MATERIAL SAFETY DATA SHEET

SECTION 1. PRODUCT IDENTIFICATION

Date: 01/01/13
Code: High Cal

Product Name	Distributor	Telephone
Calciment®	Mintek Resources, Inc.	937-431-0218 Office
	PO Box 340187	937-431-1305 Fax
	Beavercreek, OH 45434	800-424-9300 CHEMTREC

Chemical Name	Chemical Family
Calcium Oxide-Pozzolan Mixture	Lime/Cement

SECTION 2. TYPICAL COMPOSITION

Component	Formula	% Wt.	CAS No.	PEL
Calcium Carbonate	$CaCO_3$	0 - 90	1317-65-3	10 mg/m^3
Calcium Oxide	CaO	15-60	1305-78-8	2mg/m^3
Calcium Hydroxide	$Ca(OH)_2$	0 - 70	1305-78-8	5mg/m^3
Calcium Magnesium Carbonate	$CaMg(CO_3)_2$	0 – 50	16389-88-1	10mg/m^3
Crystalline Silica Quartz	$CaSO_4$	0 - 10	14808-60-7	0.1mg/m^3 (respirable)
Aluminum Oxide	Al_2O_3	0-15	1344-28-1	10mg/m^3
Ferric Oxide	Fe_2O_3	0-5	1309-37-1	15mg/m^3
Magnesium Oxide	MgO	0-5	1309-48-4	5mg/m^3
Sulfur	SO_3	0-10	7704-34-9	10mg/m^3

SECTION 3. HAZARD CLASSIFICATIONS

Overview: Contact can cause irritation to eyes, skin, respiratory system, and gastrointestinal tract. Contact may aggravate disorders of eyes, skin, gastrointestinal tract, and respiratory system.

Eyes: Can cause severe irritation or burning of eyes, including permanent damage.
Skin: Can cause severe irritation or burning of skin, especially in the presence of moisture.
Ingestion: Can cause severe irritation or burning of gastrointestinal tract if swallowed.
Inhalation: Can cause severe irritation of the respiratory system. Long-term exposure may cause permanent damage. This product is not listed by MSHA, OSHA, or IARC as a carcinogen, but this product may contain crystalline quartz silica, which has been classified by IARC as (Group 1) carcinogenic to humans when inhaled. Inhalation of silica can also cause a chronic lung disorder, silicosis.
Irritant: Eyes, mucous membranes, moist skin, respiratory tract.
Flammability: This product is not flammable or combustible.
Explosive: This product is not explosive in dust form.
Reactivity: May react violently with strong acids producing heat and possible steam explosion in confined space.
Symbols: WHMIS Symbol: "E" Corrosive Material; "D2A" Materials causing other toxic effects.

SECTION 4. FIRST AID SYMPTOMS AND TREATMENTS

Effects:

Inhalation: Acute: Irritation, sore throat, cough, sneezing. Chronic: Persistent coughing and breathing problems. Long-term exposure to silica can cause a chronic lung disorder, silicosis.
Eyes: Acute: Severe irritation, intense tearing, burns. Chronic: Possible blindness when exposure is prolonged.
Skin: Acute: Removes natural skin oils, blotches, itching and superficial burns in case of sweating. Chronic: No known effects.
Ingestion: Acute: Sore throat, stomach aches, cramps, diarrhea, vomiting. Chronic: No known effects.

Treatments:

Inhalation: Move victim to fresh air. Seek medical attention if necessary. If breathing has stopped, give artificial respiration.
Eyes: Immediately flush eyes with large amounts of water for at least 15 minutes. Pull back the eyelid to make sure all the lime dust has been washed out. Seek medical attention immediately. Do not rub eyes.
Skin: Flush exposed area with large amounts of water. Seek medical attention immediately.
Ingestion: Give large quantities of water or fruit juice. Do not induce vomiting. Seek medical attention immediately. Never give anything by mouth if victim is rapidly losing consciousness or is unconscious or convulsing.

SECTION 5. FIRE FIGHTING MEASURES

Flash Point: Non-flammable
Autoignition Temperature: Non-flammable
Inflammability Limits: None
Explosion Risk: None by itself, but heat produced by reaction with strong acids can generate steam and pressure
Hazardous Combustion Products: Decomposes to produce calcium oxide (CaO), which can react with water to produce steam and pressure
Extinguishing Media: Use dry chemical fire extinguisher. Do not use water or halogenated compounds, except that large amounts of water may be used to deluge small quantities of lime kiln dust. Use appropriate extinguishing media for surrounding fire conditions.
Fire Fighting Instructions: Keep personnel away from and upwind of fire. Wear full fire-fighting turn-out gear (full Bunker gear), and respiratory protection (self-contained breathing apparatus.

SECTION 6. ACCIDENT PREVENTIVE MEASURES

Individual and collective precautions: Avoid creating conditions which release dust – use mechanical vacuums to remove dust from work spaces.
Avoid inhalation of Dust: Wear respiratory protection – minimum NIOSH N-95 Dust Mask.
Cleaning methods (Leaks & Spills) Use personal protective equipment (eyes, skin and inhalation, see Section 8). Use dry methods (vacuuming, sweeping) to collect spilled materials. Avoid generating dust. For large spills, evacuate area downwind of clean-up area operations to minimize dust exposure. For small spills, store spilled materials in dry, sealed plastic or metal containers. Dust residue on surfaces may be washed with water.

Precautions for the protection of the environment: May not be released into surface waters without controls (increases pH).
Waste Disposal: Dispose according to federal, provincial/state and local environmental regulations.

