

MULTIFEX-MM™ USP (UK)

Ultrafine / Nano Uncoated Precipitated Calcium Carbonate

SMI PCCs for Healthcare:

MULTIFEX-MM™ USP (UK) PCC is the finest particle sized precipitated calcium carbonate in the broad USP / EP healthcare product line of Specialty Minerals Inc. (SMI).

MULTIFEX-MM™ USP PCC meets and exceeds the requirements for Calcium Carbonate of the United States Pharmacopeia 27 and of the Food Chemicals Codex, Fifth Edition. 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. MULTIFEX-MM™ USP PCC is manufactured in our Lifford PCC plant located in Birmingham, United Kingdom, under stringent quality assurance procedures and good manufacturing practices.

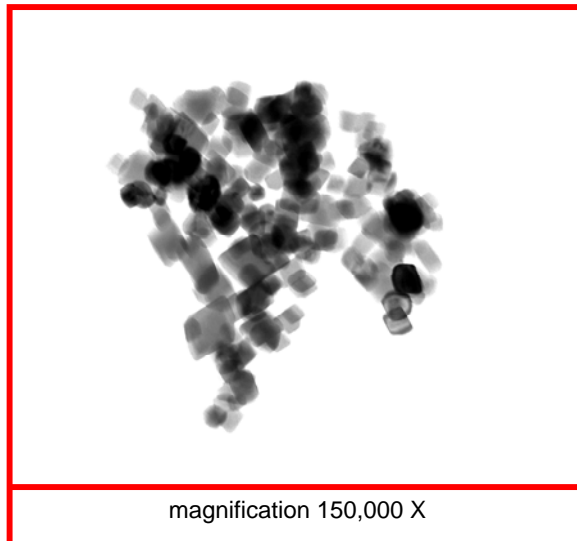
MULTIFEX-MM™ USP PCC:

MULTIFEX-MM™ USP PCC is a true nano-particle precipitated calcium carbonate, being only 0.07 microns (70 nanometers) in particle size. It is an uncoated calcite, rhombohedral in shape. The extremely small particle size results in high surface area, but only moderate oil absorption. In liquids, this small particle size minimizes settling.

Characteristics:

- Finest particle size: nano PCC
- High surface area
- Moderate oil absorption
- Uniform particles
- Narrow particle size distribution
- Uncoated
- Hydrophilic
- Suspends well, minimizing settling
- High elemental calcium level
 - ~ 40% calcium
- High bioavailability – equal to milk calcium
- Economical in use
- No calories, carbohydrates or fats
- Non-dairy, lactose – free

Transmission Electron Micrograph:



Applications:

MULTIFEX-MM™ USP PCC is the best choice when the maximum suspension and minimum settling is needed in beverages and other liquid formulations, or where the least effect on mouth feel is desired.

According to Stoke's law, the rate at which a particle settles is proportional to the square of the radius of that particle. By switching to a very small particle, the rate of settling can be reduced substantially compared to that of the larger particles often used in liquid products.

Some of the applications for MULTIFEX-MM™ USP PCC are:

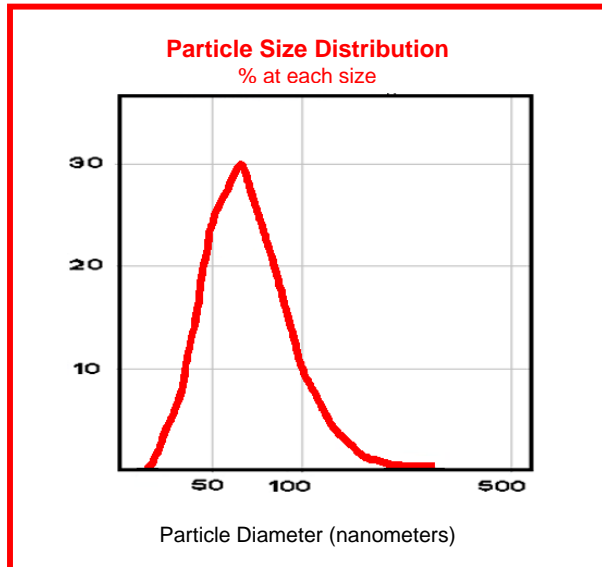
- High calcium cow's milks
- Flavored, fortified children's milk
- Calcium-fortified soy milk
- Liquid yogurts
- Smoothie drinks
- Powdered cow's or soy milk
- Dry beverage mixes
- Liquid meals and infant formulas

Typical Physical Properties

Crystal habit.....	Calcite
Particle Shape.....	Rhombohedral
Particle Size, microns.....	0.07
Surface Area, meters ² /gram.....	19
Oil Absorption, grams oil/100 grams.....	26
Tapped Density, grams/cc.....	0.43
pounds/ft ³	26.9
Bulk Density, grams/cc.....	0.17
pounds/ft ³	10.7
Specific Gravity.....	2.71
Moisture, % loss at 200° C.....	0.7
Residue, 325 mesh screen, %.....	0.01
Dry Brightness, Minolta -L.....	99
Solubility, in water, pH 7.....	Insoluble
in acid.....	Soluble
in organic solvents.....	Insoluble

Note:

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



Maximizing Suspension in Liquids:

To achieve the most stable liquid formulation, high shear dispersion of the calcium plus the use of a stabilizer / gum are recommended. A lower level of stabilizer is needed when MULTIFEX-MM™ USP PCC is used than is required for larger sized particles. In flavored products or in soy milk products, stabilizers are needed to suspend the flavors, soy solids and other ingredients, and the amount already present in the formula is often enough to keep the MULTIFEX-MM® USP PCC in suspension.

Product Code: 100-3630-3

Packaging:

MULTIFEX-MM™ USP PCC is packaged in 55 pound (25 kilogram), three-ply kraft bags. The standard shipping unit is a 51.2" x 35.4" (1300 mm x 900 mm) 4-way pallet of 39 bags, a total of 2,145 pounds (975 kg.). Pallets include slipsheets and shrinkwrap. Semi-bulk packaging for this product is not currently available.

Recommended Suspension Aids

Stabilizer	Use Level (% By Wt.)	Effect
Iota Carrageenan	0.2 %	Best
Xanthan Gum	0.25 %	Better
Hydroxypropyl Cellulose	0.02 %	Good

Specialty Minerals Inc.

35 Highland Avenue
Bethlehem, PA 18017 USA

For order placement:

Customer Service - U.S. toll free: 877-684-7627
International: 610-997-8306
Fax: 610-861-5179

Visit Our Website:

www.specialtyminerals.com

For information and samples:

Inside Sales - U.S. toll free: 877-229-9653
International: 610-997-8306
Fax: 610-861-5179
E-mail: spcc.sales@specialtyminerals.com

All products are sold on the understanding that the user is solely responsible for determining their suitability for the intended use. All information given and recommendations made herein are based upon our research and are believed to be accurate, but no guarantee, either expressed or implied, is made with respect thereto or with respect to the infringement of any patent. SMI MAKES NO WARRANTY OF MERCHANTABILITY OR SUITABILITY FOR ANY PARTICULAR PURPOSE IN CONNECTION WITH ANY SALE OF THE PRODUCTS DESCRIBED HEREIN. Inconsistent terms and conditions contained in Buyer's purchase order shall not be binding on SMI unless reflected in writing signed by SMI's representative. This information is not to be copied, used in evidence, released for publication or public distribution without written permission from Specialty Minerals Inc.