

**13 Method of Manufacture**

Calcium hydroxide is manufactured by adding water to calcium oxide, a process called slaking.

**14 Safety**

Calcium hydroxide is used in oral and topical pharmaceutical formulations. It is mildly toxic by ingestion. In the pure state, calcium hydroxide is a severe skin, eye, and respiratory irritant, and it is corrosive, causing burns. Typical exposure limits are TLV 5 mg/m<sup>3</sup> in air.<sup>(5)</sup>

LD<sub>50</sub> (mouse, oral): 7.3 g/kg

LD<sub>50</sub> (rat, oral): 7.34 g/kg<sup>(6)</sup>

**15 Handling Precautions**

Observe normal precautions appropriate to the circumstances and quantity of the material handled. Avoid contact with eyes, skin, and clothing. Avoid breathing the dust. Gloves, eye protection, respirator, and other protective clothing should be worn. In the USA, the OSHA permissible exposure limit is 15 mg/m<sup>3</sup> for total dust and 5 mg/m<sup>3</sup> respirable fraction for calcium hydroxide.<sup>(7)</sup>

**16 Regulatory Status**

GRAS listed. Accepted for use as a food additive in Europe. Included in the FDA Inactive Ingredients Database (intravenous and subcutaneous injections; oral suspensions and tablets; topical emulsions and creams). Included in parenteral preparations licensed in the UK.

**17 Related Substances**

Potassium hydroxide; sodium hydroxide.

**18 Comments**

Therapeutically, calcium hydroxide has been used as a topical astringent.<sup>(3,4)</sup>

In dentistry, it is used as a filling agent and in dental pastes to encourage deposition of secondary dentine.<sup>(8)</sup> Calcium hydroxide was traditionally used as an escharotic in Vienna Paste.<sup>(9)</sup>

A specification for calcium hydroxide is contained in the *Food Chemicals Codex* (FCC).<sup>(10)</sup>

The EINECS number for calcium hydroxide is 215-137-3. The PubChem Compound ID (CID) for calcium hydroxide is 14777.

**19 Specific References**

- 1 Wenninger JA, McEwen JD Jr, eds. *CTFA Cosmetic Ingredient Handbook*. Washington DC: CTFA, 1992; 53.
- 2 Todd RG, Wade A, eds. *The Pharmaceutical Codex*, 11th edn. London: Pharmaceutical Press, 1979; 127.
- 3 Allen L Jr et al. eds. *Ansel's Pharmaceutical Dosage Forms and Drug Delivery*. Philadelphia: Lippincott Williams and Wilkins, 2005; 411.
- 4 Allen L Jr et al. eds. *Ansel's Pharmaceutical Dosage Forms and Drug Delivery*. Philadelphia: Lippincott Williams and Wilkins, 2005; 368.
- 5 Ash M, Ash I, eds. *Handbook of Pharmaceutical Additives*, 3rd edn. Endicott, NY: Synapse Information Resources, 2007; 501.
- 6 Lewis RJ, ed. *Sax's Dangerous Properties of Industrial Materials*, 12th edn. New York: Wiley, 2012; 829.
- 7 Avantor Performance Materials. Material safety data sheet: Calcium hydroxide, version 1.0, 30 May 2014.
- 8 Foreman PC, Barnes IE. A review of calcium hydroxide. *Int Endod J* 1990; 23: 283–297.
- 9 Brayfield A (ed). *Martindale: The Complete Drug Reference*. [online] London: Pharmaceutical Press. <http://www.medicinescomplete.com> (accessed 17 November 2015).
- 10 *Food Chemicals Codex*. [online] Bethesda, MD: United States Pharmacopeia. <http://publications.usp.org> (accessed 31 March 2017).

**20 General References****21 Author**

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**22 Date of Revision**

4 May 2017.



# Calcium Lactate

**1 Nonproprietary Names**

BP: Calcium Lactate Pentahydrate

JP: Calcium Lactate Hydrate

PhEur: Calcium Lactate

USP–NF: Calcium Lactate

**2 Synonyms**

Calcii lactas pentahydricus; calcium bis(2-hydroxypropanoate) pentahydrate; calcium dilactate; calcium lactate (1:2) hydrate; calcium lactate (1:2) pentahydrate; E327; 2-hydroxypropanoic acid, calcium salt; lactic acid, calcium salt; mixture of calcium (2R)-, (2S)- and (2RS)-2-hydroxypropanoates pentahydrates; propanoic acid, 2-hydroxy-, calcium salt (2:1), hydrate; *Puracal*.

**3 Chemical Name and CAS Registry Number**

Calcium lactate anhydrous [814-80-2]

Calcium lactate monohydrate and trihydrate [41372-22-9]

Calcium lactate pentahydrate [5743-47-5] and [63690-56-2]

**4 Empirical Formula and Molecular Weight**

C <sub>6</sub> H <sub>10</sub> CaO <sub>6</sub>	218.2 (anhydrous)
C <sub>6</sub> H <sub>10</sub> CaO <sub>6</sub> ·H <sub>2</sub> O	236.0 (monohydrate)
C <sub>6</sub> H <sub>10</sub> CaO <sub>6</sub> ·3H <sub>2</sub> O	272.3 (trihydrate)
C <sub>6</sub> H <sub>10</sub> CaO <sub>6</sub> ·5H <sub>2</sub> O	308.3 (pentahydrate)