

Lime

SECTION 1. IDENTIFICATION

Product Identifier	Lime
Recommended Use	Drilling Fluid Additive.
Manufacturer/Supplier Identifier	AES Drilling Fluids, LLC, 11767 Katy Freeway, Suite 230, Houston, TX, 77079, Sales & Information, 281-556-5628
Emergency Phone No.	AES Drilling Fluids, LLC, 1-888-556-4533
Date of Preparation	August 20, 2015

SECTION 2. HAZARD IDENTIFICATION

Classified according to the US Hazard Communication Standard (HCS 2012).

Classification

Skin irritation - Category 2; Serious eye damage - Category 1; Specific target organ toxicity (single exposure) - Category 3

Label Elements



Signal Word:

Danger

Hazard Statement(s):

- H315 Causes skin irritation.
- H318 Causes serious eye damage.
- H335 May cause respiratory irritation.

Precautionary Statement(s):

Prevention:

- P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
- P264 Wash hands and skin thoroughly after handling.
- P271 Use only outdoors or in a well-ventilated area.
- P302 + P352 IF ON SKIN: Wash with plenty of water/
- P280 Wear protective gloves, eye protection.

Response:

- P302 + P352 IF ON SKIN: Wash with plenty of water.
- P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P312 Call a POISON CENTRE or doctor if you feel unwell.
- P332 + P313 If skin irritation occurs: Get medical advice or attention.
- P362 + P364 Take off contaminated clothing and wash it before reuse.

Storage:

- P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
- P405 Store locked up.

Disposal:

- P501 Dispose of contents and container in accordance with local, regional, national and international

Product Identifier: Lime

Date of Preparation: August 20, 2015

Page 01 of 06

regulations.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Mixture:

Chemical Name	CAS No.	%	Other Identifiers
Calcium hydroxide	1305-62-0	>85	
Silica, quartz	14808-60-7	<0.1	

Notes

Concentrations are expressed in % weight/weight.

SECTION 4. FIRST-AID MEASURES

First-aid Measures

Inhalation

Remove source of exposure or move to fresh air. If breathing has stopped, trained personnel should begin rescue breathing. Give artificial respiration only with the aid of a pocket mask equipped with a one way valve or other proper respiratory medical device. Immediately call a Poison Centre or doctor.

Skin Contact

Take off contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Immediately rinse with lukewarm, gently flowing water for 15-20 minutes. Seek medical advice/attention.

Eye Contact

Immediately rinse the contaminated eye(s) with lukewarm, gently flowing water for at least 30 minutes, while holding the eyelid(s) open. Immediately call a Poison Centre or doctor.

Ingestion

Do not induce vomiting without medical advice. Get medical advice or attention if you feel unwell or are concerned. Never give anything by mouth to an unconscious person.

First-aid Comments

Due to irritant properties, swallowing may result in burns/ulceration of the mouth, stomach and lower GI tract.

Most Important Symptoms and Effects, Acute and Delayed

Irritation of skin, eyes, gastrointestinal tract or respiratory tract.

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media

Dry chemical. Use flooding quantities of water or other suitable extinguishing agent.

Specific Hazards Arising from the Product

Bulk powder calcium oxide may heat spontaneously when damp. Humidity or contact with water may generate sufficient heat to ignite flammable and combustible materials.

Not known to generate any hazardous decomposition products in a fire.

Special Protective Equipment and Precautions for Fire-fighters

When fighting chemical fires, emergency responders should wear NIOSH approved self contained breathing apparatus. Firefighters should wear appropriate breathing apparatus and protective clothing.

When fighting chemical fires, emergency responders should wear NIOSH approved self contained breathing apparatus and appropriate protective clothing.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures

Do not use water on bulk spills. Lime reacts violently with water. Use the personal protective equipment recommended in Section 8 of this safety data sheet. Avoid dust formation. Do not clean up materials with compressed air. Evacuate

Product Identifier: Lime

Date of Preparation: August 20, 2015

Page 02 of 06

the area immediately. Evacuate downwind locations.

Environmental Precautions

Minimize dust during clean up. Do not allow into any sewer, on the ground or into any waterway.

Methods and Materials for Containment and Cleaning Up

Avoid generating dust. Prevent contamination of waterways or sewers. Clean up residual contamination with water and place in appropriate containers for disposal. Wash equipment with either a mild vinegar solution, or detergent and water.

Other Information

Contact EH&S regarding spill as spills of certain products and certain quantities may require reporting to various authorities.

