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Jungbunzlauer ingredients as buffering agents

Buffer systems containing Jungbunzlauer citric acid, L(+)-lactic acid or glucono-delta-lactone and the corresponding salts trisodium citrate, tripotassium citrate, sodium L(+)-lactate, potassium L(+)-lactate or sodium gluconate can stabilise the pH value of your personal care applications with acid concentrations of up to 15 wt%.

Benefits

Enhanced stabilisation of a high acid amount

Stabilise up to 15 wt% citric acid, L(+)-lactic acid or glucono-delta-lactone by the use of the ideal buffer system.

Optimised buffer system for personal care application

Choose the best combination of acid and one conjugated salt to prepare the optimal buffer system for your specific application.

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Proof of benefits

Theoretical background

A buffer is an aqueous solution, which resists in pH levels upon addition of small amount of acid or base. It contains an acid or a base and its conjugated salt. Each buffer has a specific buffer capacity. This capacity is defined as the amount of acid/base that can be added to the system before pH changes significantly. The buffer range is the pH range in which buffer effectively neutralise added acid/base, while pH remains nearly constant.

By the use of the Henderson Hasselbalch Equation, the pH value of the final buffer system can be calculated as follows:

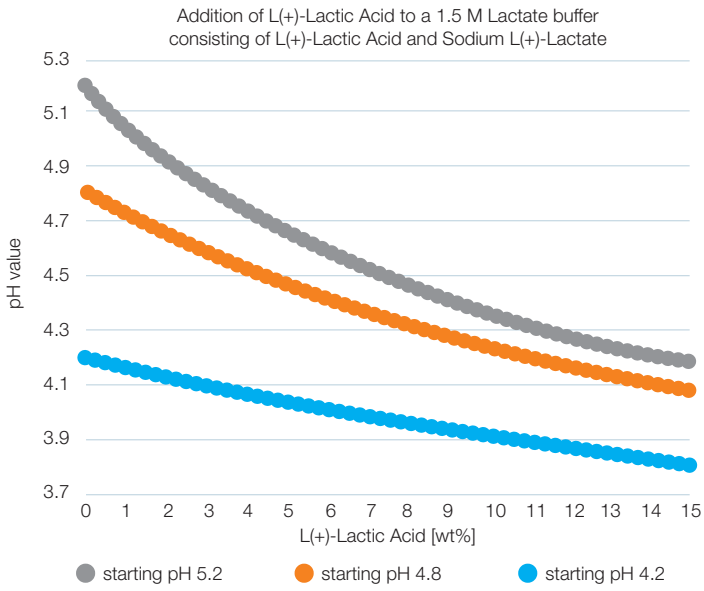
$$pH = pK_a + log\frac{[A^-]}{[HA]}$$

For the calculation of the pH value the pKa value of the acid, the initial concentration of the base [A-] and acid [HA] or the ratio of base to acid is required.

Example:
- pKa value of lactic acid: 3.86
- Sodium lactate concentration [A-]: 0.5 mol/L
- Lactic acid concentration [HA]: 0.25 mol/L

$$pH = 3.86 + log\frac{0.5}{0.25} = 4.16$$

Example for acid stabilisation



The addition of L(+)-lactic acid to a buffer system, built up by L(+)-lactic acid and sodium L(+)-lactate, leads to different final pH values. The final pH depends on the starting pH value and the amount of added acid. There is a decrease in the pH between 0.5 and 1.

Jungbunzlauer ingredients suitable for use as buffering agents

Name	Citric Acid Anhydrous	Citric Acid Monohydrate	Glucono-delta-Lactone	L(+)-Lactic Acid
INCI	Citric Acid	Citric Acid	Gluconolactone	Lactic Acid
COSMOS	Approved	Approved	Approved	Approved
Biodegradability	Readily biodegradable	Readily biodegradable	Readily biodegradable	Readily biodegradable
CAS number	77-92-9	5949-29-1	90-80-2	79-33-4
EC number	201-069-1	201-069-1	202-016-5	201-196-2
REACH number	01-2119457026-42-0000	01-2119457026-42-0000	01-2119451153-49-0000	01-2119474164-39-0004

Name	Trisodium Citrate Dihydrate	Tripotassium Citrate	Sodium L(+)-Lactate	Potassium L(+)-Lactate
INCI	Sodium Citrate	Potassium Citrate	Sodium Lactate	Potassium Lactate
COSMOS	Approved	Approved	Approved	Approved
Biodegradability	Readily biodegradable	Readily biodegradable	Readily biodegradable	Readily biodegradable
CAS number	6132-04-3	6100-05-6	867-56-1	85895-78-9
EC number	200-675-3	212-755-5	212-762-3	288-752-8
REACH number	01-2119457027-40-0000	01-2119457580-38-0000	01-2119971048-33-0002	01-2120783320-60-0001

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