

# Cal-Sistent™

Calcium Fortification Source



Cal-Sistent™ is an excellent source of calcium engineered to deliver a consistent impalpable powder that imparts target sensory characteristics for food and beverage formulators. Cal-Sistent provides a 38% calcium level as well as the ideal calcium to phosphorus ratio found in nature, including teeth and bones. Cal-Sistent lends itself to dairy and soy applications, nutritional supplements, confectionary applications, sports beverage and juices.

## CONSISTENT TOOL FOR FORMULATORS

Cal-Sistent is a micronized Tricalcium Phosphate (TCP) distinctive in the marketplace as an engineered fine powder with a narrow particle size distribution range that is consistently attained due to our unique manufacturing process. Through this manufacturing process, Cal-Sistent delivers a product in which a minimum of 95% of the TCP particles are less than 20 microns (see Figure 2). This consistency in sizing provides favorable organoleptic properties (non-detectable in the human mouth), excellent suspension properties and does not affect product flavor. Taste tests conducted with a calcium fortified pudding showed that Cal-Sistent did not impact mouth feel, minimally impacted product pH (raised pH <0.2) and did not negatively affect product flavor. Cal-Sistent can also be formed into a stable, suspended slurry that can be easily incorporated further into a mixture with no additional stirring required. Additionally, Cal-Sistent is stable in high temperature applications in excess of 1000 degrees Centigrade.

## QUALITY AND SECURITY

Cal-Sistent is Kosher certified, meets FCC monograph criteria, is allowed for use as an ingredient in properly labeled Organic formulations and is GMO and animal derivative free. Cal-Sistent is manufactured in Carondelet, MO USA, which has achieved an AIB Superior rating since 1994. To further

ensure the quality and integrity of Cal-Sistent from our door to yours, product is packaged in heat-sealed 25 lb. multi-wall bags.

## CALCIUM PHOSPHATES ARE VITAL TO GOOD HEALTH

Calcium is the most abundant mineral in the human body and is critical to the proper development of bone and teeth. Phosphorus is the second most abundant mineral in the human body and, like calcium, is required for bone growth, maintenance and repair. In fact, calcium and phosphorus are two of the three minerals for which a Recommended Dietary Allowance (RDA) is specified.

Studies indicate that patients receiving co-therapy treatments for osteoporosis should receive some of their calcium therapy in the form of a calcium phosphate supplement. Data indicates that 25-50% of women between the ages of 60-80 have a phosphorus intake that is sub-optimal for current anti-osteoporosis agents. It is important that calcium intake does not increase at a disproportionate rate to phosphorus intake to prevent the risk of phosphorus deficiency.\*

Cal-Sistent delivers the synergistic effect of both calcium and phosphorus in an ideal ratio to allow formulators to deliver these two vital ingredients from one source. TCP and other calcium phosphates have a high level of calcium when compared to other calcium products which makes them an efficient supplement (see Figure 1). It also has been shown that women with a higher total calcium intake appear to have a lower risk of cancer overall, and both men and women with higher intakes of calcium have lower risks of colorectal cancer and other cancers of the digestive system.\*\*

\**Journal of American College of Nutrition* Vol.21, No3, 239-244 (2002)

\*\**Archives of Internal Medicine* Vol. 169: 391-401 (2009)





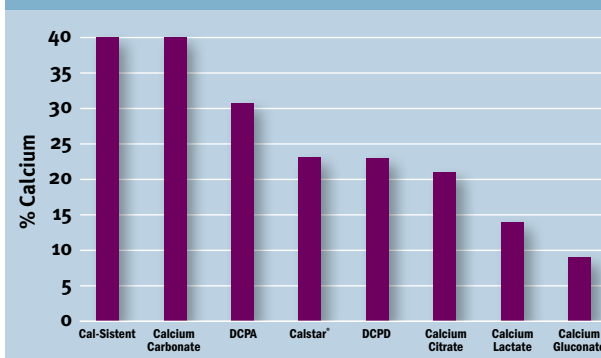
**Table 1: Typical Nutrient Data for Cal-Sistent**

	Typical Values
Calories/grams	0
Protein (g)	0
Carbohydrates (g)	0
Fat (g)	0
Loss on Drying	1.8%
Calcium	38.3%
Phosphorus	18.5%

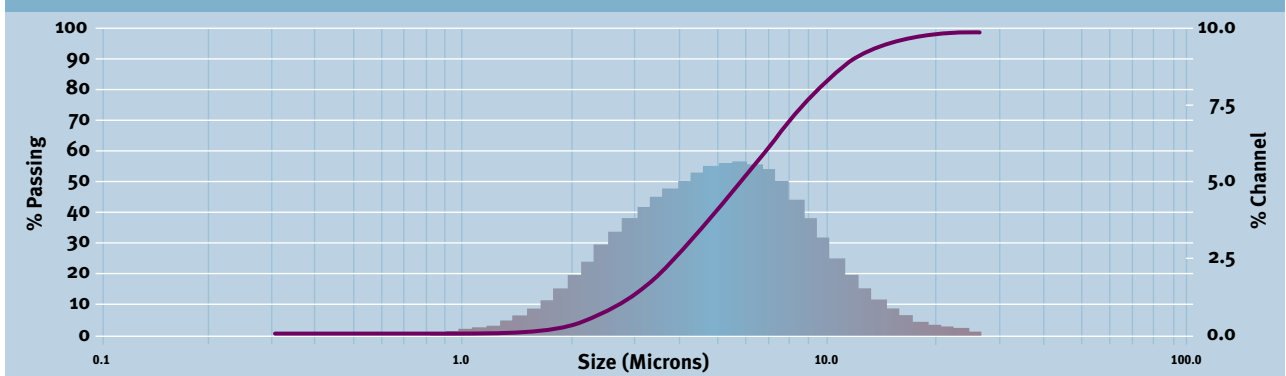
**Table 2: Typical Properties of Cal-Sistent**

<b>Chemical Composition</b>	Calcium hydroxyapatite
<b>Abbreviation</b>	TCP
<b>Synonyms</b>	Tricalcium phosphate Calcium phosphate, tribasic
<b>Formula</b>	$\text{Ca}_5(\text{OH})(\text{PO}_4)_3$
<b>pH 20% slurry</b>	7.3
<b>Solubility</b>	Negligible
<b>MW (average)</b>	502
<b>Assay (as Ca)</b>	34% - 40%
<b>Loss on Ignition</b>	10%
<b>Arsenic (as As)</b>	Not more than 3 mg/kg
<b>Fluoride (as F)</b>	Not more than 75 mg/kg
<b>Lead (as Pb)</b>	Not more than 2 mg/kg
<b>Sizing:</b>	99.9% < 44 microns 95.0% < 20 microns
<b>Product Location:</b>	Carondelet (St. Louis), MO
<b>Packaging:</b>	25 lb. multiwall bags

**Figure 1: Percent Calcium in Various Calcium Salts**



**Figure 2: Cal-Sistent Sizing**



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