



PROCESSED LIME (QUICK LIME)

SECTION I: IDENTIFICATION OF PRODUCT

COMPANY: **Diversity Technologies Corp.** DATE: **January 31, 2016**
8750 – 53rd Ave. PHONE: **780-440-4923**
Edmonton, AB T6E 5G2 FAX: **780-469-1899**

PRODUCT NAME: **Processed Lime (Quick Lime)**

PRODUCT USE: Oilwell drilling fluid additive
 CHEMICAL FAMILY: Calcium oxide CAS #: 1305-78-8

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

WHMIS CLASSIFICATION: D2A; E
 WORKPLACE HAZARD: Potential carcinogen; corrosive solid

TRANSPORTATION OF DANGEROUS GOODS (TDG)

PROPER SHIPPING NAME: Not regulated under TDG
 TDG CLASSIFICATION: Not applicable
 UN NUMBER (PIN): Not applicable
 PACKING GROUP: Not applicable

SECTION II: HAZARDOUS INGREDIENTS

INGREDIENT	% (w/w)	CAS NUMBER	LD ₅₀ Oral-Rat	LC ₅₀ Inhal-Rat	ACGIH-TLV
Calcium oxide	>90	1305-78-8	Not available	Not available	2 mg/m ³
Crystalline silica, quartz	0.1-1.0 & 0-0.1*	14808-60-7	Not available	Not available	0.025 mg/m ³ respirable

* 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.

SECTION III: HEALTH HAZARDS

ROUTE OF ENTRY: EYE CONTACT SKIN CONTACT INHALATION INGESTION
 EYE CONTACT: Corrosive solid. Will cause severe irritation. Solid will react exothermically with water to produce corrosive calcium hydroxide. Direct contact may cause conjunctival edema and corneal destruction; can lead to, and may cause, blindness.
 SKIN CONTACT: If skin is moist, this product will cause severe irritation and burning. Can penetrate skin slowly, producing soft, necrotic, deep chemical burns. Prolonged or repeated contact may cause eczema.
 INGESTION: Can cause burning and edema of digestive tract, abundant salivation, difficulties in swallowing and breathing, vomiting blood, drop in blood pressure (indicates perforation of esophagus or stomach).

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INHALATION:	Dust, or mists formed from concentrated solutions, is very irritating to the upper respiratory tract. Inflammation of the respiratory passages, ulceration and perforation of the nasal septum and pneumonia have been attributed to the inhalation of calcium oxide dust. Limited solubility of the product in water means that effects may continue for several days. Breathing silica dust may not cause noticeable injury or illness even though permanent lung damage may be occurring. Long-term inhalation of crystalline silica may cause silicosis; a progressive, disabling and sometimes fatal lung disease. Symptoms include cough, shortness of breath, wheezing, non-specific chest illness and reduced pulmonary function. Chronic inhalation exposure to crystalline silica quartz has been observed to cause lymph node effects, kidney effects and auto-immune disease.
CARCINOGENICITY:	Calcium oxide is not listed by IARC, NTP, OSHA or ACGIH. However, processed lime could contain crystalline silica, which when inhaled in the form of quartz from occupational sources is carcinogenic to humans: IARC has concluded that this chemical is carcinogenic to humans (Group 1); ACGIH has designated this chemical as a suspected human carcinogen (A2); NTP has listed this chemical as a known human carcinogen.
TERATOGENICITY:	No information available.
REPRODUCTIVE TOXICITY:	No information available.
MUTAGENICITY:	Crystalline silica has been shown to cause mutagenic effects in human cells in-vitro.
SYNERGISTIC PRODUCTS:	No information available.

SECTION IV: FIRST AID MEASURES

SKIN CONTACT:	Quickly and gently brush away excess chemical. Thoroughly flush with running water while removing contaminated clothing. If large area exposed or irritation or burning persists obtain medical attention.
EYE CONTACT:	Flush with gently flowing warm water for minimum 30 minutes, or until irritation ceases; hold eyelids open to ensure thorough flushing. Neutral saline may be used as soon as it is available. Obtain medical attention when flushing is complete and no further irritation is felt, or permanent damage may result.
INGESTION:	Do not induce vomiting. Obtain immediate medical attention. If immediate medical attention is not available; rinse mouth thoroughly with water then give one glass of water followed by one glass of milk if available. If spontaneous vomiting occurs keep head below hips to prevent aspiration of the vomit into the lungs. Never give anything by mouth if patient is unconscious, rapidly losing consciousness or convulsing.
INHALATION:	Move to area free from dust. Obtain immediate medical attention. If victim is not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel.

