applicable</b>  | TDG Flammability Classification<br><b>Non-flammable</b>      | Hazardous Combustion Products<br><b>None</b>                 |  |
| Dangerous Combustion Products<br><b>None</b>   |  |  |  |
| EXPLOSION DATA   |  |  |  |
| Sensitivity to Chemical Impact<br><b>Not applicable</b>  | Rate of Burning<br><b>Not applicable</b>                     | Explosive Power<br><b>Not applicable</b>                     | Sensitivity to Static Discharge<br><b>Not applicable</b> |

| <b>SECTION V - REACTIVITY DATA</b>   |                                |  |
|--|--------------------------------|--|
| Chemical Stability<br>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>                  | If no, under which conditions? | <b>Absorbs moisture and carbon dioxide in the air to form calcium hydroxide and calcium carbonate.</b>   |
| Incompatibility to other substances<br>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | If so, which ones?             | <b>Boron tri-fluoride, chlorine tri-fluoride, ethanol, fluorine, hydrogen fluoride, phosphorus pentoxide; water and acids (violent reaction with generating heat and possible explosion in confined area).</b>                   |
| Reactivity<br>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>                          | If so, under which conditions? | <b>Reacts violently with strong acids. Reacts with water to form calcium hydroxide. The heat generated when mixed with water or moist air is sufficient enough to ignite surrounding materials such as paper, wood or cloth.</b> |
| Hazardous Decomposition Products   | <b>None.</b>                   |  |
| Hazardous Polymerization Products  | <b>Will not occur.</b>         |  |

| <b>SECTION VI - TOXICOLOGICAL PROPERTIES</b>   |   |   |  |   |   |
|--|---|---|--|---|---|
| Route of Entry   |   |   |  |   |   |
| <input checked="" type="checkbox"/> Skin Contact   | <input type="checkbox"/> Skin Absorption  | <input checked="" type="checkbox"/> Eye Contact | <input checked="" type="checkbox"/> Acute Inhalation | <input type="checkbox"/> Chronic Inhalation | <input checked="" type="checkbox"/> Ingestion |
| Effects of Acute Exposure to Product   |   |   |  |   |   |
| Skin   | <b>Severely irritating; corrosive: Irritation, burning and corrosion of mucous and skin. Dehydration of tissues.</b>  |   |  |   |   |
| Eyes   | <b>Severe eye irritation, intense watering of the eyes, possible lesions, possible blindness when exposed for prolonged period. (Draize &gt;80).</b>  |   |  |   |   |
| Inhalation   | <b>If inhaled in form of dust: nose and throat irritation, cough, sneezing, inflammation of breathing passages, ulceration and perforation of nasal septum, bronchitis, possible pneumonia.</b>                   |   |  |   |   |
| Ingestion  | <b>If ingested, burning and edema of digestive tracts, abundant salivation, difficulties in swallowing and breathing, vomiting blood, drop in blood pressure (indicates perforation of esophagus or stomach).</b> |   |  |   |   |
| Effects of Chronic Exposure to Product:  |   |   |  |   |   |
| <b>Contact dermatitis. This product may contain trace amounts of crystalline silica. Excessive inhalation of respirable crystalline silica dust may result in respiratory disease, including silicosis, pneumoconiosis and pulmonary fibrosis.</b> |   |   |  |   |   |
| LD <sub>50</sub> of Product (Specify Species and Route)  | Irritancy of Product  |   | Exposure limits of Product                           |   |   |
| <b>Unavailable</b>   | <b>Severe to moist tissues</b>  |   | <b>Unavailable</b>                                   |   |   |
| LC <sub>50</sub> of Product (Specify Species)  | Sensitization to Product  |   | Synergistic materials                                |   |   |
| <b>Unavailable</b>   | <b>None</b>   |   | <b>None reported</b>                                 |   |   |

**SECTION VI - TOXICOLOGICAL PROPERTIES (Cont'd)**

Carcinogenicity     Reproductive effects     Tératogenicity     Mutagenicity

**Quicklime is not listed as a carcinogen by ACGIH, MSHA, OSHA, NTP or IARC. It may, however, contain trace amounts of Crystalline Silica listed carcinogens by these organizations. Crystalline Silica, which inhaled in the form of quartz or cristobalite from occupational sources, is classified by IARC as (Group 1) carcinogenic to humans. Silica, crystalline (Airborne particles of respirable size) is regulated under California's Safe Drinking Water and Toxic Enforcement Act of 1986. (Proposition 65). NIOSH considers crystalline silica to be potential occupational carcinogen as defined by the OSHA carcinogen policy [29 CFR 1910.105]. NTP lists respirable Crystalline Silica as known to be human carcinogens based on sufficient evidence of carcinogenicity in humans. ACGIH list respirable Crystalline Silica (quartz) as suspected human carcinogen (A-2).**

