



# LACTOPROT

functionality from milk



**6 PRODUCTION PLANTS**  
**8 SALES OFFICES**  
**WORLDWIDE**  
**87+ COUNTRIES**  
**SUPPLIED**





# LACTOPROT

functionality from milk

## MILK – OUR WHITE GOLD

Milk is our passion; processing of milk is our mission. We are one of the world's leading manufacturers of caseinates. With a long tradition and the seal "Made in Germany", we operate successfully around the globe.

The main focus of our activities is on processing milk and whey. We extract the best from our "white gold" for our customers around the globe. As one of the international leaders in the production of caseinates, we look back on a long tradition. Our owner-managed group of companies has a knowledge of the diverse functional properties of milk and its constituents that has accumulated over the course of generations and combined with extensive experience of the markets for the many different areas of application in the food industry.

Our products are used in milk and whey specialties, delicatessen foods, ice cream, baked goods and confectionery, beverages, baby food and sports products, and many other applications. Our constant aim is to earn and keep our customers' trust and satisfaction. As an all-round service provider, we offer products and solutions that meet the most demanding quality requirements – competently, flexibly, quickly, and "tailor-made" if you wish. A pilot plant with state-of-the-art equipment, several production sites and a worldwide distribution network guarantee service from A to Z.

### HISTORY

Our roots go back to the 19th century and are reflected in our site in Leezen. It was established in 1878 as part of a farming community focussing on milk production. 145 years and three generations of family-controlled management later, Lactoprot Deutschland GmbH is one of the international leaders in the production of caseinates and employs a staff of around 300.



*Leezen dairy, 1892*





**300+ MILL. KG MILK  
INTAKE PER ANNUM  
80+ FARMERS WITHIN A  
80 KM RADIUS  
COLLECTING AREA**



# THE WAY OF OUR MILK

We know exactly where our raw milk comes from. We know our 'contract cows' and their owners personally. They supply us with highest quality raw milk from the heartland of Europe's dairy production.

## RAW MILK

Our suppliers' cows have daily access to fresh pastures. Each farm keeps about 200 animals that give about 30 kilograms of milk a day – that is an average of 9,500 kilograms a year. We know exactly where our raw milk comes from. Our "contract cows" are controlled individually on a regular basis. They supply us with more than 200 million kilograms of "white gold" every year. Every one or two days, Lactoprot collects the "white gold" in special road tankers. To be sure of the quality of the milk, we take samples straight from the tanker and analyze the milk for its constituents. At this stage we also check the storage temperature and conduct tests for any antibiotic residues or microbial contamination.

## CASEIN

As soon as the raw milk arrives at our dairy in Leezen, it is cleaned, heated and separated into cream and skimmed milk. The skimmed milk passes into the casein plant where it is mixed with an acid. This causes the protein to flocculate, and it can then be separated from the whey by means of a sieve. When separated from the whey, the casein passes into a decanter to drain off the liquid. It is then dried and ground to form a casein powder.

## CASEINATE

The casein produced in Leezen is processed further and neutralized by adding lye. In this way we open up the protein and make it water-soluble again. The process gives the valuable protein its functional characteristics, in particular its emulsifying property. The caseinate is then dried, cooled down and ground into a fine powder.

## WHEY PROTEINS

The whey resulting from casein production is also processed further. Ultrafiltration yields a whey protein concentrate with a protein content up to 80 percent or a whey protein isolate with 90 percent protein. In our spray towers, the highly concentrated whey protein is spray-dried into a powder.

## LACTOSE

The protein-reduced whey that has passed through the membrane during ultrafiltration contains mainly lactose – that is, milk sugar – and minerals. The lactose concentration is raised to 60 percent of the dry matter by gentle evaporation in a vacuum. In the next step the lactose syrup is cooled and the solution oversaturated; in other words, the solubility limit of the substance is exceeded. The resulting crystals can be separated off with a decanter and are then dried in a fluidized bed dryer. At the customer's request we grind the lactose to a specified particle size.

