

## 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 fish and seafood

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



## Food phosphates for seafood applications

The delicate nature of seafood proteins causes them to denature far more rapidly than those of meat and poultry when refrigerated and frozen. Food-grade phosphates act as cryoprotectants for frozen seafoods and help to delay drip loss during distribution and retail storage of refrigerated seafood. Sodium

tripolyphosphate (STPP) is the most widely-used phosphate in refrigerated and frozen seafood products although blends may be more beneficial. Unsaturated phosphates act as cryoprotectants for frozen seafoods and help to delay drip loss during distribution and retail storage of refrigerated seafood. Sodium

are highly prone to oxidation. This causes a discoloration that progresses from yellow to brown and gray. Idiosyncrasies of different seafood species (struvite formation in canned tuna and bluing of crab) also lead to potential for defects if left unattended.

### Finfish fillets



Dipping the fillets into a chilled 5 to 10% solution of either STPP or Carfosel™ B-940 provides optimum treatment for most marine species. This can be accomplished by conveying the fillets through the solution on a mesh belt and providing flex to the fillet for uniform penetration of the phosphate. The contact time

should be very short (30 seconds at 5% and less than 10 seconds at 10%). This forms a surface coating of soluble protein, which acts to retain natural juices and flavour. When block-frozen, it forms a protein 'glue' that enables tight contact between the fillets and prevents spaces within the block. Fresh fillets will retain natural juices for a longer period of time than untreated fillet, so the need for overpack to meet net stated weight is substantially reduced. Thaw-drip loss of frozen fillets will also be reduced. Stronger or more robust structure types are amenable to low-pressure injection, tumbling or massaging. Aquacultured species are especially suited to the addition of flavoured marinades to increase variety and add value.

### Shrimp



Phosphates can be used on shrimp for a variety of purposes. In the Pacific Northwest, it is common to dip whole shrimp into a 5% solution of STPP prior to steam cooking and mechanical peeling. The STPP acts as a processing aid to facilitate the separation of edible flesh from the shell by solubilising the immature

collagen, which connects the muscle to its protective covering. Shrimp frozen in blocks are often treated to reduce thaw-drip loss. Treating shelled shrimp just prior to cooking results in retention of natural juices and reduces cook-cool loss, so the finished product is more succulent.

### Scallops



Scallops are sold either 'wet' (phosphate treated) or 'dry' (untreated). The adductor muscle is treated to reduce drip loss during transportation and sale. There are different methods for treating scallops, including a static (dip) method and vacuum tumbling. In the static method, the scallops are usually dipped into a solution

containing STPP and salt for a set period of time. The moisture absorption resulting from this method may be variable. Vacuum tumbling results in a far more consistent product, since a known quantity of scallops and a defined phosphate solution are introduced into a vacuum tumbler and rotated for a short period of time (30 to 45 minutes). Steam-shucked scallops may present a challenge due to their denatured exterior, though this can be overcome by using an appropriate phosphate blend.

### Surimi

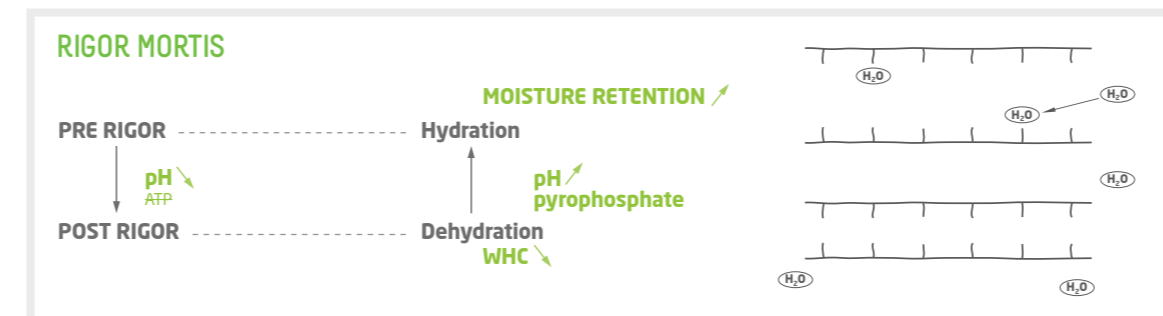


Surimi is the base material for the production of kamabuko or seafood analogues. Production of surimi is based on ancient Japanese technology involving sequential washing of minced finfish flesh in potable water. Once washed, refined and de-watered, cryoprotectants (phosphate blends, sucrose and sorbitol) must

