

Solutions for food and beverage fortification

Jungbunzlauer is the global market leader for functional minerals derived from citric, gluconic and lactic acid. These fully reacted products are manufactured in Europe by neutralisation of these acids with the appropriate alkaline mineral source. The resulting organic minerals are known for their high bioavailability, and the ability to support human health in a variety of applications, like food, beverage, dietary supplements and pharmaceutical products.

Zinc

Zinc Citrate (ZC) is a nutritionally functional chelate of zinc and citrate. Among other organic zinc salts it stands out because of its high zinc content (31%) and relatively neutral taste. Zinc has a wide variety of proven effects on human health, including the support of normal immune functions. When choosing zinc, zinc citrate is often used in functional foods, infant formula and dietary supplements due to its high bioavailability. Zinc citrate has a solubility of 2.6 g/L and can be increased with the use of potassium citrate or sodium citrate.

Zinc Lactate (ZL) is the zinc salt of lactic acid, commonly used in dental care products. In food and beverage fortification, zinc lactate is popular thanks to its solubility (55 g/L), mineral content (22%) and relatively neutral taste profile.*

**zinc lactate is not approved for food in the US*



Magnesium

Trimagnesium Citrate (TMC) is offered in a highly soluble (200 g/L initial solubility) anhydrous form and less soluble (16 g/L) nonahydrate form. Both forms are known for their neutral taste and high mineral content (16% and 12% respectively). Trimagnesium citrate nonahydrate is also available in a micronised version.

Trimagnesium Citrate is used in a wide variety of food and beverage fortification applications, including but not limited to dairy products, dietetic food, juices, flavoured waters and infant formula. Trimagnesium citrate anhydrous can function as an internal desiccant, making it especially beneficial in dry mixes.

Magnesium Lactate (ML) is known for its use in beverages and liquid sports nutrition. Benefits include high and stable solubility (84 g/L), neutral taste and good magnesium content (10%).



Calcium

Tricalcium Citrate (TCC) is one of the most important calcium salts used in dairy products, baby food, beverages, processed fruits, clinical nutrition and other calcium-fortified products. Its main characteristics are neutral taste, high calcium content (21%) and excellent bioavailability. TCC can also increase firmness in products due to its chelating ability and gelling properties.

Micronised grades are available for excellent dispersion and mouthfeel as the solubility is 1 g/L.

- M 7090 min. 90% < 70 µm Baby food (especially infant formula)
- M 2090 min. 90% < 20 µm Beverages, clinical nutrition, confectionary
- M 1098 min. 98% < 10 µm Fruit preparations, dairy, and soy products

Calcium Lactate Gluconate (CLG) is a highly soluble (400 g/L) mixture of calcium lactate and calcium gluconate, with a neutral taste and good bioavailability. Jungbunzlauer's calcium lactate gluconate has 13% calcium content and dissolves clear making it optimal for a variety of foods and beverages.

- Beverages (fruit juices, carbonated drinks, flavored waters and instant beverages)
- Confectionary
- Concentrates and pre-blends



Potassium

Tripotassium Citrate (TPC) is a highly soluble buffering salt for sodium-free pH-control in beverages and numerous food products. Tripotassium citrate is often used in infant formula fortification due to its high solubility (1780 g/L), potassium content (36%) and potential help with taste improvement in hypoallergenic formulas. As a sequestering agent, it binds cations such as calcium, magnesium and heavy metals, improving the stability of food and beverages during processing, heat treatment and storage.

Potassium Gluconate (PG) is used as an alternative to sodium salts in food as well as a potassium supplement in dietetic food products. It is supplied as an anhydrous, non-hygroscopic salt displaying mildly alkaline and highly soluble (450 g/L) characteristics. Potassium gluconate can also mask bitterness, act as a buffer, and has 17% potassium content.

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