Enjoy our movie:  
„Processing flows of our milk“







**8+ AREAS  
OF USE**

**35+ APPLICATIONS  
COVERED**

**170+ PRODUCTS**



## INGREDIENTS

## APPLICATIONS

GROUP	PRODUCTS	YOGHURT			CHEESE		CONVEIENCE			MEAT			PASTRY			CONFECTIONERY			BEVERAGES			SPORTS		INFANT
		Set	Stirred	Drinking	Processed	Initiation	Dressings	Sauces	Ham	Processed	Dough	Toppings	Ice-cream	Sweets	Chocolate	Creamer	Protein	Shakes	Bars	Baby Food				
CASEIN	main protein part of the milk																							
	Acid Casein				▲	▲														●				
	Rennet Casein				●	●														●				
CASEINATES	extruded				●	●			●	●		▲				●		▲						
	Lactonat EN				●	●			●															
	Lactonat EC				●	●											●	●	▲		▲			
	Lactonat EP				●	●											●	▲	▲		▲			
	Lactonat RN	●	●	●	●	●	●	●	●	●						●		▲	●	●	▲			
roller-dried	Lactonat RC				●	●			●		▲							▲		●				
	Lactonat RP																		●					
																fining of wine and juice								
WHEY PROTEIN CONCENTRATE	whey proteins concentrated by cross-flow membrane filtration	●	●	●	●	●			●	●	●	●	▲					●	●		▲			
MILK POWDER	standardized evaporated whole milk powder																							
	Schokolac 26						●	●			●	●	▲		●									
	Schokolac Crumbs										●	●	▲	●	●									
MILK PROTEIN CONCENTRATE	milk proteins concentrated by mebrane-filtration	●	●	●	●	●					●		▲					●	●					
	LactoProtein MP 70 - 85																							
DEMINERALIZED WHEY POWDER	whey powder demineralized by ion exchanger						▲	▲			●		▲					●	●					
LACTOSE	Demilac 40, 50, 70, 90							▲			●		▲	▲	▲						▲			
	milk sugar isolated by nano-filtration and crystallisation																							
	Lactose unground, fine, super fine						●	●	●	●	●	▲	●	●	●						●			

● Recommended ▲ Formulation Dependent

## SPECIAL PRODUCTS AND QUALITIES

ICE CREAM COMPOUNDS	Lactoglace	excellent replacer of milk components
BAKERY COMPOUNDS	Lactobake	especially developed as egg replacer
COMPOUNDS FOR BARS	Lactobar	especially developed for high protein bars
COMPOUND FOR HIGH PROTEIN PUDDING	Dolcilac	protein enrichment up to 10%, easy to use, neutral taste
COMPOUNDS FOR (ANALOGUE) CHEESE	Combistab	bringing an improved quality and affordability to processed, analogue and cream cheese recipes
DAIRY STABILIZING SYSTEMS	Jogustab	especially developed to improve/ stabilize (fermented) products

STABILIZER FOR BEVERAGES	Milkystab	especially developed for stabilising fruit and milk beverages
MICELLAR CASEIN	LactoProtein	native milk protein concentrate with increased biological value
STABILIZER FOR FOAM	Lactofaam	stabilization for an indulgent texture in froths & whipped products (dairy & dairy-alternative)
STABILIZER FOR DRESSINGS	Dolistab	stabilization and emulsification for a creamy mouthfeel, heat and storage stability (hot and cold processing)
STABILIZATION FOR VFWC	Lactowhip	stabilization for vegetable fat whipping cream, no over-whipping, overrun up to 250%, freeze-and-thaw-stable

INSTANT PRODUCTS	Lactominh, Lactonat	products with improved dispersibility
VISCOSITY ENHANCING PRODUCTS	Lactominh, Lactonat	especially developed to create a high viscosity / gel of the final product
LACTOSE-REDUCED-/FREE PRODUCTS	Lactomin	products with a lactose content of 0.2% – max. 2.0 %
ORGANIC QUALITY PRODUCTS	Lactominh, Demilac Lactose	certified as organic quality according to european regulation
VLOG QUALITY PRODUCTS	Lactominh, Demilac, LactoProtein, Lactose	certified as highest standard of GMO-free products



# LACTOPROT

More detailed information about our product portfolio and possible applications can be found on our website: [www.lactoprot.de](http://www.lactoprot.de)





**300 M<sup>2</sup> PILOT PLANT**  
**18 MACHINES**  
**1.2 MILL. EUR**  
**INVESTMENTS**



## STATE-OF-THE-ART TECHNICAL CENTRE

We are your experienced and inspiring partner – from the development of innovative products to the delivery of ingredient systems for product solutions.

- Decades of experience in markets around the globe and a broad knowledge of the food industry
- Promising innovations such as protein-enriched yoghurts and beverages
- Short development times
- All-in-one ingredient systems, tailor-made for the individual customer
- Comprehensive, solution-oriented services: development of novel products; solutions for quality and food safety; technical service.

We see ourselves not only as a manufacturer and supplier of innovative stabilizing systems, but above all as an initiator of novel end products in keeping with the trend which can only achieve success through close cooperation with our customers. We employ a growing number of food technologists and application experts whose daily task it is to develop highly efficient and cost-effective systems for global food solutions.

