APPENDIX L

IMPORTED LIME MATERIAL DATA SHEETS

2440 Dayton Xenia Rd, Suite D
Beavercreek, OH 45434
888-431-0218
www.mintekresources.com

Safety Data Sheet (SDS)

OSHA Hazard Communication Standard 29 CFR 1910.1200. Prepared to GHS Rev03.

Section 1. Identification

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
Calcium Oxide, Calcium Carbonate, Calcium Hydroxide

Uses
Soil Stabilization, De-Watering, Solidification, Fixation, Neutralization, Desulphurization, Agriculture, Cement

SECTION 2. HAZARDS IDENTIFICATION

Classification of the substance or mixture


GHS03 Exclamation Mark


GHS05 Corrosion

Signal word Danger

Hazard-determining components of labeling
Calcium Oxide, Calcium Carbonate, Calcium Hydroxide

Hazard Statements
H303 May be harmful if swallowed
H315 Causes skin irritation
H319 Causes serious eye irritation
H335 May cause respiratory irritation

Precautionary statements
P101 If medical advice is needed, have product container or label at hand

P102	Keep out of reach of children
P280	Wear protective gloves, clothing, eye protection
P281	Use personal protective equipment as required
P284	Wear respiratory protection

Section 3. Composition				
Component	**Formula**	**% Wt.**	**CAS No.**	**PEL**
Calcium Carbonate	$CaCO_3$	0-30	1317-65-3	10 mg/m^3
Calcium Oxide	CaO	20-80	1305-78-8	2 mg/m^3
Calcium Hydroxide	$Ca(OH)_2$	0-10	1305-78-8	5 mg/m^3
Calcium Magnesium Carbonate	$CaMg(CO_3)_2$	0-30	16389-88-1	10 mg/m^3
Crystalline Silica Quartz	SiO_2	0-10	14808-60-7	0.1 mg/m^3 respirable
Aluminum Oxide	Al_2O_3	0-15	1344-28-1	10 mg/m^3
Ferric Oxide	Fe_2O_3	0-5	1309-37-1	15 mg/m^3
Magnesium Oxide	MgO	0-60	1309-48-4	5 mg/m^3
Sulfur	SO_3	0-10	7704-34-9	10 mg/m^3

SECTION 4. First-Aid Measures

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, Non combustible solid, but will support combustion by liberation of oxygen

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. Accidental Release 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. Keep out of reach of children.

SECTION 8. Exposure Controls/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

Appearance:	Solid, white/tan/gray powder
Odor:	Odorless
Odor Threshold:	NA
pH:	12.4 pH graduated solution at 25º C
Melting Point:	1410º C
Boiling Point:	1565º C
Flash Point:	NA
Evaporation Rate:	NA
Flammability:	NA
Upper/Lower Flammability	NA
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
Partition coefficient:	NA
Auto-Ignition Temperature:	NA
Decomposition Temperature:	580ºC
Viscosity:	NA

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. Toxicological 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

SECTION 16. Other Information

Original Prepared: 05/13/13
Revision Date: 07/15/13
Revision #: 0

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

The information contained herein is believed to be accurate and reliable as of the date hereof. However, Mintek Resources, Inc. makes no representation, warranty or guarantee as to results or as to the information's accuracy, reliability or completeness. Mintek has no liability for any loss or damage that may result from use of the information. Each user is responsible to review this information, satisfy itself as to the information's suitability and completeness, and circulate the information to its employees, customers and other appropriate third parties.

Specialty MINERALS

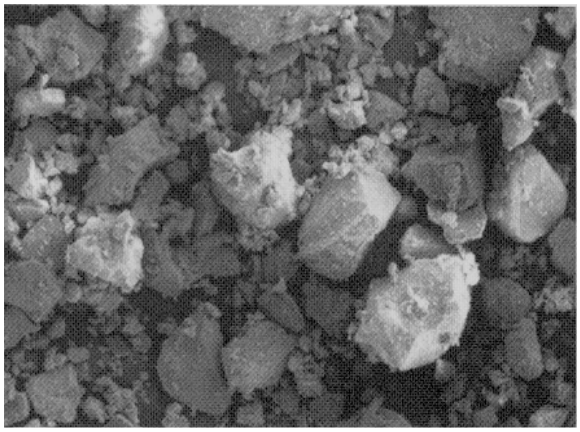
- GCC
- Talc
- PCC for Paper
- Specialty PCC

ECO-CAL® LKD (Adams, MA)

Calcium Carbonate Co-Product Series

Specialty Minerals' ECO-CAL® LKD is a co-product generated during the calcination of calcite ore mined in Adams, MA. ECO-CAL® LKD, commonly referred to as lime kiln dust (LKD), can be used in a myriad of applications (see below) as well as a lime replacement.

- cement
- waste sludge treatment - municipal, paper mills, heavy metals, pathogen treatment
- waste water treatment
- pH stabilization of sludge and ash
- acid neutralization
- soil stabilization
- flue gas desulfurization
- landfill capping
- agriculture (soil treatment)

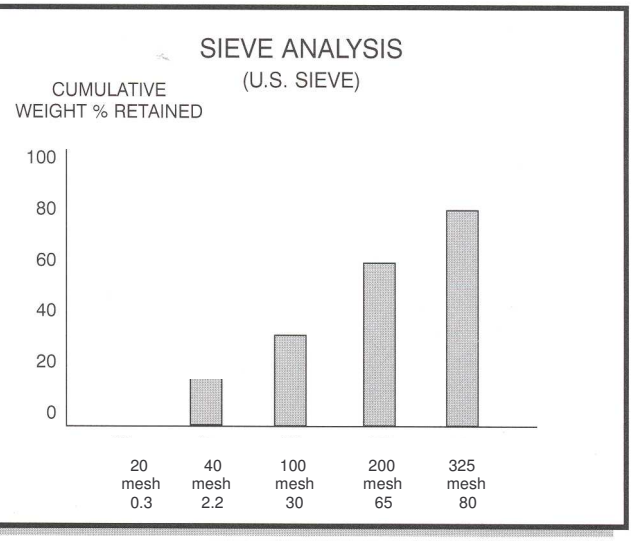


Typical Properties

Specific Gravity	2.7
Dry Brightness (Hunter Y, Rd value)	74
Bulk Density (pounds/ft³) poured	75-80
(pounds/ft³) tapped	95-100

Chemical Composition (typical)

Calcium Carbonate	$CaCO_3$	61%
Total Calcium Oxide	CaO	56%
Available Calcium Oxide	CaO	27%
Magnesium Oxide	MgO	1%
Moisture (% weight loss @ 110° C)	H_2O	<0.1%
Loss on Ignition L.O.I.		26
Total Alkali Content		89%
Total Neutralizing Value		109%



Sales Offices
Bethlehem, PA 1-610-997-8394
Adams, MA (800) 225-1156
www.mineralstech.com