

**Jungbunzlauer**

*From nature to ingredients®*



**Personal Care**

# Personal Care

## *Jungbunzlauer's comprehensive personal care solutions*

Environmental awareness is vital for human well-being and for the health of our planet. Consumers' expectations are in flux and the preference for natural and renewable products is creating a new market with strong growth. For the development of personal care products in this segment, Jungbunzlauer transforms nature's raw materials – by way of clean and authorised processes – into outstanding ingredients and offers natural solutions for personal care formulations.

## Functionality is the key to success

New formulations play a vital role in the growth and development of a company. Meeting consumer trends and preferences for natural products is therefore an essential component of a company's strategy for market success. Jungbunzlauer provides support for developers of the cosmetics industry seeking to expand their brand

by supplying them with a broad range of useful bio-based additives.

In order to facilitate the selection of our various products, we have organised the brochure according to the functionalities which they perform in personal care products.

		Skin Care	Soap and Bath Products	Hair Care	Colour Cosmetics	Deodorants	Fragrances
Anti-bacterial & Anti-inflammatory		Lactic Acid Potassium Lactate Sodium Lactate Zinc Citrate Zinc Gluconate Zinc Lactate	Lactic Acid Potassium Lactate Sodium Lactate			Zinc Citrate Zinc Gluconate Zinc Lactate	
Buffering	↓ pH	Citric Acid / Monosodium Citrate / Gluconic Acid / Gluconolactone / Lactic Acid / Buffered Lactic Acid					
	→/↑ pH	Sodium Citrate / Potassium Citrate / Sodium Gluconate / Potassium Gluconate / Sodium Lactate / Potassium Lactate					
Chelation & Synergy with antioxidants		Citric Acid / Sodium Citrate / Potassium Citrate / Gluconic Acid / Sodium Gluconate / Potassium Gluconate					
Combability			Erythritol (ERYLITE®)				
Deodorising						Triethyl Citrate (CITROFOL® AI)	
Exfoliation		Citric Acid Lactic Acid Gluconolactone					
Fixation							Triethyl Citrate (CITROFOL® AI)
Moisturising & Humectancy		Erythritol (ERYLITE®) Potassium Lactate Sodium Lactate Gluconolactone Sodium Gluconate Calcium Lactate and Calcium Gluconate (Calcium Lactate Gluconate)					
Plastification				Tributyl Citrate (CITROFOL® BI) Acetyl Tributyl Citrate (CITROFOL® BII)			
Softening		Triethyl Citrate (CITROFOL® AI) Tributyl Citrate (CITROFOL® BI) Acetyl Tributyl Citrate (CITROFOL® BII)					
Solubilisation					Acetyl Tributyl Citrate (CITROFOL® BII)		
Thickening & Stabilisation		Xanthan Gum					

Product names are listed according to INCI

## Anti-bacterial and anti-inflammatory

Antimicrobial agents are used to reduce or prevent the growth of microorganisms. However, for sensitive applications like personal care products the possibilities are limited and legal requirements are very strict. It is therefore beneficial to use multifunctional ingredients like **lactic acid** and **lactates**, which exhibit anti-bacterial and bacteriostatic properties, respectively, while used at typical

levels in cosmetics. Jungbunzlauer's **zinc salts** also have excellent anti-bacterial and anti-inflammatory effects and are therefore used in skin care and particularly in anti-acne products. In shaving products, **zinc salts** act as astringents to prevent skin irritations and inflammation.

## Buffering

Buffering agents are used to adjust and stabilise the pH of cosmetic products. Jungbunzlauer's **citric acid**, **monosodium citrate**, **lactic acid**, **buffered lactic acid**, **gluconic acid** and **glucono-delta-lactone** – the inner ester of gluconic acid – are used to decrease the pH value of cosmetic formulations when required.

Fully neutralised salts – **trisodium citrate**, **tripotassium citrate**, **sodium lactate**, **potassium lactate**, **sodium gluconate**, **potassium gluconate** – stabilise or raise it.

**Citric acid** and **citrates** have the widest buffering range from pH 2 to 7. **Lactic acid**, **lactates**, **gluconic acid**, **glucono-delta-lactone**, **sodium gluconate** and **potassium gluconate** buffer from pH 3 to 5. As all organic acids and salts are present in the metabolic pathways of our cells they exhibit a high degree of product safety. Buffering is just one technological feature of these typically multifunctional ingredients.

