

18 Comments

Studies utilizing the porous properties of calcium silicate granules have shown their ability to form floating structures, giving rise to potentially gastroretentive formulations.^(3,4)

A specification for calcium silicate is contained in the *Food Chemicals Codex* (FCC).⁽⁵⁾

The EINECS number for calcium silicate is 215-710-8. The PubChem Compound ID (CID) for calcium silicate is 518851.

19 Specific References

- 1 Gottschalck TE, McEwen GN, eds. *International Cosmetic Ingredient Dictionary and Handbook*, 11th edn. Washington, DC: The Cosmetic, Toiletry, and Fragrance Association, 2006; 325.
- 2 Health and Safety Executive. *EH40/2005: Workplace Exposure Limits*. Sudbury: HSE Books, 2011. <http://www.hse.gov.uk/pubns/priced/eh40.pdf> (accessed 14 October 2015).
- 3 Jain AK, et al. Controlled release calcium silicate based floating granular delivery system of ranitidine hydrochloride. *Curr Drug Deliv* 2006; 3(4): 367–372.

- 4 Jain SK, et al. Calcium silicate based microspheres of repaglinide for gastroretentive floating drug delivery: preparation and in vitro characterization. *J Control Release* 2005; 107(2): 300–309.
- 5 *Food Chemicals Codex*. [online] Bethesda, MD: United States Pharmacopeia. <http://publications.usp.org> (accessed 31 March 2017).

20 General References

Sigma-Aldrich. Material safety data sheet, version 5.2: Calcium silicate, 13 February 2013.

21 Author

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22 Date of Revision

4 May 2017.

Calcium Stearate

1 Nonproprietary Names

BP: Calcium Stearate

JP: Calcium Stearate

PhEur: Calcium Stearate

USP–NF: Calcium Stearate

2 Synonyms

Calcii stearas; calcium distearate; calcium octadecanoate; *Ceasit PC*; *Kemistab EC-F*; octadecanoic acid, calcium salt; stearic acid, calcium salt; *Synpro*.

3 Chemical Name and CAS Registry Number

Octadecanoic acid calcium salt [1592-23-0]

