Cereals & Snacks
A Healthy Crunch for Extruded Snacks & Cereals
A Crisp Sensation and a Calcium Boost

Pure enjoyment is no longer the only need that consumers have when it comes to snacking. The role of snack products is expanding and snacks are increasingly serving as a meal replacement. Simple ready-made food solutions that offer indulgence are flying off the shelves in supermarkets. The landscape for manufacturers is competitive. To be successful, they will have to satisfy evolving consumer demands, for better taste, texture and health impact.

Omya Calcipur® is a range of high purity Calcium Carbonate that can help formulators to achieve their goals in multiple ways. Naturally derived and available in a variety of mastered particle sizes, they not only improve nutritional profile as a calcium source, but also the processability and texture of a vast range of sweet and savory snacks, including breakfast cereals and extruded inclusions.

**PRODUCTS:**
- Omya Calcipur®/Omya-Cal®
- Calcipur®

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**Benefits**
- Excellent source of calcium
- Natural nucleating agent & extrusion aid
- Improves crispness
- Increases extrudate expansion
With 40% of available elemental calcium, it only takes 1/4 gram of Omya natural Calcium Carbonate to provide 100 mg of elemental calcium: that equates to 10% of an adult’s daily requirement.

Accordingly, up to five times less Omya Calcium Carbonate is required to meet the same calcium content and support any possible nutritional claim compared to other available solutions on the market.

**Excellent Source of Calcium**

Omya natural Calcium Carbonate is a bioavailable source with the highest elemental calcium content

*Omya natural Calcium Carbonate* food grade ingredients meet both E170 and FCC standards
Omya has developed tailor-made particles for use in extruded food products. Whether in snacks or extruded cereals, Omya Calcipur® acts as a nucleating agent, providing multiple well-distributed surfaces in which gas bubbles can form during the release of water vapor. The amount and size of Omya Calcipur® can be tailored to offer the optimum quantity and homogenous distribution of fine gas bubbles, improving expansion and texture¹.

Omya has a profound understanding of how Omya Calcipur® can aid in the extrusion process of foods. Significant improvements in crispness and texture can be obtained with just 0.5 to 1.5% of added Omya Calcipur®. Furthermore, even these low concentrations already allow for a calcium claim to be made on the final product.

**Benefits**

- Very fine granulometry
- Improves texture & crispness
- Increases hardness & expansion index
- Ensures a homogenous bubble distribution
- Enhances taste perception (saltiness/sweetness)

¹ “The Technology of Extrusion Cooking” (chapter 2: Raw materials for extrusion cooking processes); R.C.E. Guy, 1994
Cereals

The organoleptic properties of cereals containing Omya Calcipur® are described as crispy, light and fluffy. A concentration of 1.5% Omya Calcipur® is suggested for the improved crispness of extruded wheat-based breakfast cereals. The crispness of extruded cereals can be improved by up to 45%. Moreover, an enhanced perception of sweetness has also been detected.

Figure 1: The graph represents the correlation between the cereals crispness and the amount of Omya Calcium Carbonate added to the standard cereal. The crispness is expressed as the maximum force (N) measure by texture analysis on the different cereals.
Snacks

Omya Calcipur® can improve multiple parameters of extruded snack properties. A concentration of 0.5% Omya Calcipur® is recommended for an improved expansion index, increased hardness and good crispness in corn-based snacks. This is an interesting solution when making not only plain snacks, but also filled snack products.

Moreover, snacks containing Omya Calcipur® show prolonged crispness, less stickiness and also have an enhanced perception of saltiness. The snack surface is rough but – thanks to Omya Calcipur® – more even, leading to a homogenous appearance, especially at the cut edges.

Expansion index of snacks based on cornflour

![Graph showing expansion index](image)

Figure 2:
The graph shows the role of Calcium Carbonate in the expansion process. It represents the correlation between the expansion index, the particle size and the amount of Calcium Carbonate. The expansion index is measured with the following equation:

\[
FEI = \frac{D_e}{D_D}
\]

where FEI is the expansion index (dimensionless), \(D_e\) is the diameter of the extrudate (cm) and \(D_D\) is the diameter of the extruder dye (cm).

Pore Size and Distribution

- More gas cells and better distribution
- Improved snack expansion
- More even and homogenous snack surface
- Dosages as low as 0.5% already show effect
Product Offer

<table>
<thead>
<tr>
<th>Product</th>
<th>Material type</th>
<th>Manufacturing site</th>
<th>Median particle size $d_{50%}$ (μm)</th>
<th>Loose bulk density (g/ml)</th>
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</thead>
<tbody>
<tr>
<td>Omya Calcipur® 110 - KP</td>
<td>Marble</td>
<td>Kemalpasa, Turkey</td>
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<td>Omya Calcipur® 90 - KP</td>
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<td>Kemalpasa, Turkey</td>
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<td>Orgon, France</td>
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<td>Superior Arizona, USA</td>
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<td>Superior Arizona, USA</td>
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<td>0.85</td>
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</tbody>
</table>

Improve your diet with a crunchy bite, by adding Omya Calcium Carbonate to extruded inclusions in your favorite snack.