

Calcium Carbonate

Calcium carbonate (INS 170(i)) is a fine, odorless, white, or colorless microcrystalline powder. It provides a white color for various drugs and foods, including confectionery products.

Calcium carbonate is obtained from ground limestone or produced synthetically through a precipitation process using calcium oxide, water, and carbon dioxide. Its purity is not less than 98% calcium carbonate, with particle size varying according to manufacturing conditions. For its use as a color additive, the crystalline forms of calcium carbonate characteristically contain particles of 1 to 10 μm diameter crystals. The typical average particle size of food-grade calcium carbonate is about five μm , with an upper range of 65 μm and less than 1% of particles with a diameter below 100 nm. In its 2011 opinion, the European Food Safety Authority EFSA Panel on Food Additives and Nutrient Sources (ANS Panel) concluded that trace levels of adventitious nanoscale material within macroscale calcium carbonate were not of toxicological concern.

The Joint FAO/WHO Expert Committee on Food Additives (JECFA) reviewed calcium carbonate and established an ADI of “not limited” at its 9th meeting. The Codex Alimentarius has included calcium carbonate in Table 3 of the Codex General Standard of Food Additives (GSFA). It may be used in specified foods under the conditions of good manufacturing practices (GMP) as outlined in the Preamble of the Codex GSFA.

Calcium carbonate is approved for use as a color in the European Union, with an acceptable daily intake (ADI) of “not specified” in a wide variety of food categories. It is also approved in the United States as a color additive that is exempt from certification, where it is permanently listed for food use in amounts consistent with GMP to color soft and hard candies and mints and in inks used on the surface of chewing gums.

References

Joint FAO/WHO Expert Committee on Food Additives; Specifications for the Identity and Purity of Food Additives and their Toxicological Evaluation: Some Antimicrobials, Antioxidants, Emulsifiers, Stabilizers, Flour-treatment agents, acids, and bases. WHO Technical Report Series No. 339; FAO Nutrition Meetings Report Series No. 40 1965.

https://apps.who.int/iris/bitstream/handle/10665/39853/WHO_TRS_339.pdf?sequence=1

Listing of Color Additives Exempt from Certification; Calcium Carbonate, 82 FR 51554 (Nov 7, 2017).

<https://www.govinfo.gov/content/pkg/FR-2017-11-07/pdf/2017-24194.pdf>

EFSA Panel on Food Additives and Nutrient Sources added to Food (ANS); Scientific Opinion on re-evaluation of calcium carbonate (E 170) as a food additive. EFSA Journal 2011;9(7):2318 [73 pp.].

<https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2011.2318>

Codex GSFA Listing for Calcium Carbonate

<https://www.fao.org/gsfaonline/additives/details.html?id=185>