

Matching today's expectations.

What do consumers expect from their nutrition today?

Consumers' busy lifestyles often result in a lack of time to prepare healthy meals themselves. Therefore, the demand for quick snacks and convenient food continues to grow. At the same time, people are becoming more conscious about their nutrition. They do not only expect food to be ready quickly and easy, but also want it to be healthy and taste great – all at the same time. As the low-fat-trend continues, it is mainly those alternatives matching the full-fat-options in taste and mouthfeel that everyone looks for.

Shoppers have a critical look at food content and the detailed ingredient list. More than ever consumers want clean labelled and naturally derived products. In this context, the quality and origin of ingredients is becoming more important to them – for young children as well as for adults. Beyond that, with positive consumer appreciation for protein in relation to their health, a growing amount of people is actively looking for products containing exactly these ingredients.

Eventually, the group of people who buy gluten-free or lactose-free products is also steadily growing. While a part of them is actually diagnosed with food allergies, an increasing number deliberately chooses a gluten- or dairy-free diet simply because they consider it to be healthier.

Offering a wide range of solutions.

BENEO specialty rice ingredients meet today's consumer expectations in several ways. They act as naturally sourced functional ingredients in today's convenient food and snacks. This means that they can improve crunchiness and crispiness, or alternatively create creaminess and a fatty mouthfeel. Furthermore, our ingredients can increase shelf life or prevent moisture migration in baked goods and are also used to enhance the colour of confectionery coatings, for example. All this, with the focus on clean labelling.

As an alternative to dairy or other grain ingredients, our specialty rice ingredients perform well in lactose- or gluten-free products. Our wide range of rice ingredients also includes high quality solutions for infant nutrition.

Along with the overall healthy image of rice, this makes BENEO specialty rice ingredients perfectly suitable for today's food trends.



Discovering our specialty rice ingredients.

Rice is well-balanced and nutritional, with a low level of fat and high levels of carbohydrates. Between 98 % and 100 % of the rice we consume is digested by the body. Low in fat and characterised by a carbohydrate content of ± 78 %, rice is very easy to digest. Besides carbohydrates, rice contains a good amount of non-gluten proteins (~7 %) with a very interesting amino acid profile. The amino acid profile of rice proteins and ease of digestion are the main reasons why rice flour is widely used in baby food cereals. Compared to that of cow milk and soy milk, the overall amino acid profile of rice proteins is more closely related to breast's milk A.A. profile.

The same nutritional value of rice is found in rice derived products such as rice flour, starch and proteins. Therefore, rice ingredients are not only ideal for babies, adults can also benefit from their well balanced nutritional composition.

Rice flours.

We offer rice flours from different rice varieties, particle sizes and qualities. The Remyflo family includes babyfood quality, organic, wholegrain and instant options.

Technical benefits

- Improving volume and crumb structure in gluten-free baked goods
- Enhancing crispiness
- Extending the shelf life of baked goods
- Prolonging cereal bowl life
- Offering creamy, fat-like mouthfeel

Product family:
Remyflo



Product families:

Rice starches.

Remy:

regular native starches

Remyline:

waxy native starches

Remygel:

modified starches

Remypure:

functional native starches

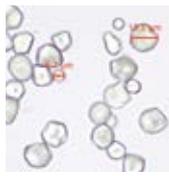
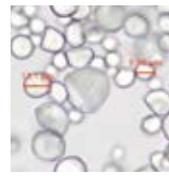
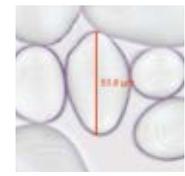
This ingredient family comprises both native and modified starches from different rice varieties (waxy, regular, organic), available in cook-up or instant forms. Functional native rice starch acts as a clean label texturiser and can be used as an alternative to chemically modified starches with similar technical performance levels.