SECTION 7. HANDLING AND STORAGE

Handling: In open air or in ventilated places, avoid skin and eye contact, avoid creating airborne dust.
Storage: Store in dry places sheltered from humidity. Keep away from acids and incompatible substances. Keep out of reach of children.

SECTION 8. EXPOSURE CONTROL/PERSONAL PROTECTION

Exposure Limits:

Calcium Carbonate: 15 mg/m^3 (total dust), 5 mg/m^3 (respirable) (OSHA); 10 mg/m^3 (ACGIH, O. Reg. 833);
Calcium oxide: 5 mg/m^3 (OSHA); 2 mg/m^3 (ACGIH, O. Reg. 833);
Calcium Magnesium Carbonate: 10 mg/m^3 (ACGIH, OSHA)
Calcium Magnesium Oxide: 2 mg/m^3 (ACGIH, OSHA)
Magnesium Carbonate: 15 mg/m^3 (total dust), 5 mg/m^3 (respirable) (OSHA); 5 mg/m^3 (ACGIH, O. Reg. 833); 10 mg/m^3 (ACGIH, O. Reg. 833);
Calcium Hydroxide: mg/m^3 (total dust), 5 mg/m^3 (respirable) (OSHA); 5 mg/m^3 (ACGIH, O. Reg. 833)
Magnesium oxide: 15 mg/m^3 (OSHA); 10 mg/m^3 (ACGIH, O. Reg. 833)
Silica (crystalline quartz): 2.5 mg/m^3 (total dust), 0.8 mg/m^3 (respirable) (OSHA); 0.5 mg/m^3 (respirable – ACGIH); 0.1 mg/m^3 (O. Reg. 845)

Engineering Controls: Use ventilation and dust collection to control exposure to below applicable limits.

Respiratory Protection: Wear NIOSH N-95 Dust Mask.

Eye Protection: Eye protection (chemical goggles, safety glasses and/or face shield) should be worn where there is a risk of lime exposure. Contact lenses should not be work when working with lime products.

Hand Protection: Use clean dry gloves.

Skin Protection: Cover body with suitable clothes (long sleeves shirts and trousers). Use over the angle waterproof caustic resistant footwear.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Solid
Odor & Appearance:	Odorless white powder.
pH:	12.4 pH graduated solution at 25º C
Melting Point:	1410º C
Boiling Point:	1565º C
Vapor Pressure (+tº)	Non volatile.
Vapor Density (air=ml):	Non volatile.
Relative Density:	720-1130 kg/ m^3
Solubility in Water:	0.100 – 1.125g/100g – reactive with water to product $Ca(OH)_2$ with large amounts of heat

SECTION 10. STABILITY AND REACTIVITY

Stability: Stable products, not very soluble.

Decomposition temperature: 580ºC, forms calcium oxide (CaO) and water.

Reactivity: Reacts with acids to form calcium salts while generating heat. Reacts with carbon dioxide in air to form calcium carbonate.

Conditions to avoid: Vicinity of incompatible materials.

Incompatible materials: Acids; reactive fluoridated, brominated or phosphorous compounds; aluminum (may form hydrogen gas), reactive powdered metals; organic acid anhydrides; nitro-organic compounds; interhalogenated compounds.

Hazardous decomposition products: Calcium oxide (CaO).

SECTION 11. TOXILOGICAL INFORMATION

Toxicity: LD_{50} oral (rat) for calcium hydroxide is 7340 mg/kg. This product is not listed by MSA, OSHA, or IARC as a carcinogen, but this product may contain crystalline silica, which has been classified by IARC as (Group 1) carcinogenic to humans when inhaled in the form of quartz or cristobalite. No reported Carcinogenicity, Reproductive Effects, Teratogenicity or Mutagenicity.

Exposure Limits: Refer to Section 8.

Irritancy: Can cause severe irritation of eyes, skin, respiratory tract and gastrointestinal tract.

Chronic Exposure: Inhalation of silica can cause a chronic lung disorder, silicosis.

SECTION 12. ECOLOGICAL INFORMATION

Alkaline substance that increases pH to 12.4 in a saturated water solution at 25ºC.
Calcium hydroxide gradually reacts with CO_2 in air to form calcium carbonate ($CaCO_3$).
Calcium carbonate is ecologically neutral.
Uncontrolled spillage in surface waters should be avoided since the increase pH could be detrimental to fish.
Harmful to aquatic life in high concentration.

SECTION 13. DISPOSAL CONSIDERATIONS

Dispose according to federal, provincial/state and local environmental regulations.

SECTION 14. TRANSPORTATION INFORMATION

Classification:
TDG: Not listed for ground transportation
HMR: Not listed for ground transportation

TDG: Transportation of Dangerous Goods Regulation (Canada)
HMR: Hazardous Materials Regulation (USA)

SECTION 15. REGULATORY INFORMATION

Symbol:

WHMIS Rating
D2A, E

NFPA RATING
HEALTH-3 SPECIFIC HAZARD – ALK FLASH POINTS-0 REACTIVITY-1

HMIS RATING
HEALTH-2 SPECIFIC HAZARD – ALK FLASH POINTS-0 REACTIVITY-1

Risk Phases: Risk of serious damage to the eyes.
Keep out of reach of children.

Safety Phases: Keep storage container away from humidity.
Avoid contact with skin and eyes.
In case of contact with eyes, rinse immediately with water for at least 15 minutes.

CPR (Canada): This product has been classified in accordance with the hazard criteria of the Controlled Products Regulation (CPR) of Canada and this MSDS contains all information required by CPR.

SECTION 16. MISCELLANEOUS OTHER INFORMATION

Lime dust can be removed from vehicles using rags dampened with dilute vinegar. After applying dilute vinegar, vehicles (especially chrome surfaces) must be washed with water.
