

School Material Safety Data Sheet

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CALCIUM OXIDE

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SECTION 1. INTRODUCTORY INFORMATION

MATERIAL NAME AND FORMULA: CALCIUM OXIDE; CaO

SYNONYMS: Lime, Quicklime, Burnt Unslaked Lime, High-Calcium Lime, Calx, Calcia, Fluxing Lime

CAS NUMBER: 1305-78-8

INGREDIENTS: Calcium oxide, > 90%; Magnesium oxides, 0 to 2.5%. Purity depends on purity of CaCO₃ from which it was prepared and on the exposure to air on storage and handling. Can contain MgO, SiO₂, other oxides, CaCO₃ and Ca(OH)₂

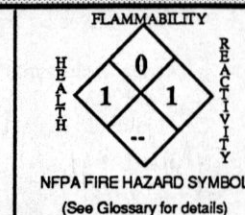
DOT CLASSIFICATION: ORM-B

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.

DESCRIPTION: A white, odorless solid. Commercially available in lump, pebble, pelletized, and powdered forms.

PRELIMINARY INFORMATION:

This material may be damaging on contact with skin or eyes. When moistened it can generate quantities of heat and swell in volume. Not considered a fire hazard, but exothermic reaction with water should be noted. A chemical reagent with chemistry 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.
- For safety, contact lenses should not be worn in the laboratory; soft lenses may absorb irritants and all lenses may concentrate them. Particles can also adhere to contact lenses and cause corneal damage.
- Always provide for safe disposal of all chemical waste generated in the lab. Check applicable regulations prior to use.
- Rubber gloves are recommended when working with this material.
- Caution students to the corrosive nature of CaO.

-- USAGE PRECAUTIONS AND PROCEDURES --

- 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.
- Much heat is evolved if large amounts come in contact with water, steam, or acidic materials.
- When exposed to air, material may react with: H₂O or CO₂ to form Ca(OH)₂ or CaCO₃.
- Do not inhale dust. Avoid body contact with this substance.
- Take care to see that heat is allowed to dissipate if quantities are mixed with water; especially if lump form is used.

-- ADDITIONAL INFORMATION --

- Material does not polymerize.
- Incompatible with acids, boric oxide, water, steam, fluorine, and many organic materials.
- Swelling and heat generation upon moistening could burst containers.

-- PREFERRED STORAGE LOCATION AND METHODS --

- Storage area should be cool and well ventilated. Containers should be tightly closed.
- All chemical containers should be protected from physical damage and kept out of direct sunlight.
- Smoking should not be permitted in areas where chemicals are stored.
- Purchase only amounts equivalent to one year's needs.
- Store with compatible materials on sturdy shelving, away from acids and organics.
- Composition may change if exposed to moisture or carbon dioxide in air.

SECTION 3. SPILLS AND DISPOSAL PROCEDURES

IF MATERIAL IS SPILLED:

- Ventilate area of spill.
- Cleanup personnel should wear personal protective equipment as necessary to prevent skin or eye contact and inhalation of dust.
- Carefully scoop up spilled material and collect in a suitable container (with secure lid) for disposal or reclamation. Avoid creating airborne dust conditions.
- Cleanup methods such as vacuuming (with appropriate filter) or wet mopping will minimize dust dispersion.
- Flush trace amounts of residue to drain, using large amounts of water.

DISPOSAL OF SMALL QUANTITIES:

- Carefully add to water, dilute and flush to sewer with large quantities of water. Large amounts may require acid neutralization. (Waste lime may also be used for neutralizing acid wastes.)

NOTE: This material was originally on EPA list of hazardous substances but has since been removed.

DISPOSAL OF LARGER AMOUNTS: Contact a licensed disposal company.

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

SECTION 4: HEALTH HAZARDS

Current OSHA PEL : 8-hr. TWA: 5 mg/m³Current ACGIH TLV 8-hr. TWA: 2 mg/m³

- Calcium oxide is a strongly alkaline material; contact with skin and eyes will cause irritation and possible severe corrosion damage. May cause burns to the skin.
- Inhalation of dust may cause coughing, sneezing, and/or inflammation of the respiratory passages.
- Calcium oxide has not been identified as a known or suspected carcinogen by the NTP, IARC, or OSHA.

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.

Inhalation:

- Remove victim from exposure to dust; restore and/or support breathing as necessary.
- Get prompt medical attention.*

Ingestion:

- Give several glasses of milk or water to drink, to dilute. Then give dilute vinegar or fruit juice to neutralize.* 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

- In small amounts, calcium oxide does not hinder the use of any standard extinguishing medium.
- In large amounts, contact with water, steam or acidic material can evolve much heat. Heat generation and swelling of material due to moistening can also lead to bursting of container.
- Extinguishing media: Use media appropriate to surrounding fire conditions.
- For major fires, or if large quantities of this material are involved, 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.

FLASH POINT AND METHOD(S) ... Not Flammable

AUTOIGNITION TEMPERATURE ... Not Flammable

FLAMMABILITY LIMITS IN AIR (vol. %) :

SECTION 7: PHYSICAL DATA

BOILING POINT (@ 1 atm.) ... 5162°F (2850°C.)

SOLUBILITY IN WATER (@ 0°C) (reacts) ... 0.14 g/100 ml (@ 50°C; 0.097) (@ 100°C; 0.054)

pH OF AQUEOUS SOLUTION (@ 25°C approx.) ... 11.7 (0.2 g/l H₂O) (12.5 for 1.2 g/l H₂O; sat.)

SPECIFIC GRAVITY ... 3.2-3.4

MELTING POINT ... 4658°F (2570°C.)

FORMULA WEIGHT ... 56.08

DATA SOURCES: Genium Industrial MSDS #22 (9/78) and references 1, 2, 4, 6-8, 12, 501, 506, 509-511, 518.*

(see glossary for titles) * Additional Reference: "Chemical Lime Facts." National Lime Assn. Bulletin 214. 3rd ed., Washington, DC, 1973.

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Approvals:

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Indust. Hygiene/Safety

Medical Review

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