On an area of nearly 300 square metres, our Technology Centre in Kaltenkirchen offers space for creativity and innovations that enhance our customers' products or make them possible at all. In our technical department with a pilot plant for nearly all food applications, our food technologists and process technicians devote themselves to developing highly functional blends for dairy, convenience, bakery, infant and sports products. Short routes and a marked readiness for dialogue speed up the creation of tailor-made solutions whose effects we adjust precisely to our customers' wishes with the aid of extensive trials on our different pilot plants.



### EQUIPMENT AVAILABLE IN OUR PILOT PLANT

- UHT machine with plate or tubular heat exchanger, indirect or direct heating, upstream or downstream homogenization and aseptic filling
- Whipping machine
- Processed and analogue cheese cooker
- Various soft ice and milk shake machines
- Autoclave and combination steamer
- Rotor-stator emulsifying systems
- Homogenizer
- Incubators
- and many more...





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**7 TECHNOLOGISTS**  
**24+ ANALYTICAL**  
**DEVICES**  
**100+ ANALYSIS**  
**PROCEDURES**



# PRODUCT DEVELOPMENT

We create customer-focussed solutions and services that deliver tangible economic impact through chemical, physical and structural analysis of materials. Underpinned by extensive industrial knowledge and expertise in technical applications, we help our customers to better understand a wide variety of materials, from proteins and fats to hydrocolloids and its functionalities.

Our idea lab and years of experiences form the basis of our successful product development. We have built up a network of recipes to cover more than 35 different applications. Successful product development includes precise and innovative methods for quantifying the results. State-of-the-art equipment is used to analyze the sensory properties of our developments.

## TECHNOLOGY AND LABORATORY EQUIPMENT

Our fully equipped laboratories contain modern analytical instruments

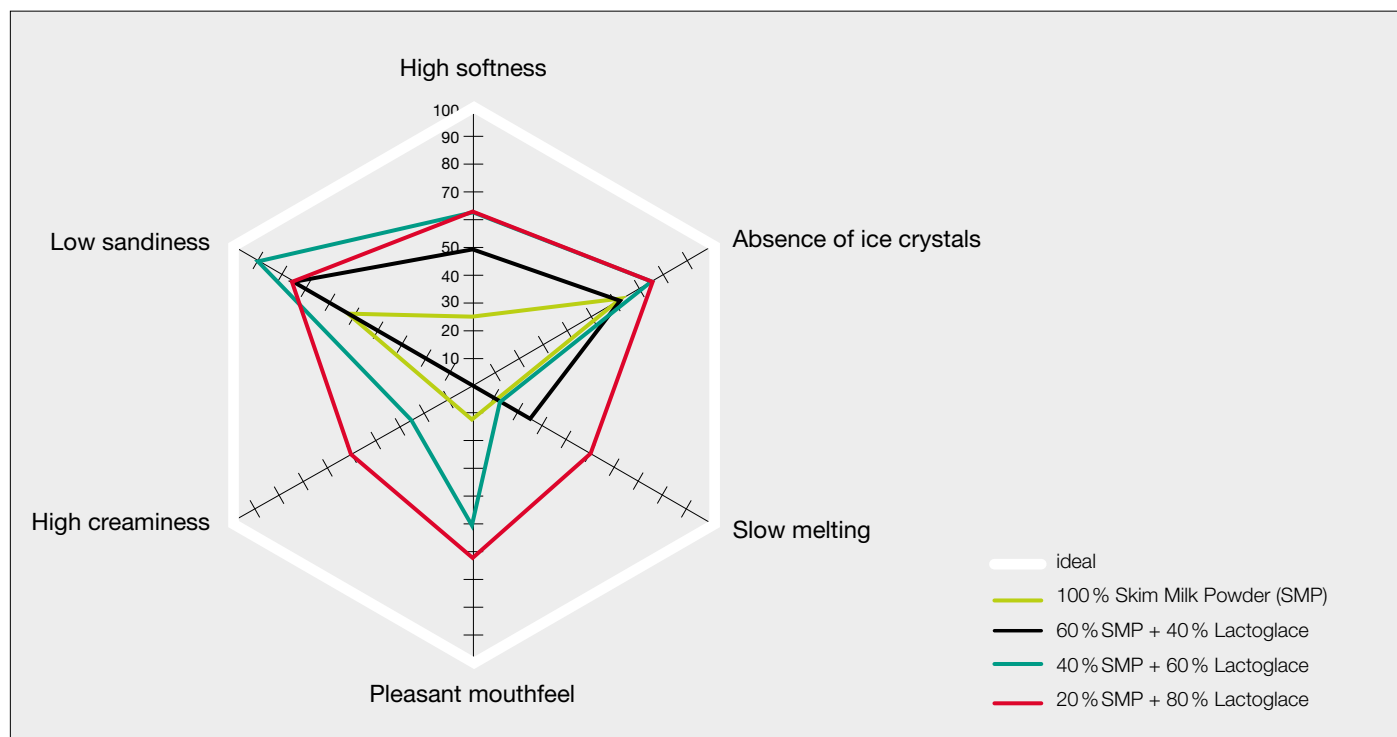
- Viscometers and rheometers
- Texture analyzers
- Laser diffraction particle size analyzers
- Gas chromatographs
- NIR spectrometers
- and many more...

