

# Probake<sup>®</sup>CP Calcium propionate food grade

## CrystalPro Calcium propionate food grade

Probake<sup>®</sup>CP calcium propionate is supplied in three grades: 1. a low dust and easy soluble granular grade; 2. a powder grade or 3. A fine powder grade.

CrystalPro calcium propionate is supplied as a low dust crystal grade.

### PRODUCT PROPERTIES

Chemical name	Calcium propionate
Formula	(CH <sub>3</sub> CH <sub>2</sub> COO) <sub>2</sub> Ca
Product form	White granules, crystals, powder or fine powder
Molecular weight	186.22 g/mol
CAS No.	4075-81-4
EINECS No.	223-795-8
HS-code EU	2915.50.00
HS-code US	2915.50.50
Flash point	>250 °C
Solubility in water	
at 0 °C	42.8 g/100 ml
at 25 °C	39.9 g/100 ml
at 30 °C	39.1 g/100 ml
at 60 °C	38.3 g/100 ml
at 80 °C	39.9 g/100 ml
at 100 °C	48.4 g/100 ml

### Applications

#### Bread preservation

Calcium propionate is an effective growth inhibitor of most molds and some bacteria. It is widely employed in bread and other bakery products to prevent mold growth and rope formation and to extend the shelf life. In addition, calcium propionate is preferred in rolls and bread because it contributes to nutritional enrichment by supplying calcium. It is easy to handle, dissolves well and is easy to blend into the flour.

#### The need for preservatives

Bread is very susceptible for microbial growth, especially the growth of molds and some specific bacteria. Bacteria, Molds and mold-spores are usually killed during the baking process, but re-contamination of the bread occurs by airborne molds and spores and by the processing equipment during and after cooling. Although strict attention to bakery hygiene can greatly reduce contamination, it is not possible to avoid it completely. Bacterial spores are heat resistant and some can survive the baking process, causing rope formation on bakery goods. Rope is characterized by a brownish, sticky and wet crumb, which causes an unpleasant overall appearance.

The rate of microbial growth on bread is affected by the number and type of spores present. It is accelerated by high storage temperatures and high humidity. Microbial growth rate is also influenced by the ingredients used. Wrapped or sliced bread

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is particularly susceptible to microbial spoilage, because of additional processing steps after baking. The use of a preservative is therefore beneficial in extending the shelf life of bakery goods.

#### Application method

Since there are many factors affecting the microbial growth in and on bread, the levels of calcium propionate cannot be correlated precisely with the extension of the shelf life. In general, however, for standard bread recipes, a dosage of 0.2-0.5% calcium propionate on flour weight is recommended. Although the odor of calcium propionate at high concentrations may be noticed when the bread is still hot, it rapidly disappears during cooling.

Calcium propionate can be added at the start of dough-making together with the other dry ingredients. In some cases, a small effect on the rising step can be observed, resulting in a small reduction in volume of the finished loaf. This can be overcome by the addition of some extra yeast. Calcium propionate can also be added at the end of the dough making.

In all cases, it is advisable to carry out an initial baking test, in order to determine the precise organoleptic and physical effects of the calcium propionate addition.

#### Other applications

Calcium propionate can also be applied as a preservative in other products like cheese, cheese analogues and other processed cheese products according to the *quantum satis* principle or the current Good Manufacturing Practice (GMP). This means that calcium propionate can be used at levels as high as necessary to achieve the intended purpose.

#### **Legislation**

Calcium propionate is an approved food additive according to EU and FDA legislation and JECFA (FAO/WHO), FCC and Japanese food standards. Please check local legislation for the exact dosage levels and allowed applications.

#### **Stability**

Probake<sup>®</sup>CP and CrystalPro are stable for 2 years from date of production. Physical stability and appearance may change before the end of shelf-life if not stored in well closed original packaging, dry and at room temperature.

#### **Handling**

Probake<sup>®</sup>CP and CrystalPro have no classification. Always check the Safety Data Sheet and label before using this product.

#### **Packaging / available grades**

1. Probake<sup>®</sup>CP granular EU grade available as low dust granules in 20kg, 25kg, 50lb and 1000kg big bags.
2. Probake<sup>®</sup>CP powder EU grade available in 25kg and 50lb bags
3. Probake<sup>®</sup>CP fine powder EU grade available in 600kg big bags.
4. Probake<sup>®</sup>CP granular available in 25kg and 50lb bags and in various big bags.
5. Probake<sup>®</sup>CP powder available in 25 kg and 50lb bags.
6. Probake<sup>®</sup>CP fine powder available in 600kg big bags.
7. CrystalPro low dust calcium propionate crystal grade, available in 20kg, 50lb and various big bags.

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**Safety precautions**

Please see the Safety Data Sheet before handling this material.

This product is produced in the Netherlands and in the USA.

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