School Material Safety Data Sheet

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CALCIUM HYDROXIDE

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SECTION 1. INTRODUCTORY INFORMATION

MATERIAL NAME AND FORMULA: CALCIUM HYDROXIDE, $Ca(OH)_2$
SYNONYMS: Hydrated Lime, Caustic Lime, Slaked Lime, Calcium Hydrate, High-Calcium Hydrated Lime
CAS NUMBER: 1305-62-0
INGREDIENTS: Typical composition (commerical material prepared by hydration of lime): $Ca(OH)_2$, >90%; $CaCO_3$, <47%; MgO, <3%; other oxides (of Al, Si, Fe etc.), <3%
MANUFACTURERS: Always request Material Safety Data Sheets from your chemical supplier. These should indicate the manufacturer of the substance and include an emergency phone number to call. The Manufacturers section of this book contains a listing of some of the larger manufacturers and available emergency numbers.

NFPA FIRE HAZARD SYMBOL
(See Glossary for details)

DESCRIPTION: Calcium hydroxide is an odorless material consisting of crystals, granules, or a soft white powder. It has an alkaline, bitter taste.

PRELIMINARY INFORMATION:
Calcium hydroxide is a noncombustible material that can be an irritant to the eyes, skin, or mucous membranes. This material has a variety of lab applications.

SECTION 2. USE AND STORAGE INFORMATION

-- PRELIMINARY PLANNING CONSIDERATIONS --

- Safety glasses or goggles and protective clothing (rubberized apron, etc.) should be worn for all experiments.
- Be sure eyewash station and safety shower are in good working order and readily available.
- Always provide for safe disposal of all chemical waste generated in the lab. Check applicable regulations prior to use.
- Strongly alkaline material.

-- USAGE PRECAUTIONS AND PROCEDURES --

- **For safety, contact lenses should not be worn in the laboratory: Soft lenses may absorb and all lenses may concentrate irritants. Particles may adhere to lenses and cause corneal damage.**
- READ THE LABEL and follow all precautions.
- Maintain good housekeeping practices to avoid unintentional mixing with incompatible materials.
- After working with this material, always wash hands and face before eating, drinking, or smoking.
- Avoid creating airborne dust conditions. Avoid contact of this material with skin and eyes.

-- ADDITIONAL INFORMATION --

- Material does not polymerize. It is stable solid under normal conditions in sealed containers.
- Incompatible with acidic materials.
- Liberates ammonia from ammonium salts.
- Forms salts with nitroparaffins in the presence of water, which are explosive when dried.
- Can cause the explosive decomposition of maleic anhydride.
- Boiling elemental phosphorous in a $Ca(OH)_2$ solution can liberate spontaneously flammable and toxic phosphines.

-- PREFERRED STORAGE LOCATION AND METHODS --

- Storage area should be cool and well ventilated. Containers should be tightly closed. (When exposed to air, this material will absorb carbon dioxide [CO_2] slowly to form calcium carbonate [$CaCO_3$].)
- Do not store chemicals alphabetically by name; store by chemical family instead to keep compatibles together.
- All chemical containers should be protected from physical damage and kept out of direct sunlight.
- Store with compatible materials on sturdy shelving, away from acids.

SECTION 3. SPILLS AND DISPOSAL PROCEDURES

IF MATERIAL IS SPILLED:
- Pick up carefully (avoid creating airborne dust conditions) and place in a suitable container for disposal. Traces of residue can be flushed to drain with large excess of water.
- Cleanup personnel should have protection against inhalation of dust or skin contact.

DISPOSAL OF SMALL QUANTITIES:
- Consider the following methods (choose the most appropriate): Use to neutralize waste acid; spread on surface of ground in an isolated protected area to react with carbon dioxide (CO_2) in air to form calcium carbonate ($CaCO_3$, limestone); or disperse in water, neutralize with dilute hydrochloric acid (HCl), precipitate with soda ash (sodium carbonate, Na_2CO_3), and flush to drain with excess water, to keep below 250 mg/l of sodium chloride (NaCl).

DISPOSAL OF LARGER AMOUNTS : Contact a licensed disposal company.

*** FOLLOW ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS FOR ALL WASTE DISPOSAL ***

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SECTION 4: HEALTH HAZARDS

Current ACGIH TLV: 8-hr. TWA: 5 mg/m^3

Calcium hydroxide is not listed as a carcinogen by OSHA, IARC, or NTP.

No OSHA PEL established (minimum control would be as a nuisance particulate).

Rat, Oral, LD_{50}: 7340 mg/kg

- In the presence of moisture this material can be a moderately caustic irritant and can be damaging to human tissue.
- Excessive skin contact will irritate the skin and produce dermatitis.
- Eye contact gives a burning sensation with severe irritation and possible damage.
- Inhalation in particulate form is irritating and can be damaging to the mucous membranes of the upper respiratory tract.
- Mild GI (gastrointestinal tract) irritation after ingestion. Do not ingest.

SECTION 5: FIRST AID PROCEDURES

Eye contact:
- Flush eyes promptly with plenty of running water for at least 15 minutes, including under the eyelids.
- Get prompt medical attention.*

Skin contact:
- Wash affected area with large amounts of water. Remove contaminated clothing promptly.
- Get medical help when area of skin exposure is large or if irritation persists.*

Inhalation:
- Remove victim to fresh air; restore and/or support breathing as necessary. Contact medical personnel.*
- Get medical help for coughing or breathing difficulty.*

Ingestion:
- Give two glasses of milk or water to drink to dilute. Follow with fruit juice or diluted vinegar to neutralize the alkali, then consult physician. Never give anything by mouth to a person who is unconscious or convulsing.

* Get medical help (in school, paramedic, or community) for further treatment, observation, and support after first aid.

SECTION 6: FIRE PROCEDURES AND DATA

- Not a combustible material, but can release H_2O above 1076°F (580°C) to form calcium oxide (CaO).
- Extinguishing media: Use media appropriate to surrounding fire conditions.
- For fires involving a number of chemicals, fire fighters should wear appropriate protective clothing and use respiratory protection. Self-contained breathing apparatus is recommended.
- A water spray may be used to cool fire-exposed containers and disperse vapors.

THERMAL DECOMPOSITION PRODUCTS: Calcium oxide (CaO) and H_2O (above 580°C)

FLASH POINT AND METHOD(S) ... Not Combustible
AUTOIGNITION TEMPERATURE ... Not Combustible

FLAMMABILITY LIMITS IN AIR (vol. %) :

SECTION 7: PHYSICAL DATA

SOLUBILITY IN WATER (@ 25°C) ... 0.159 g/100 ml (0.185 g/100 ml @ O°C; 0.017 g/100 ml @100°C)
pH OF AQUEOUS SOLUTION ... 12.5 (saturated solution; @ 25°C)
MELTING POINT ... Loses H_2O on decomposition @ 1076°F (580°C) to form CaO.
MOLECULAR WEIGHT ... 74.1

DATA SOURCES: Genium's Industrial MSDS #39 (10/84) and references 1, 2, 4-9, 11, 14, 20, 47, 501, 518.
(see glossary for titles)

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