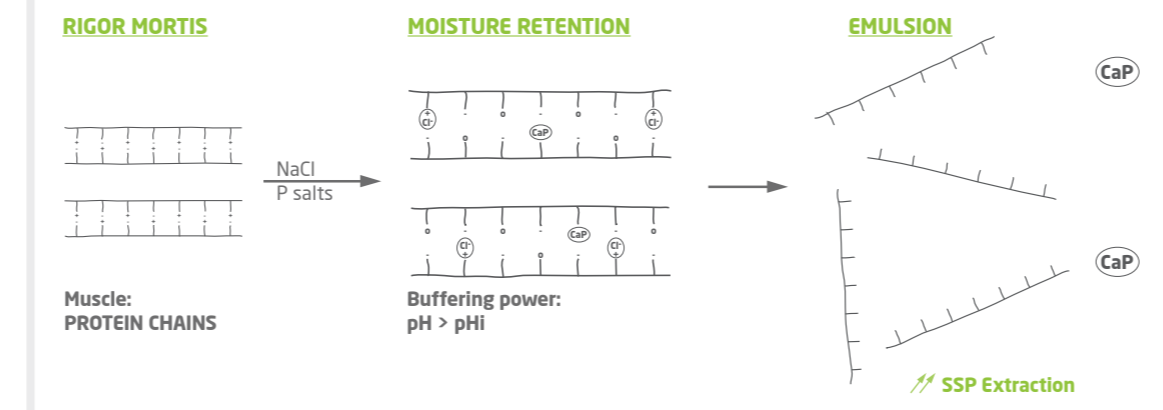
be added to the flesh to protect the protein against denaturation during freezing and frozen storage. Blends of alkaline pyro- and polyphosphates are the most desirable phosphates for use in cryoprotectant systems.

## 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 phosphates demonstrate comparable characteristics to the cell's own phosphate. They act on muscles and restore uncontracted state, thereby enabling constitutive water to be retained.



### Benefits of phosphate salts



## 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™ optimises yields, controls texture and enhances cured colour development. Prayon also offers Carfosel™ blends to meet customers' specific needs.

### Carfosel™ Instant

Carfosel™ Instant outperforms equivalent physical blends in terms of solubility and dissolving speed. These properties are particularly useful in extreme conditions. For example, Carfosel™ Instant salts even dissolve very well in freezing brines with a very high salt concentration. Under standard conditions, Carfosel™ Instant help to guarantee optimal brine homogeneity and stable processing conditions.

Product	Phosphates	Properties and applications
Shrimp	STPP range Carfosel™ B-940	Help with peeling and provide a good yield. Provide a high processing yield and reduce freeze thaw-drip losses. Increase yield after cooking, give shrimp a better appearance and texture.
Frozen fish and fish fillets	Carfosel™ 1000i Carfosel™ B-940	Retain natural moisture. Reduce thaw-drip and cooking losses. Improve performances in hard water conditions. Inhibit colour and lipid oxidation.
Scallops	STPP range Carfosel™ B-940	Reduce drip loss during transportation and storage.
Surimi Fish sausages	Carfosel™ 1010	Provide good cryoprotection of myofibrillar proteins. Increase gel strength and ensure a homogeneous product.
Canned fish & seafood	Carfosel™ 480	Prevent struvite formation (magnesium ammonium phosphate).

*Phosphates are permitted in frozen fish & seafood up to a level of 0.5% of the weight of the finished product.*

Other Carfosel products are available. For details about our complete range, please contact us at [sales2services@prayon.be](mailto:sales2services@prayon.be)