SECTION 7. HANDLING AND STORAGE

Precautions for Safe Handling

Keep containers tightly closed when not in use or empty. Protect containers from physical damage. Avoid contact with eyes, skin and clothing.

Conditions for Safe Storage

Store in an area that is: cool, dry, well-ventilated, separate from incompatible materials (see Section 10: Stability and Reactivity). Keep away from moisture long term storage in aluminum containers is not recommended, as calcium oxide may corrode aluminum over long periods of time.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

Chemical Name	ACGIH® TLV®		Alberta		SASK	
	TWA	STEL [C]	OEL	STEL	OEL	STEL
Calcium hydroxide	5 mg/m ³		5 mg/m ³		5 mg/m ³	10 mg/m ³
Silica, quartz	0.025 mg/m ³ A2	Not established	0.025 mg/m ³	Not established	0.05 mg/m ³	Not established

ACGIH® = American Conference of Governmental Industrial Hygienists. TLV® = Threshold Limit Value. TWA = Time-Weighted Average. STEL = Short-term Exposure Limit. C = Ceiling limit. OEL = Occupational Exposure Limit.

Appropriate Engineering Controls

Use local exhaust ventilation, if general ventilation is not adequate to control amount in the air. An eyewash and safety shower should be within acceptable distance to the work area.

Individual Protection Measures

Eye/Face Protection

Wear chemical safety goggles and face shield when contact is possible. It is not recommended to wear contact lenses while working with product.

Skin Protection

Wear gloves with appropriate chemical resistance, see manufacturers specifications for suitability. Wear long sleeves, long pants and appropriate footwear while working with product. Wear chemical protective clothing e.g. gloves, aprons, boots.

Respiratory Protection

If conditions exist above the OEL if conditions of use promote large amounts of dust to gather in the work area, wear NIOSH approved dust mask or respirator.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Basic Physical and Chemical Properties

Appearance	White - grey fine powder.
Odour	Odourless
Odour Threshold	Not available

Product Identifier: Lime

Date of Preparation: August 20, 2015

Page 03 of 06

pH	12.45 (saturated solution)
Melting Point/Freezing Point	1076 °F (580 °C) (melting); Not available (freezing)
Initial Boiling Point/Range	5162 °F (2850 °C)
Flash Point	Not available
Evaporation Rate	Not available
Flammability (solid, gas)	Not available
Upper/Lower Flammability or Explosive Limit	Not available (upper); Not available (lower)
Vapour Pressure	Not available
Vapour Density (air = 1)	Not available
Relative Density (water = 1)	2.2 - 2.4
Solubility	0.070 - 0.185 g/100 mL (Slightly soluble) in water
Partition Coefficient, n-Octanol/Water (Log Kow)	Not available
Auto-ignition Temperature	Not available
Decomposition Temperature	Not available
Other Information	
Physical State	Solid
Bulk Density	720 - 1200 kg/m ³ (45 - 75 lb/ft ³)

SECTION 10. STABILITY AND REACTIVITY

Reactivity

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.

Chemical Stability

Unstable under certain conditions - see Conditions to Avoid.

Possibility of Hazardous Reactions

Humidity or contact with water may generate sufficient heat to ignite flammable and combustible materials.

Conditions to Avoid

Water, moisture or humidity.

Incompatible Materials

Strong acids. Water. Avoid contact with: boron trifluoride, chlorine trifluoride, ethanol, fluorine. Powdered metals aluminum, acid anhydrides (e.g. acetic anhydride), hydrogen fluoride, phosphorus pentoxide.

Hazardous Decomposition Products

Reacts with water to form calcium hydroxide and generates heat.

SECTION 11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure

Inhalation; skin contact; eye contact; ingestion.

Acute Toxicity

Chemical Name	LC50	LD50 (oral)	LD50 (dermal)
Calcium hydroxide	Not available	7300 mg/kg (mouse)	Not available
Silica, quartz	Not available	500 mg/kg (rat)	Not available

Skin Corrosion/Irritation

Corrosive. May cause severe skin irritation. Contact can cause pain, redness, burns, and blistering. Permanent scarring can result.

Product Identifier: Lime

Date of Preparation: August 20, 2015

Page 04 of 06

Serious Eye Damage/Irritation

Contact causes severe burns with redness, swelling, pain and blurred vision. Permanent damage including blindness can result.

