Phosphates for fish and seafood

Carfosel™ salts are used to retain the natural juices of frozen fish fillets, prawns, shrimp, scallops and other seafood. Carfosel™ also helps to prevent the build-up of struvite crystals in tins of tuna and coab.

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.
- 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 (SIRAW), 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).
- Food-grade purified phosphoric acid and phosphates supplied by Prayon:
  - are controlled using an HACCP approach 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 in the meat, poultry, seafood, baking and dairy industries.

- Food-grade purified phosphoric acid and food-grade phosphates are mainly used in the meat, poultry, seafood, baking and dairy industries.
- Food-grade phosphates are allergen-free, GMO-free and BSE-/TSE-free.
- ISO 9001 (Quality)
- ISO 14001 (Environment)
- OHSAS 18001 (Health/Safety)
- ISO 22000 (Food Safety)
- We achieve our goals through strong ethics and solid core values:
  - Customer-focused: We listen to your needs and fulfill your requirements. We aim to go beyond expectations.
  - People-oriented: We cherish the experience, contributions and professional development of our employees. We aim to be a winning team.
  - Technology: We maintain an open mind towards continuous improvement and innovation.
  - Quality of life: We practice Responsible Care. We believe in sustainable development. We are committed to enhancing the quality of life.

Phosphates

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Food phosphates for seafood applications

The delicate nature of seafood proteins causes them to denature more rapidly than those of meat and poultry when refrigerated and frozen. Food-grade phosphates act as cryoprotagogues for frozen seafood and help to delay drip loss during distribution and retail storage of refrigerated seafood. Sodium tripolyphosphate (STPP) is the most commonly used phosphate in refrigerated and frozen seafood products although other phosphates, such as monophosphate, pyrophosphate and polyphosphate, are also used. Uncooked and pasteurized meats contain more phosphates than those of meat and poultry when frozen, causing them to denature far more rapidly and generally result in more robust structures. STPP is particularly beneficial when adherence of muscle proteins to their protective covering is desired, as in the case of shrimp. STPP is also effective in the dehydration of muscle proteins, reducing the water content of muscle proteins, making them more amenable to further processing.

Effects on muscle proteins

After harvesting, quality of fish and seafood proteins quickly alter. The cell’s own phosphate compound (ATP – adenosine triphosphate) quickly decomposes. As a result, pH decreases, muscles contract (rigor mortis) and water is expelled. Prayon’s STPP prevents this by using an appropriate phosphate blend. STPP, which is generally used as a pre-dip, can be introduced into a vacuum tumbler and rotated for a shorter period of time. Vacuum tumbling results in a far more consistent product, since a known quantity of scallops and a defined procedure are followed. This method may be variable, though this can be overcome by using an appropriate phosphate blend.

Phosphates can be used on different stages of processing. In the fresh fish fillet, it is common to use phosphate during the process of washing, trimming and freezing. A phosphate solution is introduced into a vacuum tumbler and rotated for a short period of time. The phosphate solution is removed after a wash period, then the fillets are allowed to drain. Phosphate-tREATED fillets are dipped in a solution of STPP and sold for a period of time. The texture of the fillet remains, though the resulting fillet may be firmer than untreated fillets, in which case the phosphate solution is removed after a wash period. Drying the fillets through the solution ensures that the fillets are treated homogenously. In the static method, the scallops are sold either ‘wet’ (phosphate treated) or ‘dry’ (untreated). Dipping the fillets into cold water prevents this, though this can be overcome by using an appropriate phosphate blend.

Benefits of phosphate salts

Shrimp

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Surimi

Phosphates are also beneficial in the production of surimi. Phosphates improve the quality of surimi by increasing the yield and texture. The addition of phosphates improves the water-holding capacity of the final product. Surimi is the base material for the production of fish (prawns) and seafood products. Production of surimi is expensive and requires a large amount of time and energy. Surimi is made by mixing muscle proteins with ice water, then peeling, refining and dehydrating the resulting material. Surimi is then further processed into various products, such as imitation crab meat. Surimi is also a rich source of phosphorus, sulfur and essential amino acids that are beneficial to human health. The phosphorus content of surimi is higher than in most other phosphate sources for use in pharmaceutical systems.

Food phosphates for fish & seafood

STPP Range

Prayon has a wide range of spray dried STPPs with various particle size distributions, bulk densities and hydration levels. There is always a Prayon STPP to fit your specific processing needs and requirements.

Carfosel™ Blends

Prayon has developed a full range of blended phosphates designed for the meat, fish and seafood industries. Carfosel™ advantages include content texture and enhances cured colour development. Prayon also offers Carfosel™ blends to meet customers’ specific needs.

Carfosel™ Instant

Carfosel™ Instant imparts equivalent physical bonds in terms of stability and dissolve speed. These properties are particularly useful in extreme conditions. For example, Carfosel™ Instant sets even dissolve very well in freezing times with a very high salt concentration. Under standard conditions, Carfosel™ Instant helps to guarantee optimum homogeneity and stable processing conditions.

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