

Discovering what's possible with calcium

TECHNICAL DATA SHEET

PRODUCT DESCRIPTION

Standard Hydrated Lime is a refined hydrate that has a small median particle size, good flow properties, high surface area, and high total & available Ca(OH)₂. Standard Hydrated Lime is used in flue gas treatment (for the control of SO₂ and SO₃ emissions), water and waste water treatment, acid neutralization, construction and other environmental applications.

| TYPICAL CHEMICAL PROPERTIES | |
|---------------------------------|---------|
| Ca(OH) ₂ - Total | 98.0% |
| Ca(OH) ₂ - Available | 96.8% |
| CO ₂ | 0.5% |
| Free Moisture | 0.7% |
| CaSO ₄ | 0.1% |
| Sulfur - Equivalent | 240 ppm |
| Crystalline Silica | <0.1% |
| Al ₂ O ₃ | 0.2% |
| Fe ₂ O ₃ | 0.06% |
| MgO | 0.4% |
| P ₂ O ₅ | 100 ppm |
| MnO | 25 ppm |

| TYPICAL PHYSICAL PROPERTIES | |
|------------------------------------|-------------------------|
| Specific Gravity | 2.34 |
| Dry Brightness, G.E. | 92.0 |
| Median Particle Size - Sedigraph | 2 micron |
| pH | 12.4 |
| -100 Mesh (150 μm) | 100.0% |
| -200 Mesh (75 μm) | 99.0% |
| -325 Mesh (45 μm) | 94.0% |
| Apparent Dry Bulk Density - Loose | 22 lbs./ft ³ |
| Apparent Dry Bulk Density - Packed | 35 lbs/ft ³ |

- ✓ Meets the AWWA standard B202-02
- ✓ Certified to NSF standard 60
- ✓ Certified to ASTM standards:
 - C977-95
 - C1097-95
 - C207-91 (type N only)
 - C911-99



Telephone: 800.437.5463
Contact: sales@mississippilime.com
Web site: www.mississippilime.com

All information provided and recommendations made herein are intended to assist customers in determining whether our products are suitable for their applications. We request that customers inspect and test our products before use in order to make their own final decision regarding suitability. We do not guarantee results, freedom from patent infringement, or suitability of resultant products for any suggested application with respect to the use of any formula or material described herein.



GRAYMONT

MATERIAL SAFETY DATA SHEET

| SECTION I - CHEMICAL PRODUCT AND COMPANY INFORMATION | | |
|---|---|--|
| Product Name: | Precipitated Calcium Carbonate | WHMIS – CLASSIFICATION: D2A: MATERIALS CAUSING OTHER TOXIC EFFECTS |
| MANUFACTURER'S AND SUPPLIER'S NAME: | | |
| GRAYMONT (WESTERN US) INC. 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 | Chemical Family | Chemical Formula |
| Calcium Carbonate | Alkaline earth | Complex mixture - mostly CaCO₃ |
| Molecular Weight | Trade Name and Synonyms | Material Use |
| CaCO₃ = 100.09 | Calcium Carbonate, Precipitated Calcium Carbonate slurry, PCC, PCC slurry, Calcite PCC, Aragonite PCC. | Mineral filler, Liming, Neutralization, Desulphurization, feed supplement for animals |

| SECTION II - COMPOSITION AND INFORMATION ON INGREDIENTS | | | | | | | | |
|---|---------------------------|-------------------|---|-------------------------------------|-----------------------------------|---|--|------------|
| Hazardous Ingredients | Approximate Concentration | C.A.S. Number | Exposure limits (mg/m ³) | | | | | |
| | | | OSHA PEL | ACGIH TLV | RSST VEMP | MSHA PEL (Note 2) | NIOSH REL | NIOSH IDLH |
| (Complex Mixture) | (% by weight) | | (TWA) 8/40h | (TWA) 8/40h | (TWA) 8/40h | (TWA) 8/40h | (TWA) 10/40h | |
| Calcium Carbonate | 90 to 100 | 471-34-1 | 15 total dust 5 respirable dust | 10 total dust (Note3) | 10 total dust (Note3) | 15 total dust 5 respirable dust | 10 total dust 5 respirable dust | N/A |
| Crystalline Silica, Quartz | 0.1 to 1 | 14808-60-7 | 10/(%SiO₂)+2 respirable silica dust | 0.025 respirable silica dust | 0.1 respirable silica dust | 10/(%SiO₂)+2 respirable silica dust | 0.05 respirable free silica | 50 |
| Crystalline Silica, Quartz | 0 to 0.1 (Note 1) | 14808-60-7 | 10/(%SiO₂)+2 respirable silica dust | 0.025 respirable silica dust | 0.1 respirable silica dust | 10/(%SiO₂)+2 respirable silica dust | 0.05 respirable free silica | 50 |

(Note 1) : Concentration of crystalline silica in a series of Calcium Carbonate 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. (Note 3) The value is for particulate matter containing no asbestos and less than 1 % crystalline silica. (Note 4): ACGIH issued a new Notice of Intended Change (NIC) for calcium carbonate, in which it would "Withdraw Documentation and adopted TLV" due to insufficient data.