Rice starch is characterised by very **small granules in the range of 2–8 µm**, that are much smaller than those of other cereals, tubers and roots, such as corn and potato. The rice starch granule size is comparable to the size of fat globules. It is therefore ideally suited to mimic a full bodied fatty mouthfeel. It provides creamy textures and can even serve as a **natural fat replacer**. Also, the smaller rice starch granules allow to smoothen the surface of confectionery coatings. The rice starch's neutral **taste** and creamy to very **white appearance** make it an ideal ingredient for clean label coatings.

Technical benefits

- Creating soft & creamy gel textures
- Enhancing crispiness & crunchiness
- Providing a fat-like mouthfeel
- Improving process, freeze-thaw and acid stability
- Extending shelf-life of baked goods
- Reducing breakage in biscuits
- Replacing gelatin in dairy
- Replacing casein in cheese
- Smoothing & whitening in coatings

What makes rice starch stand out?

	Rice starch	Wheat starch	Corn starch	Tapioca starch	Potato starch
size µm	2–8	3–40	15–25	20–35	15–80
shape	hexagonal	oval	hexagonal	hexagonal	oval
colour	very white	greyish white	yellowish white	greyish white	white
taste	neutral	cereal taste	protein taste	light off taste	potato taste
gel structure	soft and creamy	soft and creamy	firm	sticky	sticky
					

Rice specialties.

Product families:

Remypro

Remylose

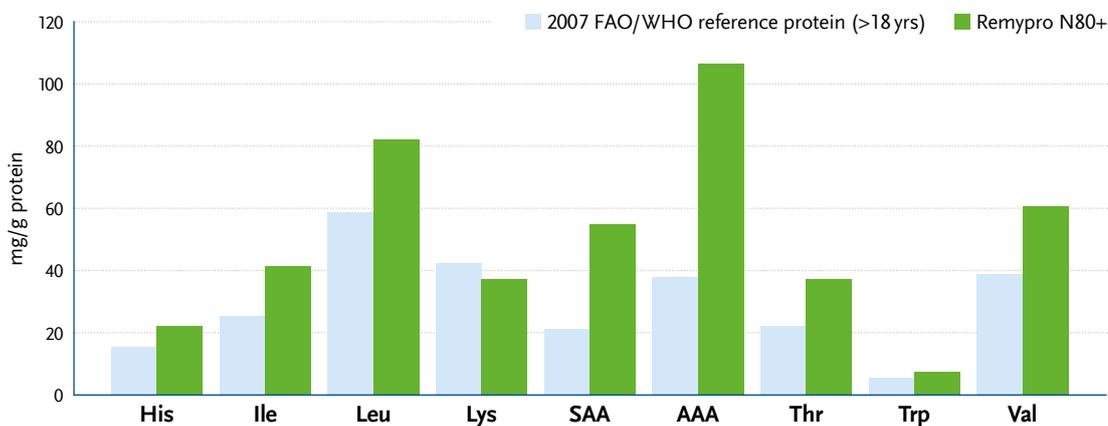
Nutriz

Rice protein:

BENEO's rice endosperm protein is **all natural, gluten-free, non-GMO, hypo-allergenic, and has an excellent amino acid profile and protein digestibility**. As a result, Remypro has a biological value higher than most other plant-based protein sources, and is a good protein source for mainstream, as well as gluten-free products. BENEO rice protein works very well in bars, baked goods, cereals, nutrition mixes and batters.

The essential amino acid profile of Remypro is an exceptionally good fit to the 2007 FAO/WHO reference protein for adults. It's high protein digestibility value of $\pm 96\%$ (AOAC method 991.29) serves an easy enrichment with lysine, resulting in a Protein Digestibility Corrected Amino Acid Score of 1.0. In addition, as a result of it's exceptionally high content of sulphur-containing amino acids, blends of Remypro with other plant-based protein, like pea protein, can give a complete protein with a biological value equal to animal based protein.

Fig. 1: Essential amino acid profile of Remypro.



Rice syrup:

Our rice specialty range also includes Remylose as a **healthy alternative sweetening ingredient**. As one of our rice specialty solutions, Remylose is a suitable ingredient for gluten-free products.