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SECTION V: PHYSICAL DATA

APPEARANCE AND ODOUR:	White crystalline powder; slight earthy odour
SPECIFIC GRAVITY:	3.25 - 3.38
BOILING POINT (°C):	2850
MELTING POINT (°C):	2570 - 2625
SOLUBILITY IN WATER:	0.125g/100mL @ pH: 12.45 (saturated sol'n) 25°C
PERCENT VOLATILE BY VOLUME:	Not applicable
EVAPORATION RATE:	Not applicable
VAPOUR PRESSURE (mmHg):	Not applicable
VAPOUR DENSITY (air = 1):	Not applicable
BULK DENSITY:	720-1200 kg/m ³

SECTION VI: FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:	Not flammable
FLAMMABLE LIMITS:	Not applicable
EXTINGUISHING MEDIA:	Use media appropriate for packaging and surrounding materials.
SPECIAL FIRE FIGHTING PROCEDURES:	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. Self-contained breathing apparatus and chemical resistant clothing required for firefighting personnel.
UNUSUAL FIRE AND EXPLOSION HAZARDS:	Bulk powder calcium oxide may heat spontaneously when damp. Humidity or contact with water may generate sufficient heat to ignite flammable and combustible materials.
HAZARDOUS COMBUSTION PRODUCTS:	No information available.

SECTION VII: REACTIVITY DATA

STABILITY:	<input checked="" type="checkbox"/> STABLE <input type="checkbox"/> UNSTABLE
INCOMPATIBILITY (CONDITIONS TO AVOID):	Avoid contact with boron trifluoride, chlorine trifluoride, ethanol, fluorine, hydrogen fluoride, phosphorus pentoxide; water and acids (violent reaction with generation of heat and possible explosion in confined area). Absorbs moisture and CO ₂ in the air to form calcium hydroxide and calcium carbonate.

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CONDITIONS OF REACTIVITY:	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.
HAZARDOUS DECOMPOSITION PRODUCTS:	Calcium hydroxide and heat.
HAZARDOUS POLYMERIZATION:	<input checked="" type="checkbox"/> WILL NOT OCCUR <input type="checkbox"/> MAY OCCUR

SECTION VIII: PREVENTIVE MEASURES

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:	NIOSH approved dust masks or respirators for silica bearing dust required if ventilation is inadequate.
VENTILATION:	Use local exhaust ventilation, process enclosure or other engineering controls to maintain PEL's/TLV's.
PROTECTIVE GLOVES:	Suggest rubber.
EYE PROTECTION:	Wear tight fitting chemical goggles. Do not wear contact lenses.
OTHER PROTECTIVE EQUIPMENT (SPECIFY):	Protective clothing as required to prevent contact. Ensure eye-wash station and emergency shower are available.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

This product is corrosive. Wear appropriate protective equipment. Avoid creating dust. Avoid breathing dust. Avoid skin and eye contact. After handling lime, employees must shower. If exposed daily, use oil, Vaseline, silicone base crème etc. to protect exposed skin, particularly neck, face and wrists. Launder contaminated clothing before reuse. Discard contaminated leather articles. Clean spills promptly to avoid making dust. Store in cool, dry area away from incompatibles. Keep containers away from contact with water. Dry all equipment before use. Wash all equipment thoroughly with water when handling is completed. Empty packages contain residual hazardous material and should be handled as if full.

STEPS TO BE TAKEN IN CASE THE MATERIAL IS SPILLED OR RELEASED

Use appropriate safety equipment. Keep spilled material away from organic materials and other incompatible materials. Do not use floor sweep or sawdust to absorb this product, or solutions of this product, as sufficient heat may be generated to self-ignite (Danger: Ignition may be delayed). Vacuum up, if possible, to avoid generating airborne dust. Collect uncontaminated material for repackaging. Collect contaminated material in approved containers for disposal. Flush spill area with copious quantities of water.

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WASTE DISPOSAL METHOD

Dispose of in accordance with federal, provincial and local regulations. It is the responsibility of the end-user to determine if material meets the criteria of hazardous waste at the time of disposal. Empty containers, which have not been cleaned and purged, contain residual hazardous material and must be recycled, or disposed of, in accordance with local regulations.

SECTION IX: PREPARATION

The information contains herein is given in good faith, but no warranty, expressed or implied, is made.

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BY: Regulatory Affairs
PHONE: 780-440-4923