| SECTION III - PHYSICAL AND CHEMICAL PROPERTIES | | | | |
|--|--|---|---|--|
| Physical State Gas <input type="checkbox"/> Liquid <input type="checkbox"/> Solid <input checked="" type="checkbox"/> | Odor and Appearance Odorless – White slurry, consistency of cream. Dries to a fine white crystalline powder. | | Odor Threshold (p.p.m.) Not applicable | Specific Gravity 2.65 – 2.75 |
| Vapor Pressure (mm) Not applicable | Vapor Density (Air = 1) Not applicable | Evaporation Rate Not applicable | Boiling Point (°C) Not applicable | Freezing Point (°C) Not applicable |
| Solubility in Water (20°C) 0.001 % by weight | Volatiles (% by volume) Not applicable | pH (25 °C) Sat. soln CaCO₃ 9.4 | Density (kg/m ³) 900 - 1900 | Coefficient of water/oil distribution Not applicable |

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flammability

Yes No If yes, under which conditions?

Extinguishing Media

Calcium Carbonate does not burn. Use extinguishing media appropriate to surrounding fire conditions.

Special Fire Fighting Procedures

Calcium Carbonate is generally non-flammable, but ignites on contact with fluorine. Wear adequate personal protection to prevent contact with material or its combustion products. Firefighters should use self-contained NIOSH approved breathing apparatus with full face piece to protect against the products of combustion.

| | | |
|---|--|--|
| Flash point (°C) and Method Not applicable | Upper flammable limit (% by volume) Not applicable | Lower flammable limit (% by volume) Not applicable |
| Auto Ignition Temperature (°C) Not applicable | TDG Flammability Classification Non-flammable | Hazardous Combustion Products None |

Dangerous Combustion Products **None**

EXPLOSION DATA

| | | | |
|---|--|--|--|
| Sensitivity to Chemical Impact Not applicable | Rate of Burning Not applicable | Explosive Power Not applicable | Sensitivity to Static Discharge Not applicable |
|---|--|--|--|

| SECTION V - REACTIVITY DATA | | |
|--|--|--|
| Chemical Stability Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | If no, under which conditions? | Decomposes at 870 °C to form carbon dioxide and calcium oxide. |
| Incompatibility to other substances Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | If so, which ones? | Fluorine, magnesium, aluminum, silicon, hydrogen, mercury, aluminum sulfate, ammonium salts, acids (violent reaction with generating heat and possible explosion in confined area). |
| Reactivity Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | If so, under which conditions? | Calcium Carbonate is a very stable chemical substance. Decomposition does not occur at normal temperatures (inferior to 600°C). Reacts chemically with strong acids to form calcium based compounds and to liberate carbon dioxide. |
| Hazardous Decomposition Products | Decomposition at 870°C will produce calcium oxide and carbon dioxide. | |
| Hazardous Polymerization Products | Will not occur. | |

| SECTION VI - TOXICOLOGICAL INFORMATION | | |
|---|--|---|
| 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 | May cause skin irritation. Irritation: Skin-Rabbit-500 mg/ 24 h – Moderate. | |
| Eyes | May cause eye irritation with discomfort or pain, local redness and swelling of the conjunctiva. Irritation: Eye-Rabbit-750 µg/ 24 h – Severe. | |
| Inhalation | If inhaled in form of dust, may cause respiratory tract, irritation / inflammation. Exposure may cause coughing and sneezing. Large amounts may cause chemical pneumonitis. | |
| Ingestion | Cause gastro-intestinal irritation. If ingested in large quantities may cause nausea, constipation and hypercalcaemia, hemorrhage. | |
| Effects of Chronic Exposure to Product: | | |
| No signs or symptoms of chronic exposure have been reported. 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. | | |
| LD ₅₀ of Product (Specify Species and Route) | Irritancy of Product | Exposure limits of Product |
| 6450 mg/kg (Rat, oral) | Eyes | Unavailable |
| LC ₅₀ of Product (Specify Species) | Sensitization to Product | Synergistic materials |
| Unavailable | None | None reported |

SECTION VI - TOXICOLOGICAL PROPERTIES (Cont'd)

Carcinogenicity Reproductive effects Tératogenicity Mutagenicity

Calcium Carbonate 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 crystobalite 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 1990].

NTP lists respirable Crystalline Silica as known to be human carcinogens based on sufficient evidence of carcinogenicity in humans.

ACGIH lists respirable Crystalline Silica (quartz) as suspected human carcinogen (A-2).

RSST lists respirable Crystalline Silica (quartz) as suspected human carcinogen.

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) Gauntlets Cuff style | Respiratory (Specify) NIOSH approved (N/R/P95) dust respirator | Eyes (Specify) ANSI, CSA or ASTM approved safety glasses with side shields. Tight fitting dust goggles should be worn when excessive (visible) dust conditions are present. | Footwear (Specify) Usual protection |
|---|--|---|---|

| | |
|--|---|
| Clothing (Specify) Fully covering skin | Other (Specify) Evaluate degree of exposure and use PPE if necessary. |
|--|---|

Engineering Controls (e.g. ventilation, enclosed process, specify)
Enclose dust sources; use exhaust ventilation (dust collector) or other engineering controls at handling points to keep airborne levels below recommended exposure limits.