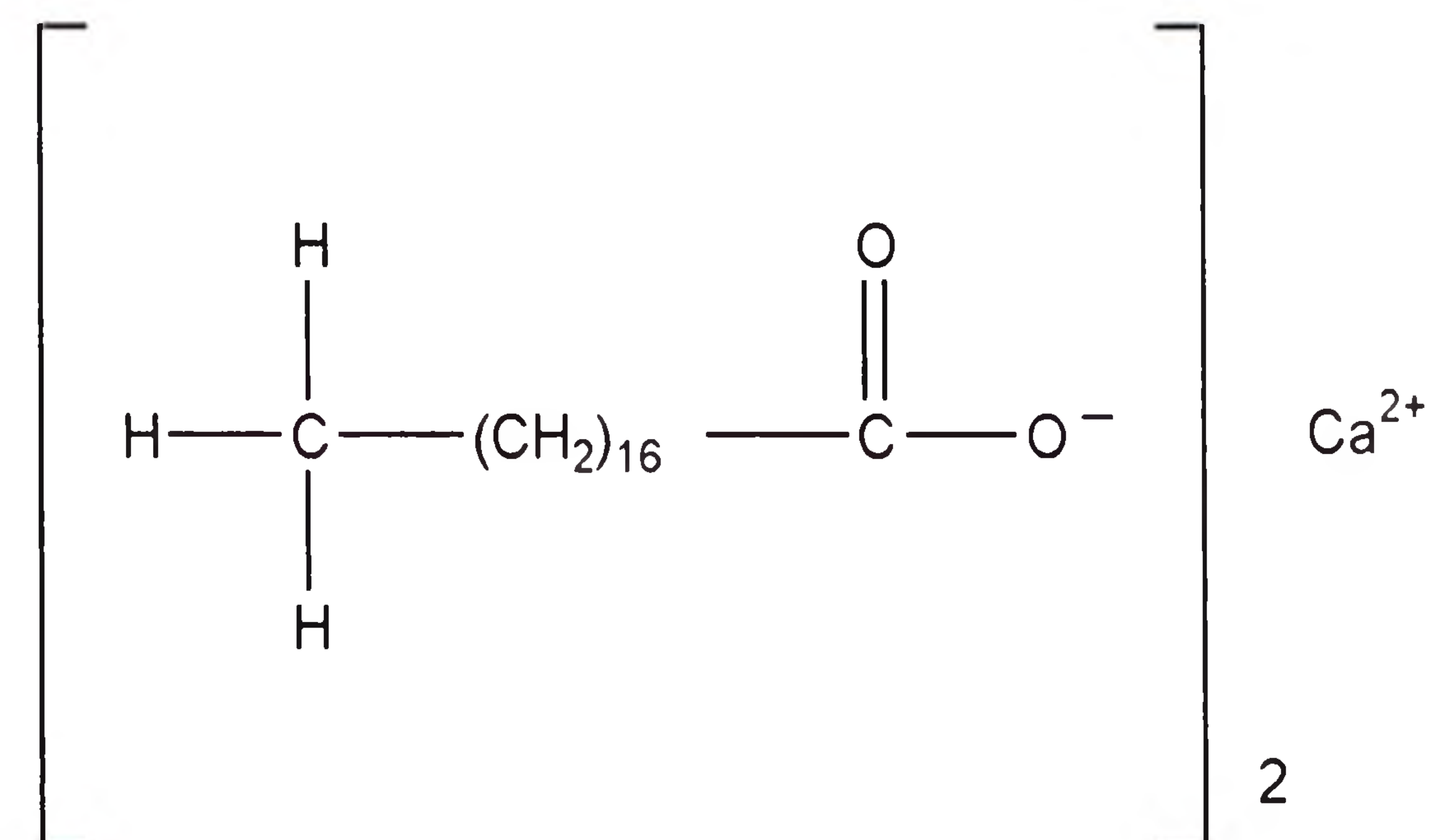
4 Empirical Formula and Molecular Weight

$C_{36}H_{70}CaO_4$ 607.03 (for pure material)

The USP 40–NF 35 S1 describes calcium stearate as a compound of calcium with a mixture of solid organic acids obtained from sources of vegetable or animal origin, and consists mainly of variable proportions of calcium stearate and calcium palmitate. It contains the equivalent of 6.4–7.4% of calcium calculated on the dried basis. The content of stearic acid in the fatty acid fraction is a minimum of 40.0% of the total content. The sum of stearic acid and palmitic acid in the fatty acid fraction is a minimum of 90.0% of the total content.

The PhEur 9.2 describes calcium stearate as a mixture of calcium salts of different fatty acids consisting mainly of stearic acid $[(C_{17}H_{35}COO)_2Ca]$ and palmitic acid $[(C_{15}H_{31}COO)_2Ca]$ with minor proportions of other fatty acids. It contains a minimum of 40.0% stearic acid in the fatty acid fraction. The sum of stearic acid and palmitic acid in the fatty acid fraction is a minimum of 90.0%. It contains the equivalent of 9.0–10.5% of calcium oxide.

5 Structural Formula



6 Functional Category

Tablet and capsule lubricant.

7 Applications in Pharmaceutical Formulation or Technology

Calcium stearate is primarily used in pharmaceutical formulations as a lubricant in tablet and capsule manufacture at concentrations up to 1.0% w/w. Although it has good antiadherent and lubricant properties, calcium stearate has poor glidant properties.

Calcium stearate is employed as an emulsifier, stabilizing agent, and suspending agent, used in cosmetics and food products.

8 Description

Calcium stearate occurs as a fine, white to yellowish-white, bulky powder having a slight, characteristic odor. It is unctuous and free from grittiness.

9 Pharmacopeial Specifications

See Table I.