Rice blends:

The Nutriz family provides rice based blends in powder form perfectly suitable as **healthy and hypoallergenic dairy alternatives**. The ideal choice to develop innovative products for lactose-intolerant or vegan consumers. Main ingredients of the Nutriz range are rice flour, rice starch, and rice syrup. Nutriz powders are a source of highly digestible, readily available carbohydrates, purely based on glucose. They are hypoallergenic and suitable for gluten-free products.



Exceeding baby food standards.

Rice is ideal for the nutrition of infants, toddlers and babies because of its easy digestibility. Through a close working relationship with rice farmers and millers, we are able to provide a full range of high quality rice starches and flours for infant cereals, meals and milk formula. Apart from securing high quality and easy digestibility, our rice ingredients also help to create pleasant and creamy textures.

It is crucial to ensure high quality when it comes to food for the youngest. Under the brand name Remyflo BF, for example, we produce a range of rice flours that are ideal for **infant cereals** as they meet all industry and regulatory requirements concerning contaminants. They are well digested by infants and provide a pleasant creaminess and mouthfeel.

Ideal for use in **fruit and vegetable based jars**, our rice starch range not only meets but also exceeds today's stringent market and regulatory standards, offering the ultimate in functional rice ingredients for baby meal applications. The naturally sourced texturiser qualifies for hypoallergenic, clean label, organic, as well as non-GMO products. Test trials have shown that vegetable and fruit based infant meals with BENEÓ's baby food rice starch have improved product stability in terms of viscosity, syneresis control and shelf-life. In addition, the ingredient's small particle size creates a creamy texture without any effect on the end product's taste or colour. Rice is furthermore highly digestible and consequently interesting for baby food applications.

For fruit and vegetable based infant meals, BENEÓ offers both native waxy rice starch and native regular rice starch for good product stability, pleasant mouthfeel and taste control. Ultimately BENEÓ also offers an organic regular rice starch for **organic Infant meals**.

Our rice ingredients for baby food applications:

Product name	Description	Technical properties
Remyflo R6... BF (T)	Baby food grade cook-up rice flour	Texturising, creaminess, product stability
Remylin AX DR	Native waxy rice starch	Texturising, creaminess, product stability
Remy DR	Native regular rice starch	Texturising, creaminess, product stability
Remy O DR6	Native organic regular rice starch	Texturising, creaminess, product stability
Remypure S	Functional native rice starch	Texturising, creaminess, product & process stability
Remylin AX HC P	Precooked rice starch for infant & follow-on formulae	Anti regurgitation





Creating smoothness and clean label confectionery.

Functional and texturising ingredients are often used in confectionery products. While colour improvement and texture improvement can be obtained by several ingredients, our BENEО rice starches specifically display very unique properties of helping to improve colour, taste and texture experience of a variety of confectionery products.

Our native rice starches can replace wheat starch or flour in **liquorice**, thereby contributing to a soft and elastic texture in a gluten-free, clean label solution. Several regular rice starch varieties (Remy DR, Remy B7) can be used to create a tailor-made soft, elastic texture.

As the perfect clean label whitening agent for **confectionery coatings** (e.g. in chewing gums, hard candy or chocolate lentils) regular rice starch contributes to a high level of whiteness. This makes it a natural choice for challenging colour coatings in which otherwise artificial colour could be used. Due to its very small granule size, our rice starch is used during the coating process to smoothen the rough surfaces of confectionery centres. On top, Remyline AX FG P, a precooked native rice starch, can be used for its adhesive properties as an alternative for gum arabic.

The very small granule size and the high affinity for oil binding make rice starch the ideal solution to reduce fat in fat-based confectionery fillings and spreads. Where the granule size contributes to a fatty, smooth mouthfeel, the oil binding capacity imparts structure and stability to the fat matrix without requiring a higher melting fat (being high in saturated fatty acids).