Leak and Spill Procedure
Limit access to trained personnel. Sweep up and place in container. Use industrial vacuums for large spills. Avoid raising dust. Ventilate area.

SECTION VII - PREVENTIVE MEASURES (Cont'd)

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 should be readily available where this is used.

Storage Requirements

Keep tightly closed containers in a cool, dry and well ventilated area, away from acids.

Special Shipment Information

Calcium Carbonate is neither regulated by the Transportation of Dangerous Goods (TDG) Regulations (Canada) nor by the Hazardous Materials Regulations (USA).

SECTION VIII - FIRST AID MEASURES

Skin

Carefully and gently brush the contaminated body surfaces in order to remove all traces of Calcium Carbonate. Use a brush, cloth or gloves. Remove all Calcium Carbonate-contaminated clothing. Rinse contaminated area with lukewarm water for 15 to 20 minutes. If irritation occurs or persists seek medical attention.

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 if irritation occurs or persists, consult 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. Contact a physician immediately.

Ingestion

If victim is conscious, wash out mouth with water. Have conscious person drink several glasses of water to dilute. Induce vomiting. Contact a physician immediately. Never give anything by mouth to an unconscious or convulsing person.

General Advise

Consult a physician for all exposures except minor instances of inhalation.

SECTION IX – REGULATORY INFORMATION

Superfund Amendments and Reauthorization Act of 1986 (**SARA Title III**). / The Emergency Planning and "Community Right-to-Know" Act (**EPCRA**). / Comprehensive Environmental Response, Compensation and Liability Act (**CERCLA**). / Resource Conservation and Recovery Act (**RCRA**).

Component Calcium Carbonate has been reviewed against the following regulatory listings:

- **SARA Section 302 – Emergency Planning Notification. Extremely Hazardous Substances (EHS) List and Threshold Planning Quantity (TPQ). (40 CFR, Part 355, Section 30): Not listed.**
- **SARA Section 304 – Emergency Release Notification. Extremely Hazardous Substances (EHS) and Reportable Quantity (RQ) List. (40 CFR, Part 355, Section 40): Not listed.**
- **SARA Section 311/312 – Hazard Categories (40 CFR, Part 370): This product is not listed under CFR 1910.1200 (OSHA Hazard Communication).**
- **SARA Section 313 – Toxics Release Inventory (TRI). Toxic Chemical List (40 CFR, Part 372): Not listed.**
- **CERCLA – Hazardous Substance (40 CFR, Part 302): Not listed in Table 302.4.**
- **RCRA – Hazardous Waste Number (40 CFR, Part 261, Subpart D): Not listed.**
- **RCRA – Hazardous Waste Classification (40 CFR, Part 261, Subpart C): Not classified.**

CWA 311. - Clean Water Act List of Hazardous Substances.

Calcium Carbonate does not appear on the Clean Water Act (CWA) list of hazardous substances.

California Proposition 65.

Component Calcium Carbonate 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)

Transportation - Hazardous Materials Regulations (USA) & Transportation of Dangerous Goods (TDG) Regulations (Can).

Calcium Carbonate does not appear on the above regulatory listings.

Toxic Substances Control Act (TSCA).

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 one the USEPA TSCA Inventory List. Calcium Carbonate is exempt from reporting under the inventory update rule.

Canadian Environmental Protection Act (CEPA) – Substances Lists (DSL/NDL).

Calcium Carbonate appears on the Domestic Substances List (DSL).

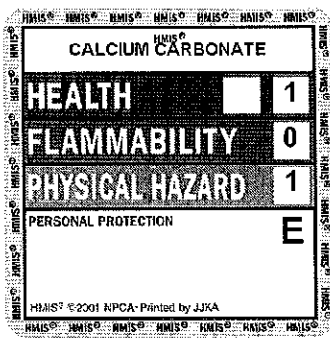
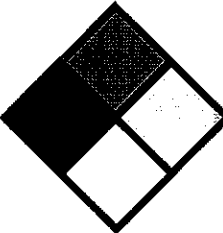
ANSI/NSF 60 - Drinking Water Treatment Additives.

Calcium Carbonate 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 Carbonate has been determined as "Generally Recognized As Safe" (GRAS) by FDA. See 21CFR184.1191. (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>NFPA has not assigned a rating to Calcium Carbonate.</p> | <p>Fire Hazard</p>  <p>Instability / Thermal Hazard</p> <p>Specific hazard</p> |
|---|---|---|---|

WHMIS Classification:
 "D2A" Materials causing other toxic effects.

Symbol:



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

| | | |
|---|-------------------|----------------|
| Prepared by: | Telephone number: | Date : |
| GRAYMONT (QC) INC. Technical Services | (450) 449-2262 | September 2006 |

An electronic version of this MSDS is available at: www.graymont.com under the PRODUCTS section.