



About us

Prayon is a leading producer of purified phosphoric acid and food-grade phosphates. Our food applications laboratory enables us to meet market requirements and offer innovative products in line with the latest trends in the food industry.

Food-grade phosphates are produced using high-quality purified phosphoric acid.

The Prayon Group has a global reputation for its phosphoric acid technology. Jointly owned by the Office Chérifien des Phosphates (OCP) and Société Régionale d'Investissements de Wallonie (SRIW), the Group consists of more than 20 companies in more than 10 countries. It employs over 1,400 people and generates a turnover of approximately €680 million (2010).

With production facilities in Belgium (Engis and Puurs), France (Les Roches de Condrieu) and the USA (Augusta, Georgia), Prayon produces a full range of purified phosphoric acids, sodium, potassium and calcium phosphates and blends mainly used in the meat, poultry, seafood, baking and dairy industries.

Food-grade purified phosphoric acid and phosphates supplied by Prayon:

- are controlled using an HACCP approach on all production lines and are ISO 22000 certified;
- meet current legal requirements;
- are kosher- and halal-certified.

Phosphates perform a wide range of functions in processed food products. These include protein modification, sequestration of minerals that may catalyse oxidative rancidity and pH adjustment in meat, poultry and seafoods.

Baked goods are leavened with phosphates that contribute to texture, colour, rise and desirable crumb characteristics.

The smooth mouthfeel, even melt and slice-ability of processed cheeses benefit from the buffering capacity and protein dispersion properties provided by phosphates.

A variety of beverages are acidified by purified phosphoric acid.

Phosphates are also widely used to balance the mineral content of foods (Na, K, Ca, etc.).



We achieve our goals through strong ethics and solid core values

- **Customer-focused:** We listen to your needs and fulfil your requirements. We are competitive and flexible.
- **People-oriented:** We value the experience, creativity and professionalism of our employees. We are a winning team.
- **Technology:** We maintain state-of-the-art facilities through continuous process improvement and innovation.
- **Quality of life:** We practise Responsible Care. We believe in sustainable development. We are committed to enhancing the quality of life.



ISO 9001 (Quality) / OHSAS 18001 (Health/Safety) / ISO 14001 (Environment) / ISO 22000 (Food Safety). Our food-grade phosphates are allergen-free, GMO-free and BSE-/TSE-free.



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Phosphates

for calcium enhancement



Phosphates for calcium enhancement

Recent years have seen a rising interest in nutrition as it relates to disease prevention. The role of calcium in preventing osteoporosis is important for anyone wishing to reduce their consumption of dairy products, especially in view of the ageing population.

Osteoporosis results from the resorption of calcium from the bones and teeth to meet metabolic requirements when dietary calcium intake is inadequate. Although blood, lymph and other body fluids account for just 1% of the body's calcium, this need is sufficiently important to draw from the remaining 99% of the calcium stored in the bones and teeth. As the bones get thinner, brittleness develops and puts osteoporosis sufferers at risk of serious fractures.

Osteoporosis is not just an issue for the elderly. Menopause leads to dramatic changes in hormones that previously protected the internal calcium stores. According to estimates, osteoporosis affects 75 million people in Europe, the USA and Japan and is linked to 9 million bone fractures each year.

Is it easier to pop a pill?



Numerous studies have shown that calcium is best absorbed if taken with a meal. Other factors affecting absorption include the binder, formulation and compression method used. All of these can affect the release of calcium in tablet form.

If the calcium is not water-soluble, can it be absorbed?



Absorption of calcium depends on other dietary factors, including the presence of vitamin D and gastric acid. Even those with seriously reduced stomach acid levels (achlorhydria) can absorb calcium when it is taken with food. The presence of acid is important since calcium is acid-soluble and most is absorbed in the small intestine.

Is it true that other dietary components can interfere with calcium absorption?



It is true that fibre, phytic acid (in wheat bran), uronic acid (in hemicellulose) and oxalic acid (in dark green, leafy vegetables such as spinach) bind with calcium and prevent its absorption. It is more important to remember that other dietary constituents such as vitamin D, lactose and phosphorous enhance calcium absorption when consumed with protein. This is why it is so important to add calcium to many foods. Even vegans who avoid all animal products can maintain a positive calcium balance with calcium-enriched foods.

Which type of calcium is best for use as a food formulator?

Product name	Abbreviation	Calcium content (%)	Formula
Monocalcium phosphate, monohydrate	MCPM	15	$\text{Ca}(\text{H}_2\text{PO}_4)_2 \cdot \text{H}_2\text{O}$
Dicalcium phosphate, anhydrous	DCPA	29	CaHPO_4
Dicalcium phosphate, dihydrate	DCPD	23	$\text{CaHPO}_4 \cdot 2\text{H}_2\text{O}$
Tricalcium phosphate	TCP	39	$\text{Ca}_3(\text{OH})(\text{PO}_4)_3$

Monocalcium phosphate (MCP):

- Is a common ingredient in baking powder, bakery mixes, canned fruits, baby food, flour, pudding mixes, pet food and yoghurt
- Is a dough conditioner
- Prevents ropiness in bread
- May partially replace citric acid in powdered beverages

Dicalcium phosphate (DCP):

- Is a common constituent in nutritional beverages, frozen doughs, bakery mixes, powdered beverages, pet food, baby food, multivitamin tablets and chewing gum
- May be used to limit moisture absorption
- Is suitable for flavoured beverages with moderate viscosity



Prayon TCP

Features a **high bulk density** (0.55 - 0.75 g/cm³).

- ➔ facilitates transportation and warehousing by boosting space efficiency;
- ➔ as a denser product, it creates less dust, resulting in easier use and less clean-up.

Main applications

Mineral fortification - adding calcium and phosphorous that may have been removed during secondary processing and/or increasing the natural level occurring in a given foodstuff.

Mineral enrichment - adding calcium and phosphorous to a food naturally lacking in these minerals.

Used in processed cheese, yoghurt drinks, soy beverages, extruded breakfast cereals, breakfast bars, margarine and pet foods.

Benefits of Prayon TCP as mineral enrichment and fortification

• INSOLUBLE

With soluble calcium, free ions interact strongly with proteins, thereby modifying the texture of finished products. With insoluble TCP, there is no interaction with proteins when used in food systems where proteins are the main functional ingredients.

- ➔ Ideal for processed cheese and pet food.

When used in low-viscosity food systems, hydrocolloids may be required to maintain TCP in suspension.

Example: Since the viscosity of milk is low, TCP tends to precipitate. TCP needs to be used together with viscosity enhancers (which might also change the mouthfeel).

Soluble calcium sources can also be implemented. In that case if is necessary to use sequestering sodium phosphates (STPP, SHMP) to neutralise the free calcium.

Example: 0.8% SHMP added to calcium-enriched milk (soluble calcium source) does prevent calcium interaction and improves the protein's heat stability.

• SMALL PARTICLE SIZE

- ➔ ranging from 4.7 to 5.1 μm (average: 4.8 μm), thus preventing a "sandy" mouthfeel;
- ➔ fine particle size without the added cost of micronisation.

• HIGH LEVEL OF Ca CONTENT

- ➔ TCP contains the highest calcium content of the usual calcium sources;
- ➔ provides the highest CaP ratio for phosphate salts;
 - ➔ small amount of TCP makes it possible to achieve the desired calcium level;
 - ➔ to be factored into the cost calculation in comparison with other products.