**SECTION VII - PREVENTIVE MEASURES**

Personal Protective Equipment (PPE)    **Wear clean, dry gloves, full length pants over boots, long sleeved shirt buttoned at the neck, head protection and approved eye protection selected for the working conditions.**

|   |  |  |  |
|---|--|--|--|
| Gloves (Specify)<br><b>Gauntlets Cuff style</b> | Respiratory (Specify)<br><b>NIOSH approved (N/R/P95) dust respirator</b> | Eyes (Specify)<br><b>Tight fitting goggles with side shields. Do not wear contact lenses when handling this chemical</b> | Footwear (Specify)<br><b>Resistant to caustics</b> |
|---|--|--|--|

|  |  |
|--|--|
| Clothing (Specify)<br><b>Fully covering skin</b> | Other (Specify)<br><b>Evaluate degree of exposure and use PPE if necessary. After handling lime, employees must shower. If exposed daily, use oil, Vaseline, silicone base creme etc. to protect exposed skin, particularly neck, face and wrists.</b> |
|--|--|

Engineering Controls (e.g. ventilation, enclosed process, specify)  
**Enclose dust sources; use exhaust ventilation (dust collector) at handling points, keep levels below Max. Concentration Permitted.**

Leak and Spill Procedure  
**Limit access to trained personnel. Use industrial vacuums for large spills. Ventilate area.**

Waste Disposal  
**Transport to disposal area or bury. Review Federal, Provincial and local Environmental regulations.**

Handling Procedures and Equipment  
**Avoid skin and eye contact. Minimize dust generation. Wear protective goggles and in cases of insufficient ventilation, use anti-dust mask. An eye wash station and safety shower should be readily available where this material or its water dispersions are used. Contact lenses should not be worn when working with this chemical.**

Storage Requirements  
**Keep tightly closed containers in a cool, dry and well ventilated area, away from acids. Keep out of reach of children.**

Special Shipment Information  
**Quicklime is not regulated by the Transportation of Dangerous Goods (TDG) Regulations (Canada) nor the Hazardous Materials Regulations (USA) unless this material is offered or intended for transportation by aircraft.**

| <b>SECTION VIII - FIRST AID MEASURES</b> |   |
|--|---|
| Skin                                     | Carefully and gently brush the contaminated body surfaces in order to remove all traces of lime. Use a brush, cloth or gloves. Remove all lime-contaminated clothing. Rinse contaminated area with lukewarm water for 15 to 20 minutes. Consult a physician if exposed area is large or if irritation persists. |
| Eyes                                     | Immediately rinse contaminated eye(s) with gently running lukewarm water (saline solution is preferred) for 15 to 20 minutes. In the case of an embedded particle in the eye, or chemical burn, as assessed by first aid trained personnel, contact a physician.  |
| Inhalation                               | Move source of dust or move victim to fresh air. Obtain medical attention immediately. If victim does not breathe, give artificial respiration.   |
| Ingestion                                | If victim is conscious, give 300 ml (10 oz) of water, followed by diluted vinegar (1 part vinegar, 2 parts water) or fruit juice to neutralize the alkali. Do not induce vomiting. Contact a physician immediately.   |
| General Advise                           | Consult a physician for all exposures except minor instances of inhalation.   |