These technologies guarantee representative results and solve problems associated with product standardization and high-quality requirements. The goal is to meet or even exceed the customer's expectations.

## LACTOGLACE

One example of successful product development is our Lactoglace, an innovative functional blend used specially for ice cream. This product is made from cow's milk by special treatment and spray drying. Its production process gives it extraordinary functionality. The main benefits of Lactoglace are slower melting, improved texture properties and cost efficiency.

## INFLUENCE OF LACTOGLACE ON THE SENSORY PROPERTIES OF ICE CREAM





**2 CASEIN LINES**  
**3 EXTRUSION LINES**  
**3 SPRAY DRYERS**  
**5 DRUM DRYERS**  
**13 BLENDEERS**  
**13 EVAPORATORS**  
**20 FILTRATION LINES**







# TOLL PRODUCTION

Toll production of special food products requires a comprehensive knowledge of raw materials and process technology. We have both, and offer exactly the right technologies for your products.

In 2016, Lactoprot took over a sophisticated blending plant from Tate & Lyle in Lübeck, Germany (formerly G. C. Hahn & Co.). Built in 2008 and equipped with systems from AZO and other German powder handling specialists, the plant has five large blenders of different kinds permitting a variety of technologies and enabling it to handle allergens and liquid components. The greatest advantage is that the main parts of the plant can be wet-cleaned individually (clp). In the years 2017/2018, Lactoprot invested a further 1.5 million euros in a new 6,000-litre Lödige blender with a continuous bagging and palettizing line.

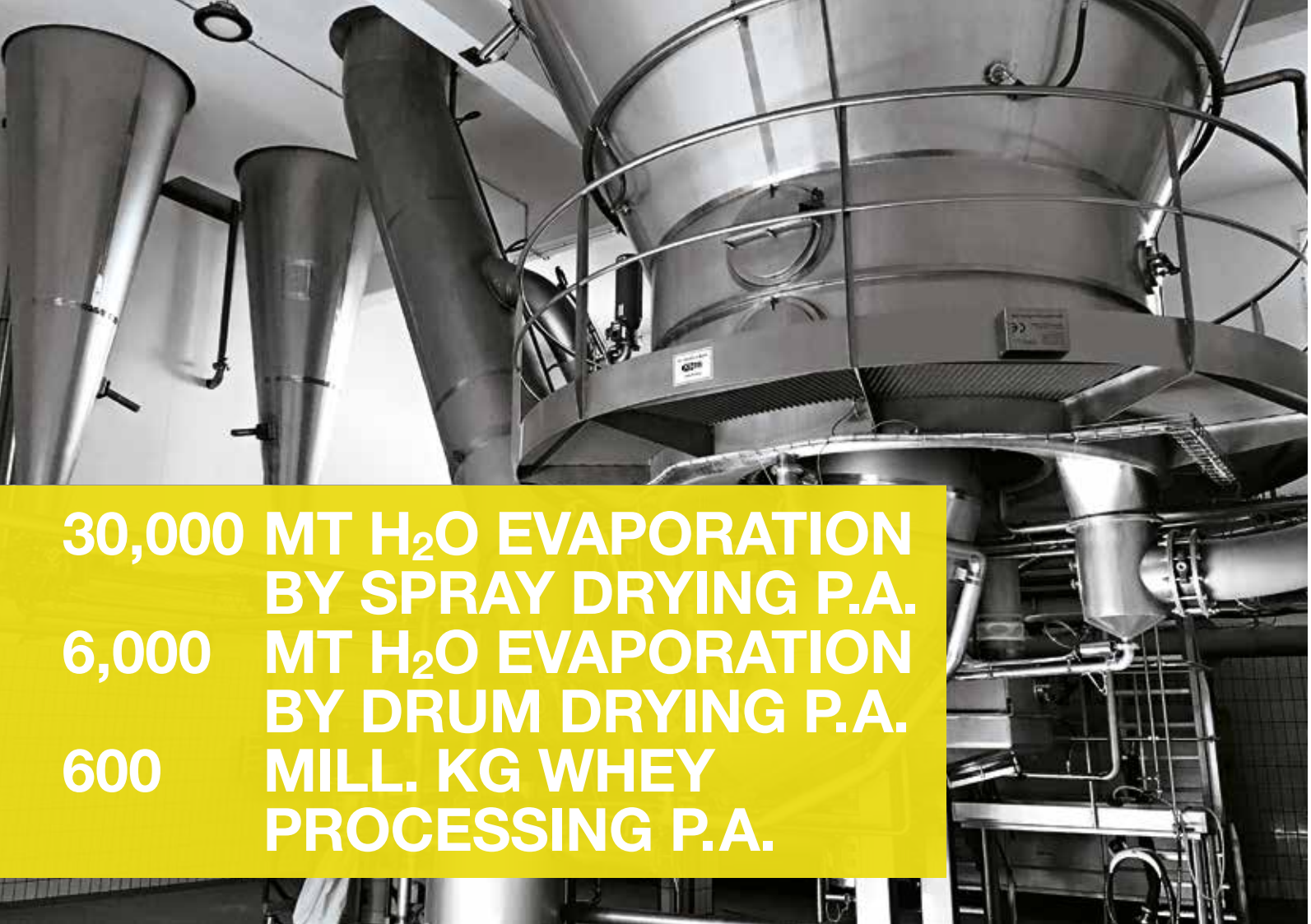
One of the focal points of our offer is tailor-made blends for customers from the sports nutrition industry. The products are filled in cans or bags, depending on the requirements. Since we process dairy products, in particular, dry powders are part of our daily business. Our factories are specialists in drum, extrusion and spray drying of various raw materials. Moreover, we carry out special pre-treatment of raw materials; this includes heat treatment, evaporation, hydrolyzation, fermentation, electrodialysis, filtration and also agglomeration and instantization of finished powders.