When choosing the buffering agent it is therefore important to not only consider the pH of the end product, but also the other functions provided by these organic acids and salts. The use of multifunctional ingredients helps to shorten ingredient lists on the label and to limit costs.

The physical form may also play an important role in certain production processes. **Citric acid** and **citrates**, **glucono-delta-lactone** and **sodium gluconate** are typically available in dry form – fine powders but also coarser granules for less dusting – with 100% active substance content. **Gluconic acid**, **lactic acid** and **lactates** are available as 50% to 90% solutions in water, depending on the product.

**Citric Acid DC** is a surface modified and direct compressible type of citric acid. A hydrosoluble coating improves both processing speed and enhances firmness of the end product. For example, when used in effervescent care products like bath bombs it shortens the drying process without influencing the dissolution behaviour. **Monosodium citrate** and **glucono-delta-lactone** are technologically interesting ingredients for bath bombs as well. The former is a dry buffered form of citric acid, providing a milder effervescence than the pure acid. The latter is a controlled release acid that prolongs the effervescent effect.



## Chelation and synergy with antioxidants

The presence of metal ions in raw materials and water or their release from the processing equipment can lead to unwanted reactions in personal care formulations. To prevent problems like rancidity, discolouration, precipitation and degradation of ingredients, Jungbunzlauer offers outstanding natural alternatives to conventional chelating agents made by chemical synthesis.

**Citric acid, gluconic acid** and their **sodium** and **potassium salts** are powerful chelating agents for trace metal ions. **Citric acid** acts as a synergist for antioxidants. As a chelating agent it reacts with

metal ions to form a complex and thus prevents the metal from acting as a catalyst in oxidative reactions. Hence, deterioration due to chemical reactions with oxygen in moisturising creams and lotions may be slowed or even prevented. **Sodium gluconate**, in particular, has the ability to inactivate iron and copper ions over a wide pH range, thus helping to protect oils and actives in skin care – especially UV filters in sunscreens – and soap and bath products as well as sensitive ingredients in fragrances from discolouration, degradation and rancidity. In many cases it can replace EDTA.

## Combability

**ERYLITE®** is a crystalline form of erythritol which occurs naturally in grapes, melon and fermented foods. Based on a yeast fermentation process it is the only polyalcohol that can be considered natural. Next to its moisturising properties, ERYLITE® proves to improve hair combability when contained in hair care products such as shampoos or conditioners, displayed through a significantly decreased combing

force needed. Hair treated with a product including ERYLITE® is more manageable and consequently, styling becomes much easier and quicker. In addition, ERYLITE® also achieves a moisturising effect on the scalp as well as an anti-frizz effect, delivering thus a great performance in regard to the basic requirements of modern hair care systems.



## Deodorising

The function of deodorants is to prevent body odour which develops when the originally odourless sweat is decomposed by microorganisms.

Jungbunzlauer's well-known active deodorising agent, **CITROFOL® AI**, meets all the criteria for a 48 hour deodorising effect. There is no substantial interference with the natural biological processes of the skin and CITROFOL® AI is even safe in cases of excessive or abnormal use. CITROFOL® AI also integrates well in personal care formulations and shows no reaction with other components. Furthermore, repeated usage does not lead to accumulation on the skin. CITROFOL® AI is used in liquid formulations, in aerosol sprays, roll-on sticks and deo sticks.

The anti-bacterial properties of Jungbunzlauer's zinc salts reduce the growth of those microorganisms responsible for odour – making it a perfect choice for deodorant products.

## Exfoliation

The removal of dead cells of the stratum corneum helps to maintain healthy skin. Besides physical removal through abrasive scrubbing or microdermabrasion, exfoliation can be achieved by chemicals – preferably gentle products. Hydroxy-acids like Jungbunzlauer's organic acids are typically used for this purpose. Citric and lactic acids are alpha-hydroxy-acids (AHA) and gluconic acid, as well as glucono-delta-lactone, are poly-hydroxy-acids (PHA).

**Lactic acid** is a powerful exfoliant. Its skin cell renewal performance is higher than that of citric acid and malic acid and comparable to that of glycolic acid, yet the L(+) form of lactic acid is less irritating

compared to glycolic acid. It is therefore used at levels of 3-10% in exfoliating creams with a pH  $\geq 3.5$  for regular use at home, but also in significantly higher concentrations in chemical peels applied by aestheticians or dermatologists. Cosmetic grade of lactic acid is available as 90% highly pure solution in water.

