

TAMAX-SDS-02 — Safety Data Sheet for Quicklime

TAMAX VENTURES LTD. — SAFETY DATA SHEET (SDS)

- **Document ID:** TMX-SDS-02
- **Chemical Name:** Calcium Oxide — CaO
- **Trade Name / Product:** Fine Ground Quicklime (Burnt Lime, Unslaked Lime, Fluxing Lime, Pebble Lime)
- **Company:** Tamax Ventures Ltd. (Kansarawdo Mampong Road, Yankey Junction, Takoradi, Ghana)
- **Emergency Contact (Ghana):** 191 (National Fire/Ambulance services) or +233-31-2092199

SECTION 1: Chemical Product & Company Identification

- **Synonyms:** Calcium monoxide, Burnt lime, Unslaked lime, Fluxing lime, Pebble lime, Quick lime.
- **Chemical Formula:** CaO
- **CAS Number:** 1305-78-8 | **EINECS Number:** 215-138-9 | **Molecular Weight:** 56.08 g/mol
- **Primary Uses:** Gold cyanidation loops, iron and steel fluxing, industrial chemical synthesis, and heavy soil stabilization/drying.

SECTION 2: Composition / Information on Ingredients

- **Major Ingredient:** Calcium Oxide (CaO) obtained from thermal calcination of high-purity limestone minerals.
- **Trace Constituents:** Small quantities of Calcium Carbonate (CaCO₃), Calcium Dihydroxide (Ca(OH)₂), Magnesium Oxide (MgO), Silicon Oxide (SiO₂), Aluminium Oxide (Al₂O₃), and Iron Oxide (Fe₂O₃).

SECTION 3: Hazards Identification

[!CAUTION] Xi — IRRITANT STATUS & EXOTHERMIC CRITICAL RISK

- **R37:** Highly irritating to the respiratory system.
- **R38:** Irritating to skin, particularly in the presence of moisture/sweat.
- **R41:** Risk of serious, irreversible eye damage.
- **CRITICAL HYDRATION REACTION:** Calcium oxide reacts exothermically with water to form Calcium Hydroxide: $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca(OH)}_2 + 1155 \text{ kJ/kg}$ CaO This hydration reaction generates extreme heat (temperatures exceeding 100°C are easily reached) and can readily ignite nearby flammable materials such as wood, paper, straw, or plastics, posing a major fire and chemical burn risk.

SECTION 4: First Aid Measures

Eye Exposure

- **Action:** Dry-brush any dust off eyelids first. Do NOT rub eyes. Immediately flush eyes with large quantities of fresh running water (or saline solution) for **15 to 20 minutes**. Ensure eyelids are held wide apart. Remove contact lenses immediately if present.
- **Target:** Prevent cornea chemical burns and thermal scarring. **Seek immediate medical attention.**

Inhalation

- **Action:** Move the affected person to fresh air immediately. If breathing is difficult, administer oxygen. If coughing and chest pain persist, **seek immediate medical attention.**

Skin Contact

- **Action:** Dry-brush the loose powder gently off the skin surface first. Wash the contaminated area immediately with large volumes of fresh water for **15 to 20 minutes**. Remove all contaminated clothing. If skin irritation, blistering, or chemical burns occur, consult a physician.

Ingestion

- **Action:** Rinse the mouth thoroughly with water. Drink copious amounts of fresh water. **Do NOT induce vomiting.** Seek immediate medical attention.

SECTION 5: Fire-Fighting Measures

- **Flammability:** The substance is **strictly non-flammable** and non-combustible.
- **CRITICAL WARNING FOR FIRE-FIGHTERS:** Avoid direct water stream contact on bulk quicklime. Contact with water triggers an intense exothermic hydration reaction, releasing significant steam and heat, which can exacerbate surrounding fire and ignite nearby combustibles.
- **Extinguishing Media:** Use dry chemical powder, carbon dioxide (CO₂), or foam. Do NOT use water unless necessary, and if used, apply in massive, flooding quantities to absorb generated heat.

SECTION 6: Accidental Release Measures

- **Personal Precautions:** Wear full protective gear (Section 8). Keep dust levels to an absolute minimum. Avoid inhaling dust.
- **Environmental Precautions:** Contain the dry spillage. Do not allow untreated quicklime dust to enter waterways, municipal drains, or sewers, as it causes severe localized heating and rapid, toxic rise in water pH. Report spills exceeding local limits to the Ghana Environment Protection Agency.
- **Spill Cleanup:** Keep the spilled material strictly dry. Pick up dry powder/lumps mechanically utilizing vacuum systems or shovels. Store in airtight bags for recovery or disposal. Do not use water for cleanup.

SECTION 7: Handling & Storage

Handling

- Avoid direct contact with eyes and skin. Avoid inhaling dust. Wear recommended personal protective equipment (PPE). Ensure handling zones are completely dry.

Storage

- Store under strictly dry, weather-proof, moisture-free conditions. Bulk storage must utilize purpose-designed dry silos.
- Keep strictly away from:**
 - Water & Moisture (causes intensive heat generation and steam).
 - Acids (violent reaction generating significant heat).
 - Combustibles (wood, paper, straw, nitro-compounds, which can ignite due to exothermic heat).
 - Aluminum and Brass (contact in damp conditions generates highly flammable **Hydrogen Gas**: $\text{CaO} + 2\text{Al} + 7\text{H}_2\text{O} \rightarrow \text{Ca}(\text{Al}(\text{OH})_4)_2 + 3\text{H}_2\uparrow$).

SECTION 8: Exposure Controls & Personal Protection

- Occupational Exposure Standard (OES):** 2 mg/m³ of dust (8-hour Time Weighted Average TWA).

Personal Protective Equipment (PPE)

REQUIRED PPE GEAR	
	Mask: EN 149 FFP2 Respirator
	Eyes: Tight Goggles
	Hands: Nitrile Gloves
	Feet: Caustic-Resistant

- Skin Protection:** Wear close-fitting protective overalls covering all exposed skin, long sleeves, and full-length trousers. Shower daily after shifts.

SECTION 9: Physical & Chemical Properties

- Appearance:** White or off-white solid material available in varying sizes: Lumps, granules, or fine ground dry powder.
- Odor:** Mild, slight earthy odor.
- pH value:** 12.4 (at 25°C in saturated aqueous solution).
- Melting Point:** 2570°C.
- Boiling Point:** 2850°C.
- Specific Gravity:** 3.3 – 3.4 g/cm³ at 20°C.
- Bulk Density:** 700 – 1300 kg/m³ at 20°C.
- Solubility:** Highly soluble in acids and ammonium salts. Soluble in water (1850 mg/l at 0°C; 1650 mg/l at 20°C). Reacts exothermically with water to form Calcium Hydroxide. Completely insoluble in alcohol.

SECTION 10: Toxicological & Ecological Information

- **Toxicological Profile:** Causes acute skin irritation, serious eye damage, and upper respiratory tract irritation. Due to the exothermic reaction, contact with sweat or mucous membranes leads to immediate thermal and chemical skin burns.
- **Ecotoxicity:** Highly toxic to aquatic life on a localized scale due to pH spikes above 12 and thermal heat release. Non-toxic under dilution (C. carpio LC50 = 1070 mg/l for 96 hours).