

CalEssence® 80 Enhanced Purity

USP / FCC Precipitated Calcium Carbonate

CalEssence® PCC Products:

CalEssence® 80 Precipitated Calcium Carbonate (PCC) is one of a family of enhanced purity, ultra-low lead calcium carbonates developed for those needing to meet the lead requirements of California Proposition 65. CalEssence® PCC products contain less than 125 parts per billion lead.

CalEssence® PCCs meet and exceed the requirements for Calcium Carbonate of the United States Pharmacopeia 24 and of the Food Chemicals Codex, Fourth Edition. All are certified as Kosher. Calcium carbonate is Affirmed GRAS (Generally Recognized As Safe) by the US FDA (21 CFR 184.1191) with no limitations other than good manufacturing practices. This makes calcium carbonate suitable for both direct and indirect food applications. CalEssence® PCC products are manufactured in the Specialty Minerals plant in Adams, MA under stringent quality assurance procedures and good manufacturing practices.

CalEssence® 80 PCC:

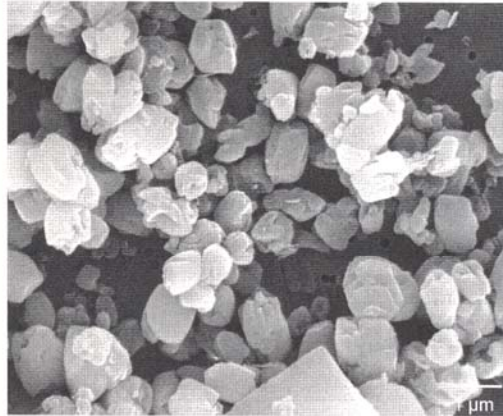
CalEssence® 80 PCC is an ultra-low lead calcite, and is a mixture of a 0.7 micron prismatic particle (CalEssence® 70 PCC) with 15% of a 3 micron cubic particle (CalEssence® 300 PCC). The larger particle is added to improve flow of the powder and of high solids dispersions. This small median particle size gives low powder density.

CalEssence® 80 PCC is the ultra-low lead equivalent of ViCALity ALBAGLOS™ PCC.

Characteristics:

- Small particle size
- High surface area
- Moderately high oil absorption
- Low density
- Bimodal for improved flow
- Less than 125 ppb lead
 - Good for all Proposition 65 uses
- High elemental calcium level
 - ~40% calcium
- High bioavailability - equal to milk calcium
- Economical in use
- No calories, carbohydrates or fats
- Non-dairy, lactose-free

Scanning Electron Micrograph:



magnification: 10,000X

Applications:

CalEssence® 80 PCC is the grade of choice when a very small particle size is needed, but where high solids liquids which were formulated using CalEssence® 70 PCC showed flow problems. In most solid products and chewable tablets, the larger sized 300, 450 or 1500 grades are small enough to be under the taste's size-detection limit. These larger grades are usually preferred in solids because they occupy the least volume, and often yield better taste. But in a few products, especially liquids, ice creams and some soft textured forms, the use of a product entirely of these larger sizes may be detectable. In those instances, and where liquid flow is a problem, CalEssence® 80 may provide the solution.

Some of the uses for CalEssence® 80 PCC are:

- Frozen dairy products
- Liquid meals and infant formulas
- Soy or milk beverages
- Soft chew antacids or supplements
- Liquid antacids and supplements
- Solid confectionery dosage forms
- Antacid and calcium supplement tablets, but only when a large tablet is wanted
- Calcium salt manufacturing

If when using CalEssence® 80 PCC, objectionable settling or separation of the larger, flow-enhancing particles occurs, then CalEssence® 70 PCC, which is all small particles, should be tried.

Typical Physical Properties

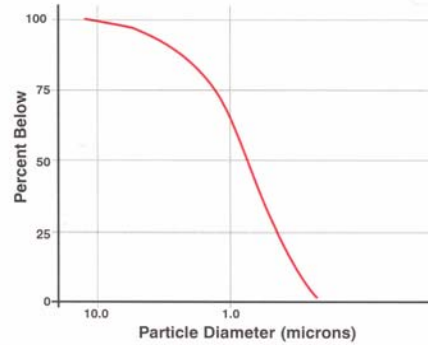
Crystal habit	Calcite
Particle Shape	Prismatic/Cubic blend
Particle Size, median, microns	0.8
mode, microns	0.7
Surface Area, meters ² /gram	6.1
Oil Absorption, grams oil/100 grams	30
Tapped Density, grams/cc	0.58
pounds/ft ³	36.2
Bulk Density, grams/cc	0.32
pounds/ft ³	20.0
Specific Gravity	2.71
pH	9.8
Moisture, %	0.2
Dry Brightness Hunter Y, Rd value	98
Lead, parts per billion	< 125
Solubility, in water, pH 7	Insoluble
in acid	Soluble

Note:

These are typical values, and should not be used to set specifications.

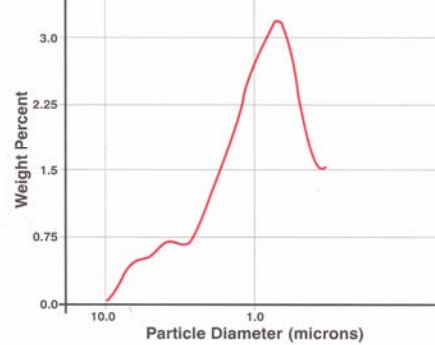
Cumulative Particle Size Distribution

Total % by weight below each micron size



Particle Size Distribution

% by weight at each micron size



Dispersion and Slurry Viscosity:

CalEssence® 80 PCC is one of the more difficult grades to disperse. Use high shear, with high solids, to achieve the small particle size.

After high shear dispersion for 10 minutes, the Brookfield RVT viscosity of a slurry in water, measured at 20 rpm, is:

30% solids	.550 cps
40% solids	.2,100 cps
50% solids	.7,700 cps

If problems are encountered in preparing high solids slurries, an appropriate pigment dispersant should be used.

Product Code: 100-0570-3

Packaging:

CalEssence® 80 PCC is packaged in 50 pound, three-ply kraft bags. The standard shipping unit is a 54" x 42" 2-way pallet of 50 bags, a total of 2,500 pounds. Pallets include slipsheets and shrinkwrap. Semi-bulk packaging, typically in 2,000 pound sacks, is also available. Contact Inside Sales or your SMI Representative for details.

FDA Codes:

The Specialty Minerals plant in Adams, MA is registered with the US FDA as a Drug Establishment. The registration number for the plant is 1214544. The National Drug Code (NDC) for CalEssence® 80 PCC is 053004-0570-3 for product supplied in 50 pound bags.

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