

ViCALity™ Extra Heavy

USP / FCC Precipitated Calcium Carbonate

ViCALity™ PCC Products:

ViCALity™ Extra Heavy Precipitated Calcium Carbonate (PCC) is one of a family of low lead calcium carbonates available in a wide variety of sizes and shapes to meet the needs of formulators of foods, drugs, nutritionals and personal care products. Containing less than 500 ppb lead, the ViCALity™ PCCs are suitable for many applications that must meet the lead requirements of California Proposition 65.

ViCALity™ 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 allows the use of calcium carbonate as both a direct and indirect food additive. ViCALity™ PCC products are manufactured in the Specialty Minerals plant in Adams, MA under stringent quality assurance procedures and good manufacturing practices.

ViCALity™ Extra Heavy PCC:

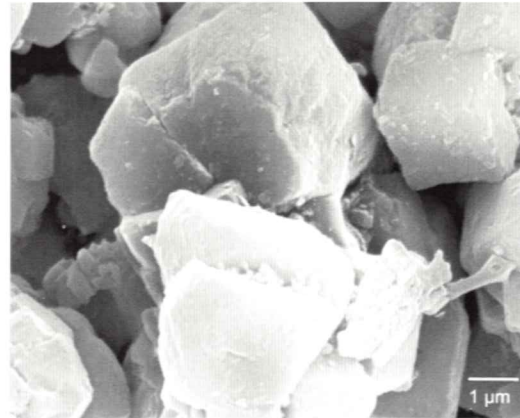
ViCALity™ Extra Heavy PCC is a low lead calcite which is a 4.5 micron clustered cubic particle. Except for the much larger, super dense ViCALity™ Ultra Heavy, it has the highest density and lowest surface area of the ViCALity™ PCC family.

CalEssence® 450 PCC is the ultra-low lead equivalent of ViCALity™ Extra Heavy PCC.

Characteristics:

- 4.5 micron particle size
- High density
- Low surface area
- Moderate abrasive
- Less than 500 ppb lead
 - Good for most Proposition 65 uses
- High elemental calcium level
 - ~40% calcium
- Low loadings to achieve desired fortification level
- High bioavailability - equal to milk calcium
- No calories, carbohydrates or fats
- Non-dairy, lactose-free

Scanning Electron Micrograph:



magnification: 10,000X

Applications:

ViCALity™ Extra Heavy PCC is the best choice where a still-small particle sized calcium carbonate is wanted, but where the highest calcium dosage in a small volume is desired. This grade has a low binder demand, aiding in the development of highly calcium loaded granulations and formulations. In solid foods, the larger Heavy and Extra Heavy grades tend to result in better taste than the smaller ViCALity ALBAFIL™ and ViCALity ALBA-GLOS™ PCC grades. The particles of the Heavy and Extra Heavy grades are still small enough to usually not be detected, so are preferred in non-liquid products.

Some uses for ViCALity™ Extra Heavy PCC are:

- Cereal fortification
 - In batter, flavor bit, coating or dry blend
- Snack bars, energy bars, diet bars
- Baked goods
 - Breads, crackers, cookies, waffles, pancakes
- Snack foods
- Flour and pasta enrichment
- Dry food mixes
- High dosage calcium supplement tablets
- Antacid tablets at lower dosages
 - Chewable or swallowable
- Vitamin and mineral premixes

Typical Physical Properties

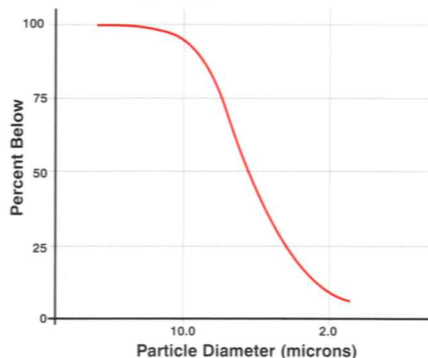
| | |
|---|-----------|
| Crystal habit | Calcite |
| Particle Shape | Cubic |
| Particle Size, median, microns | 4.5 |
| mode, microns | 5.0 |
| Surface Area, meters ² /gram | .24 |
| Oil Absorption, grams oil/100 grams | 32 |
| Tapped Density, grams/cc | 1.00 |
| pounds/ft ³ | 62.4 |
| Bulk Density, grams/cc | 0.57 |
| pounds/ft ³ | 35.6 |
| Specific Gravity | 2.71 |
| pH | .97 |
| Moisture, % | 0.2 |
| Dry Brightness Hunter Y, Rd value | .97 |
| Lead, parts per billion | < 500 |
| Solubility, in water, pH 7 | Insoluble |
| in acid | Soluble |

Note:

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

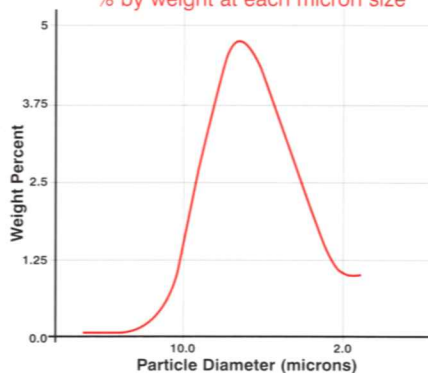
Cumulative Particle Size Distribution

Total % by weight below each micron size



Particle Size Distribution

% by weight at each micron size



Dispersion and Slurry Viscosity:

High shear should be applied to a high solids suspension in order to achieve the smallest particle size in a dispersion.

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

| | |
|------------|----------|
| 30% solids | .35 cps |
| 40% solids | .90 cps |
| 50% solids | .350 cps |

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

Product Code: 100-0460-3

Packaging:

ViCALity™ Extra Heavy PCC is packaged in 50 pound, three-ply kraft bags. The standard shipping unit is a 48" x 40" 4-way GMA 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 ViCALity™ Extra Heavy PCC is 053004-0460-3 for product supplied in 50 pound bags.

Specialty Minerals Inc.

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For order placement:

Customer Service – toll free: 877-684-7627
Direct dial: 610-997-8306
Fax: 610-861-5179

Visit Our Website:

www.mineralstech.com

For Information and Samples:

Inside Sales – toll free: 877-229-9653
Direct dial: 610-997-8300
Fax: 610-882-9846
E-mail: spcc.sales@mineralstech.com

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