| <b>SECTION IX - REGULATORY INFORMATION</b>   |  |
|--|--|
| Superfund Amendments and Reauthorization Act of 1986 ( <b>SARA Title III</b> ) / The Emergency Planning and "Community Right-to-Know" Act ( <b>EPCRA</b> ) / Comprehensive Environmental Response, Compensation and Liability Act ( <b>CERCLA</b> ). | <p><b>Component Calcium Oxide has been reviewed against the following regulatory listings:</b></p> <ul style="list-style-type: none"> <li>• <b>Section 302 – Emergency Planning Notification. Extremely Hazardous Substances (EHS) List and Threshold Planning Quantity (TPQ). (40 CFR, Part 355, Section 30) : <u>Not listed.</u></b></li> <li>• <b>Section 304 – Emergency Release Notification. Extremely Hazardous Substances (EHS) and Reportable Quantity (RQ) List. (40 CFR, Part 355, Section 40) : <u>Not listed.</u></b></li> <li>• <b>Section 311/312 – Hazard Categories (40 CFR, Part 370) : This product is regulated under CFR 1910.1200 (OSHA Hazard Communication) as Immediate (Acute) Health Hazards - Corrosive.</b></li> <li>• <b>Section 313 – Toxics Release Inventory (TRI). Toxic Chemical List (40 CFR, Part 372). <u>Not listed.</u></b></li> </ul> |
| CWA 311. - Clean Water Act List of Hazardous Substances.   | <b>Calcium Oxide has been withdrawn from the Clean Water Act (CWA) list of hazardous substances. (11/13/79) (44FR65400)</b>  |
| California Proposition 65.   | <b>Component Calcium Oxide does not appear on the above regulatory listing. This product may contain small amounts of crystalline silica. Silica, crystalline (Airborne particles of respirable size) is regulated under California's Safe Drinking Water and Toxic Enforcement Act of 1986. (Proposition 65)</b>  |
| Transportation - Hazardous Materials Regulations (USA) & Transportation of Dangerous Goods (TDG) Regulations (Can).  | <b>Calcium Oxide is listed in both table 172.101 of Title 49 CFR 172 and in schedule 18 D.G. List (Chapter 34 TDG ACT, SOR/DORS 93-525). Application of requirements are restricted to material offered or intended for transportation by aircraft. - Calcium oxide. By aircraft only. Class 8 - Corrosives. PIN UN1910. Packing group III. Maximum net quantity per package - passenger vehicles, 25kg.</b>   |
| Toxic Substances Control Act (TSCA).   | <b>All naturally occurring components of this product are automatically included in the USEPA TSCA Inventory List per 40 CFR 710.4 (b). All other components are on the USEPA TSCA Inventory List. Calcium Oxide is exempt from reporting under the inventory update rule.</b>   |
| Canadian Environmental Protection Act (CEPA) – Substances Lists (DSL/NDSL).  | <b>Calcium Oxide appears on the Domestic Substances List (DSL).</b>  |

**SECTION IX - REGULATORY INFORMATION (Cont'd)**


ANSI/NSF 60 - Drinking Water Treatment Additives.

Quicklime has been investigated with respect to elements identified by EPA as toxic and it has been classified for use in direct contact with drinking water. (in accordance with Standard ANSI/NSF 60). For a list of classified products, refer to Underwriters Laboratories Inc.'s Online Certifications Directory.



FDA - U.S. Food and Drug Administration, Department of Health and Human Services.

Calcium Oxide has been determined as "Generally Recognized As Safe" (GRAS) by FDA. See 21CFR184.1210. (CFR Title 21 Part 184 - - Direct food substances affirmed as generally recognized as safe).

**SECTION X - OTHER INFORMATION**

|   |  |   |   |
|---|--|---|---|
| <p>Hazardous Materials Identification System (U.S.)</p> |  | <p>National Fire Protection Association (U.S.)</p> <p>Health Hazard</p> | <p>Fire Hazard</p>  <p>Instability / Thermal Hazard</p> <p>Specific hazard</p> |
|---|--|---|---|

|   |   |
|---|---|
| <p>WHMIS Classification: "E" Corrosive Materials.</p> | <p>WHMIS Classification: "D2A" Materials causing other toxic effects.</p> |
|---|---|

|  |   |
|--|---|
| <p>Symbol:</p>  | <p>Symbol:</p>  |
|--|---|

Additional Information/Comments:

The technical data contained herein is given as information only and is believed to be reliable. **GRAYMONT** makes no guarantee of results and assumes no obligation or liability in connection therewith.

Sources Used:

NFPA, NLA, TDG, CSST, RSST, (LSRO-FASEB), Hazardous Products Act, Environment Canada, Enviroguide, OSHA, ACGIH, IARC, NIOSH, CFR, NTP, HSDB, EPA SRS, Chemistry and Technology of Lime and Limestone (John Wiley and Sons, Inc.), Lime and Limestone (WILEY-VCH).

**SECTION XI - PREPARATION INFORMATION**

|   |   |                                      |
|---|---|--------------------------------------|
| <p>Prepared by:</p> <p><b>GRAYMONT (QC) INC.</b><br/> <b>Technical Services</b></p> | <p>Telephone number:</p> <p><b>(450) 449-2262</b></p> | <p>Date :</p> <p><b>May 2005</b></p> |
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