For savoury products, Lactoprot has additional blending capacities at its Wiesmühl plant in Bavaria. And if we are unable to offer you the right service ourselves, we know who can.

## FROM SPIRAL-WOUND FIBREBOARD CANS TO BLOCK-BOTTOM BAGS

An attractive design, suitability for storage and safety are all equally important for the success of a product. Many goods – especially foods – cannot be stored, distributed or sold without suitable packaging. A cost-efficient packaging process and the latest filling and packaging lines enable us to respond flexibly to your co-packing needs. On our sophisticated packaging lines we fill block-bottom bags, sachets, spiral-wound fibreboard cans, tubular bags, PET and HDPE cans, capsules, and more.





**30,000 MT H<sub>2</sub>O EVAPORATION  
BY SPRAY DRYING P.A.**

**6,000 MT H<sub>2</sub>O EVAPORATION  
BY DRUM DRYING P.A.**

**600 MILL. KG WHEY  
PROCESSING P.A.**





# PRODUCTION SUBSIDIARIES

Dairyfood and Rovita are members of our group. They have a very strong focus on separate segments of our business and Lactoprot is using their know how and technical possibilities to provide the best possible solution for our customers requirements.



## DAIRYFOOD

We have established our subsidiary Dairyfood as a further mainstay of our business in South Germany. The company with around 35 employees in Riedlingen, in the pre-alpine region, has been a member of the Lactoprot family since 2013. With its own spray tower,

microfiltration and ultrafiltration plant and various packaging lines, it processes an annual volume of some 250,000 tonnes of whey from the region into whey protein powder and lactose. In addition, the site has an electrodialysis plant for the production of demineralized whey derivatives. Besides cheese whey from

the region, it processes organic-quality whey from Switzerland and Austria and goat whey from the whole of Europe. In addition to our own production we offer contract manufacturing in Riedlingen.



## ROVITA

The technology company develops and produces customized solutions for the food industry. It consists of a multidisciplinary team of 85 employees with competence in proteins, natural flavourings, natural preservatives, enzymes, fermentation, hydrocolloids and natural colourants.

The plant of Rovita in Engelsberg/Wiesmühl includes multiple spray dryers, roller dryers and blending facilities.

The R&D facilities include a total of 280 m<sup>2</sup> pilot plants for meat, dairy and bakery products as well as 140 m<sup>2</sup> of well-equipped food and fermentation labs.

We are certified to offer the service of analyzing pathogens in our microbiology laboratory for external customers on request.

In addition, there are processing facilities for dairy products, proteins, stocks, sauces, hydrolyzates and blends.



# LACTOPROT

functionality from milk

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