PRAYON

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.

carfosel · kasomel · praylev · prayphos

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.

DNV · KOSHER Pareve Passover · NSF ANSI Standard 60 · Responsible Care · CERTIFIED HALAL

PRAYON SA
Rue Joseph Wauters 144
4480 Engis - Belgium
+32 (0)4 273 93 58
+32 (0)4 275 68 36
E-mail: sales2services@prayon.be

Visit the group website for more information
www.prayon.com

Phosphates
for baking products

Acid phosphates are well-known leavening agents. A reaction with sodium bicarbonate produces a controlled gas release that helps improve the volume, appearance and taste of cakes and pastries.

PRAYON

Food phosphates for bakery applications

Why use phosphates in baking?

Chemically leavened baked goods generally require one or more food-grade phosphates. These are used for volume expansion in products such as cakes, cookies, donuts, crackers, quick breads, muffins and pancakes. They also help produce an appetising product.

3 types of leavening systems

- **Natural yeast:**
  Difficult to control and time consuming
- **Sodium/ammonium bicarbonate:**
  Heat induced and ammonium taste/smell development
- **Chemical leavening (an acid-base reaction):**
  Edible Acid + $NaHCO_3$ → CO_2
  Most common edible acid phosphate salts: PRAYLEV™ Aerocal 308, DCPD, PRAYLEV™ Slowpyro; Pyro; Fastpyro

The choice of leavening phosphate will depend on the end product and how it is prepared. Although chemical leavening typically involves a reaction with baking soda or sodium bicarbonate, it may also be used together with yeast leavening in frozen doughs such as pizza crusts. The phosphates may also act as dough conditioners, mineral supplements, pH controllers, buffers and as a nutrient source used to support yeast development in bread and rolls.

Functional performance of leavening agents

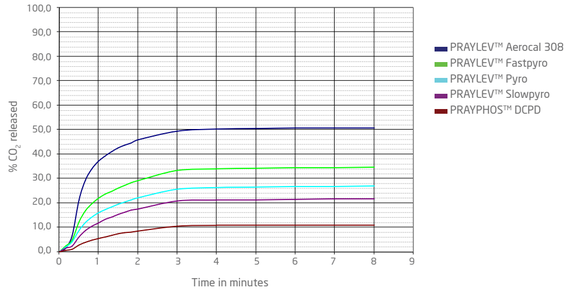
Neutralising value (NV)

Determining the correct quantity of leavening acid to use in a formulation involves calculating the neutralising value (NV). NV is defined as the weight of sodium bicarbonate (kg) neutralised by 100 kg of leavening acid. The higher the NV, the less phosphate is required to produce a defined amount of gas. An unbalanced ratio between bicarbonate and phosphate salt has a direct impact on pH and hence on colour and flavour.

Dough rate of reaction (DRR)

The most important factor in selecting the appropriate leavening acid is the dough rate of reaction (DRR). This involves monitoring the CO_2 released by the reaction of the leavening acid with the baking soda during mixing and subsequent bench time using a standard biscuit dough at a defined temperature. DRR expresses the quantity of CO_2 generated by the reaction between the leavening acid and sodium bicarbonate during the preparation of batters/doughts. Reference methods may vary.

Typical DRR Measures
(% CO_2 released after 8 minutes in standard dough)



Typical NV and CO_2 release figures

Phosphate Leavening Acid	Neutralising Value (NV)	CO_2 release (after 3 minutes of mixing and 5 minutes of bench action)
PRAYLEV™ Aerocal 308	**80**	50
PRAYPHOS DCPD	**33**	10
PRAYLEV™ Fastpyro	**72**	35
PRAYLEV™ Pyro	**72**	28
PRAYLEV™ Slowpyro	**72**	22

Most commonly used phosphate leavening agents

SODIUM ACID PYROPHOSPHATE: PRAYLEV™ Slowpyro, Pyro, Fastpyro	CALCIUM PHOSPHATES: PRAYLEV™ Aerocal 308, DCPD
PRAYLEV™ Slowpyro, Pyro, Fastpyro: the most versatile leavening acids since they can be adjusted to a variety of leavening rates: • **PRAYLEV™ Slowpyro** has a very slow ROR and it is used for refrigerated biscuits and cookie doughs. • **PRAYLEV™ Pyro** has a moderate DRR and is used in wheat tortillas and wraps, retail package mixes, cookie mixes and baking powder. • **PRAYLEV™ Fastpyro** has a rapid DRR and is used for domestic baking powder production (home bakers usually bake immediately after having prepared the dough) and for small cakes (short baking time). PRAYLEV™ Slowpyro, Pyro, Fastpyro are ideal for: • baking mixes; • cakes, doughnuts and various bakery products; • industrial and domestic baking powder (stable in hot climates).	**PRAYLEV™ Aerocal 308 has the fastest action.** PRAYLEV™ Aerocal 308 is ideal: • for snacks, crackers, cookies, biscuits, waffles, cakes and pancakes; • for retail and industrial baking powder; • as a dough conditioner; • for acidifying doughs to enhance the action of the mould inhibitor (calcium propionate) or to reduce α-amylase activity; • for preventing "rope" formation in bread. **DCP Dihydrate is unique since it is heat activated at 60°C (140°F).** DCPD is ideal for: • frozen doughs and batters; • self-rising pizza doughs; • microwave mixes; • diet, nutrition and energy bars for calcium fortification.

Which phosphates for which market?

BAKERIES	FLOUR CONDITIONING	BAKING POWDER PRODUCTION	PREMIXES FOR THE BAKERY TRADE
For any fast-cooking products such as biscuits, waffles, crackers, cookies, pancakes > fast-acting PRAYLEV™ Aerocal 308 is advised. All others (cakes, sponge cakes, batters, cake mixes, frozen/refrigerated doughs) > PRAYLEV™ Slowpyro, Pyro.	Self-rising flour > PRAYLEV™ Aerocal 308. Anti-microbial treatment of flours > PRAYLEV™ Aerocal 308 prevents "rope" spoilage. Bread improvers: Calcium strengthens gluten > PRAYLEV™ Aerocal 308.	Domestic baking powders: PRAYLEV™ Aerocal 308, PRAYLEV™ Fastpyro Industrial baking powders: PRAYLEV™ Pyro, Slowpyro Hot climates: PRAYLEV™ Pyro	Custom formulations: PRAYLEV™ Aerocal 308, PRAYLEV™ Pyro