**Glucono-delta-lactone** is a less powerful exfoliant than lactic acid, but it is more gentle to the skin as it is a larger molecule and consequently penetrates the skin more slowly. Therefore, it constitutes a smooth alternative to the AHAs, especially in applications where the irritant side-effect needs to be reduced or eliminated.

# Moisturising and humectancy

Standard moisturisers are frequently produced by chemical synthesis and can thus not be used for natural care. Some of them also confer a sticky texture to skin care products or exhibit other sensorial and technological drawbacks. Jungbunzlauer offers a comprehensive range of moisturisers which can help to overcome these issues. Some of these moisturisers can also be used as humectants in soap bars and wipes.

**ERYLITE®** is a premium moisturiser, preventing stickiness in skin care formulations as well as unpleasant odour. It is particularly useful for creams and lotions. Jungbunzlauer has proven in its studies that the use of 3% ERYLITE® can increase the level of skin moisture by up to 27%. These studies further revealed valuable synergies when ERYLITE® is used together with the standard moisturiser glycerine.

Because of their high water holding capacity and skin friendliness as components of the natural moisturising factor (NMF) of the skin, **sodium lactate** and **potassium lactate** serve as smooth moisturisers in both leave-on and rinse-off products. Cosmetic grades of Jungbunzlauer sodium lactate and potassium lactate are available as 60% highly pure solutions in water. Clinical tests with a skin cream containing 3% of sodium lactate have shown an increase of the skin hydration by 23% vs. no treatment and by 8% compared to a cream without moisturiser after two weeks of daily application. In vivo tests with a shower gel containing 5% of potassium lactate have shown an increase in skin moisture content by 11% vs. a shower gel without moisturiser when applied daily over a period of two weeks. The tests also confirmed that Jungbunzlauer's lactates provide a pleasant skin feel compared to glycerine.

Jungbunzlauer **sodium gluconate** is another crystalline moisturiser, particularly adapted for mass market soap and bath products. Due to its molecular structure with a number of hydroxyl groups, the gluconate molecule is able to bind water. **Glucono-delta-lactone** is a premium version of this gluconate molecule, with an outstanding active substance content. It is particularly advisable for leave-on products. A skin cream containing 3% of glucono-delta-lactone has been shown to improve the relative skin moisture content by 25% vs. no treatment and by 10% vs. a cream without moisturiser. This is a comparable performance to that of the same cream containing 3% glycerine, but with an improved skin feel.

Last but not least, Jungbunzlauer **calcium lactate gluconate**, a double calcium salt of lactic acid and gluconic acid and the most soluble organic calcium salt, completes Jungbunzlauer's range of premium moisturisers. A shower gel with 5% of calcium lactate gluconate has been able to increase the skin moisture content by 13% vs. the same shower gel without moisturiser.



Ultimately, all Jungbunzlauer moisturisers are skin friendly, compatible with each other and with glycerine, permitting formulators to achieve the desired performance, sensorial and technological targets by combining them.

## Plastification

Commonly plasticisers are added to advance plasticity and fluidity properties of a material. Jungbunzlauer's **CITROFOL® citrate esters** are safe, non-volatile plasticisers used to lower the brittleness of polymers in hair styling and conditioning products. Due to their excellent compatibility to a wide variety of polymers they ensure sufficient elasticity, permanence and resistance to humidity for the hair care products.

Our well established **CITROFOL® esters** are also used in colour cosmetics. Cosmetic nail lacquers enhance the care for finger and toe nails and give them form and colour. For this application our CITROFOL® esters offer multifunctional solutions. Besides their excellent plasticising properties they perform as dispersing aids and diluents, either in nitro-cellulose/solvent-based or in acrylate/water-based formulations.



## Softening

Emollients are the most versatile key components in many cosmetic products. Emollients contribute to the moisturising, lubricating, protecting, conditioning and softening performance of cosmetic formulations.

As medium spreading oils, **CITROFOL® esters** not only improve the properties related to emollients, but also ease the emulsification of creams, skin feel and polarity respectively. While formulating cosmetics, product developers can choose between specific CITROFOL® esters to refine several important factors such as naturalness, viscosity, polarity, solubility and spreading values.

## Solubilisation

Most colour pigments for eye shadows, lip sticks or nail lacquers are solid, expensive and therefore used in low concentrations. Solubilisers help to form a colour mixture, which can be easily dosed and processed to a homogeneous coloured product.