STOT (Specific Target Organ Toxicity) - Single Exposure

Inhalation

Material is irritating to mucous membranes and upper respiratory tract. May cause coughing, sneezing, inflammation of respiratory tract, ulceration and perforation of nasal septum, bronchitis, possible pneumonia.

Skin Absorption

No information was located.

Ingestion

Product is harmful if ingested. May cause burning and edema of the digestive tract. Symptoms may include abundant salivation, difficulties in swallowing and breathing, vomiting blood, drop in blood pressure which would be an indication of the esophagus or stomach.

Aspiration Hazard

Not known to be an aspiration hazard.

STOT (Specific Target Organ Toxicity) - Repeated Exposure

Long term exposure to respirable crystalline silica dust over the TLV may lead to the development of silicosis or other respiratory problems. Symptoms include cough, shortness of breath, wheezing, non-specific chest illness and reduced pulmonary function.

Prolonged skin contact may cause defatting of the skin resulting in irritation and conditions such as dermatitis.

Prolonged or repeated skin contact may cause skin corrosion.

Respiratory and/or Skin Sensitization

No information was located.

Carcinogenicity

Chemical Name	IARC	ACGIH®	NTP	OSHA
Calcium hydroxide	Not Listed	Not Listed	Not Listed	Not Listed
Silica, quartz	Group 1	A2	Known carcinogen	Not Listed

This product contains free silica which the International Agency for Research on Cancer (IARC) has listed as causing cancer in humans.

Key to Abbreviations

IARC = International Agency for Research on Cancer. Group 1 = Carcinogenic to humans. ACGIH® = American Conference of Governmental Industrial Hygienists. A2 = Suspected human carcinogen. NTP = National Toxicology Program. OSHA = US Occupational Safety and Health Administration.

Reproductive Toxicity

Development of Offspring

No information was located.

Sexual Function and Fertility

No information was located.

Effects on or via Lactation

No information was located.

Germ Cell Mutagenicity

No information was located.

SECTION 12. ECOLOGICAL INFORMATION

Do not allow product to contaminate domestic or irrigation water supplies, lakes, streams, ponds or rivers.

Ecotoxicity

Expected to be toxic to aquatic organisms.

Acute Aquatic Toxicity

Product Identifier: Lime

Date of Preparation: August 20, 2015

Page 05 of 06

Chemical Name	LC50 Fish	EC50 Crustacea	ErC50 Aquatic Plants	ErC50 Algae
Calcium hydroxide	Not available	Not available	Not available	Not available
Silica, quartz	Not available	Not available	Not available	Not available

Persistence and Degradability

No information was located.

Bioaccumulative Potential

This product and its degradation products are not known to bioaccumulate.

Mobility in Soil

If released into the environment, this product can move slowly through the soil. Contamination of groundwater could occur.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal Methods

Dispose of in accordance with all local, state and federal regulations. If this product as supplied, and unmixed, becomes a waste, it will not meet the criteria of a hazardous waste as defined under the Resource Conservation and Recovery Act.

SECTION 14. TRANSPORT INFORMATION

Not regulated under US DOT Regulations.

SECTION 15. REGULATORY INFORMATION

Safety, Health and Environmental Regulations

Canada

Domestic Substances List (DSL) / Non-Domestic Substances List (NDSL)

All ingredients are listed on the DSL or are not required to be listed.

USA

Toxic Substances Control Act (TSCA) Section 8(b)

All ingredients are on the TSCA Inventory or exempt from the TSCA.

Additional USA Regulatory Lists

CERCLA: Product does not contain any chemicals subject to the reporting requirement of CERCLA.

SARA Title III - Section 302: No listed components.

SARA Title III - Section 311/312: Immediate Health Hazard

SARA Title III - Section 313: No chemicals are reportable under Section 313.

SECTION 16. OTHER INFORMATION

NFPA Rating **Health - 3** **Flammability - 0** **Instability - 0**

SDS Prepared By HSE Department

Phone No. 403-269-2800

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Disclaimer Do not handle or use until precautions on MSDS are read and understood. The information on this form is furnished solely for the purpose of enabling those who transport, handle or use our products to ensure the safety and health of their employees and to comply with various laws and regulations (federal, state and local). We believe the statements, technical information and recommendations contained herein are reliable but, they are given without warranty or guarantee of any kind, express or implied and we assume no responsibility for any loss, damage, direct or consequential, arising out of their use.

Product Identifier: Lime

Date of Preparation: August 20, 2015

Page 06 of 06