

PRLB-82 — Quicklime and Hydrated Lime for Soil Stabilisation

Ground quicklime (CaO) · hydrated lime (Ca(OH)₂) · high-calcium, dolomitic or magnesian

In accordance with ASTM C977 / AASHTO M 216 — Quicklime and Hydrated Lime for Soil Stabilization

1. Description

Lime for soil stabilisation acts through two successive mechanisms. In the short term, cation exchange between the calcium in the lime and the cations adsorbed on the clays causes flocculation of the fine particles, with an immediate reduction of the plasticity index and improved workability. In the long term, the pozzolanic reaction between the lime and the silica and alumina released from the clays generates hydrated calcium silicates and aluminates that provide permanent structural strength.

2. Applications

- Stabilisation of high-plasticity clay subgrades and drying of wet soils.
- Modification of expansive soils and control of swelling potential.
- Stabilisation of sub-bases and granular bases with a plastic fine fraction.
- Anti-stripping additive in hot mix asphalt.
- Temporary working platforms on soft ground.

3. Specifications

Chemical requirements — applicable to quicklime and hydrated lime

Property	Method	Requirement
CaO + MgO, non-volatile basis (%), min.	ASTM C25	90.0 %
Carbon dioxide, CO ₂ (%), max.	ASTM C25	5.0 % (as measured at the place of manufacture)
Free moisture (%), max.	ASTM C25	2.0 % (as measured at the place of manufacture)

Physical requirements

Type	Property	Requirement
Hydrated lime	Retained on No. 30 (600 µm) sieve	3 % max.
Hydrated lime	Retained on No. 200 (75 µm) sieve	25 % max.
Quicklime	Particle size	All passing the 1.0 in. (25.0 mm) sieve
Quicklime	Slaking rate — temperature rise (ASTM C110)	Minimum 30 °C rise in 20 min
Quicklime	Residue (ASTM C110)	10 % max.

Normative notes. (i) ASTM C977 does NOT contemplate the "Type N" and "Type S" designations: those classifications belong to ASTM C207, applicable to hydrated lime for masonry, not to soil stabilisation. (ii) Neither does ASTM C977 set an unhydrated-oxide limit; that requirement belongs to ASTM C1097 (hydrated lime for asphalt mixtures) and to agency criteria such as those of Caltrans — which require a maximum of 5.0 % unhydrated oxides and a slaking rate of 30 °C in 8 minutes, stricter than the standard. (iii) The values in this sheet correspond to the ASTM C977-03 / AASHTO M 216-05 editions, numerically identical to each other; the current C977-18(2024) and M 216-22 editions retain the same parameter set. (iv) For use as an anti-stripping additive in asphalt mixtures the applicable standard is ASTM C1097 or AASHTO M 303 Type I; please request the specific data sheet.

4. Handling and application

DANGER — quicklime is a corrosive product. On contact with moisture on the skin, eyes or respiratory tract it reacts exothermically and causes chemical burns. Handling requires sealed goggles, impermeable gloves, full-body clothing and respiratory protection against particulate matter. In application, the optimum dosage is established by the Eades and Grim pH test (ASTM D6276) and verified with plasticity and unconfined compressive strength testing. The material must be mixed, hydrated and cured in accordance with the design procedure before final compaction.

5. Storage and transport

Store in a dry, covered and ventilated place, on pallets and away from the ground. Keep containers closed: prolonged contact with ambient moisture causes hydration, lump formation and loss of reactivity. Do not stack more than two pallets of big bags. Typical shelf life of 6 months in the original sealed packaging under suitable storage conditions. In bulk handling, protect silos against water ingress and verify ventilation before any confined-space entry.

6. Packaging and logistics

In bulk in pneumatic bulk carriers of 25–35 t · 1,000–1,500 kg big bags with discharge valve · 25 kg and 50 kg bags on ISPM-15 certified pallets. All packages are labelled in accordance with GHS.

7. Quality control

Every batch shipped is accompanied by a laboratory-issued quality certificate reporting the tests required by the applicable standard, with traceable batch identification. Additional testing or independent third-party inspection (SGS, Bureau Veritas, Intertek, Cotecna) at origin or destination can be arranged at the customer's request.

Consult the product Safety Data Sheet (SDS) before handling.

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