Due to their high solvent efficacy **CITROFOL® esters** are ideal additives for this application. They exhibit excellent storage stability and, as non-volatile organic compounds (non-VOC), they do not contribute to any environmental emissions.

## Thickening and stabilisation

**Xanthan gum** is a naturally occurring polysaccharide produced by fermentation. Its most important functional property is the ability to control the rheology of water-based systems. Xanthan gum solutions are highly pseudoplastic, which means they combine excellent stabilising properties with easy flow. In rest and at low shear rates xanthan provides very high viscosity and a strong ability to stabilise emulsions and suspensions. When high shear is applied the viscosity drops instantly, which makes xanthan containing products easy to process and apply by mixing, pumping or spraying.

For personal care applications Jungbunzlauer offers a range of special personal care grades that meet the highest quality and purity standards. Special features are the very low microbial plate counts, the absence of amylase and cellulase activity and a high degree of whiteness.

The range includes regular **xanthan gum** and grades with enhanced functionality like clarity and modified flow behaviour. Transparent personal care products can be made using the special clear solution grades that provide all the stabilising and shear thinning properties of regular xanthan gum without imparting the typical turbidity. Special grades with reduced pseudoplasticity offer less stability and shear thinning and can be used to improve the flow or spreadability of viscous creams and gels.

The personal care grades are available with different particle size distributions, which allows a selection based on the individual blending and mixing processes. While the fine grades blend well with most other ingredients, the coarser, agglomerated grades allow easy dispersion with low mixing efforts.





COSMOS  
APPROVED

## Conformity to the natural and organic cosmetic standards of ECOCERT and COSMOS

Producers and consumers are increasingly looking for credibility. The inspection of the raw materials by a neutral body on conformity to the natural and organic cosmetic standards meets this expectation. The bulk of Jungbunzlauer range of personal care and cosmetic ingredients are approved by ECOCERT COSMOS. Our products are therefore an assurance for all producers seeking ingredients to formulate natural personal care products certified according to the ECOCERT and COSMOS Natural and Organic Cosmetic Standards.

\*ECOCERT Greenlife is an independent organisation with a well-recognised standard for natural and organic cosmetics. COSMOS (COSMetic Organic Standard) was developed by several organisations including ECOCERT to define common requirements and definitions for organic and/or natural cosmetics.



NATRUE  
Approved

Most Jungbunzlauer products used in personal care and cosmetic applications are NATRUE approved as natural or derived natural ingredients.



## Ethical, health or environmental concerns – we take them seriously

A continuously growing number of people choose a vegetarian or vegan lifestyle. Veganism does not stop at the edge of a plate, but covers all articles of daily use including personal care products. Producers world-wide consequently adapt their range to broaden the offerings of animal-free products. Jungbunzlauer offers naturally sourced ingredients for personal care products which are fully suitable for vegetarians and vegans.



## Non-GMO Positioning

Jungbunzlauer can provide products following a strict Non-GMO policy. All raw materials used in our European manufacturing processes are purchased according to strict Non-GMO specifications. All fermentation is done by using natural and non-genetically modified microorganisms.

## Oral care

Please see our specific folder for Jungbunzlauer ingredients in oral care.

# Jungbunzlauer Group

Jungbunzlauer is represented in all major markets. Our global network of sales companies and distributors covers more than 130 countries.

## North America

## Europe (incl. Russia, Africa and Middle East)



- SALES OFFICE
- PRODUCTION SITE

- PRODUCTION SITE / SALES OFFICE
- APPLICATION TECHNOLOGY CENTER

Jungbunzlauer is one of the world's leading producer of biodegradable ingredients of natural origin. The Swiss-based, international company's roots date back to 1867. Today, Jungbunzlauer specialises in citric acid, xanthan gum, gluconates, lactics, specialties, special salts and sweeteners for the food, beverage, pharmaceutical and cosmetic industry as well as for various other industrial applications.

Jungbunzlauer's products are manufactured utilising natural fermentation processes based on renewable raw materials.

All its products can be used, transported and disposed of in a secure and ecologically safe way. The Group operates manufacturing plants in Austria, Canada, France and Germany.

A worldwide network of sales companies and distributors with a thorough understanding of target markets and client requirements underlies Jungbunzlauer's strong market and customer focus. Committed to its rigorous quality standards, Jungbunzlauer guarantees for the excellence and sustainability of its products and services.

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