Our rice ingredients for confectionery applications:

Product name	Description	Technical properties
Remyline AX FG P	Precooked waxy rice starch	Adhesive properties
Remyline DR	Native waxy rice starch	Texture creation, fat-like mouthfeel
Remy B7	Native regular rice starch	Smoothening & whitening agent, texture creation

Enhancing baked goods and cereals.

The unique characteristics and extensive range of BENEО specialty rice ingredients enable you to achieve very specific technical benefits in a multitude of applications. They are suitable for gluten-free products and can enhance the texture of wheat-based recipes in baked goods. They can also improve the crispiness and bowl life of cereals.

Baked goods: Excellent texture for gluten-free products.

In **gluten-free baked goods**, rice flours and rice starches are the main ingredients, allowing to formulate products close to their wheat-based counterparts. Bread, pizza, cookies and cakes have been developed with an excellent taste and texture. Our ingredients portfolio also contains whole grain rice flours meeting the increased market needs for whole grain bakery products.

In **wheat-based recipes**, rice starch achieves the required texture or improves final product characteristics, such as increased crunchiness in crackers thanks to the use of our pregelatinised waxy rice starch. This rice starch can also be used to reduce breakage in cookies and cracks in pastries. In soft baked goods like cakes, rice flour with a fine particle size or a modified waxy rice starch can extend shelf life as it promotes water retention during baking.

In **water-based bakery fillings**, our modified waxy rice starch can control moisture migration. Furthermore, trials have shown that BENEО regular rice starch can reduce fat or sugar in **fat-based fillings**, to improve the nutritional composition of bakery products.

Our rice ingredients for baked good applications:

Product name	Description	Technical properties
Remyflo R7 90 T (CP)	Micronized regular rice flour	Backbone ingredient in gluten-free, improved volume
Remyflo C 200	Whole grain regular rice flour	Control of dough rheology in gluten-free pizza, whole grain
Remy DR	Native regular rice starch	Fat/sugar reduction in cream fillings
Remyline AX FG P	Precooked waxy rice starch	Breakage control & crunchiness in biscuits & crackers
Remygel 663	Modified waxy rice starch	Moisture control in fillings, shelf-life extension of soft baked goods
Rempure S	Functional native rice starch	Texturising, creaminess, product & process stability in bakery cream
Remypro N80+ (G)	Rice protein	Protein enrichment



Cereals: Crispiness and prolonged bowl life.

BENEO rice flours have a clear and unique advantage in **breakfast cereals**: in the extrusion process they show a high thickening speed during cooling, leading to a crispy product.

In **extruded breakfast cereals** various BENEO rice flours help to control the porosity of expanded products. In addition, our whole grain and organic rice flours enhance crispiness and bowl life of the cereals.

In addition, we offer Remypro as an ideal plant-based protein source for the creation of gluten-free extruded cereals. This rice protein not only allows you to include significant levels of protein with only limited impact on product expansion rate, it also considerably improves crispiness and bowl life.

Our rice ingredients for cereal applications:

Product name	Description	Technical properties
Remyflo R7 200	Regular rice flour	Texturising, expansion control, crispiness
Remyflo C 200	Whole grain rice flour	Texturising, expansion control, crunchiness
Remypro N80+(G)	Rice protein	Protein enrichment, expansion control, crispiness



Improving body in dairy and dairy-alternatives.

BENEO rice starches offer a whole range of texturising and technical benefits in different dairy products. Our unique Nutriz rice based blends have been developed for the growing segment of consumers who are actively looking for dairy-alternative products.

Dairy products: Stability and a perfectly smooth texture.

Because of its unique gelatinisation properties, rice starch can replace gelatine in **yoghurt** products. BENEO supplies a specific rice starch offering a smooth structure with a good melting behaviour in the mouth. As a native solution, a combination of a waxy with a regular starch gives the best results. Waxy rice starches provide smooth textures where the regular rice starches result in more rigid structures.

In set yoghurts, BENEO native regular rice starch acts as a natural texture builder. In stirred low-fat yoghurts, native waxy rice starches provide a creamy structure with an excellent stability over time.

In **dairy fruit preparations**, both our clean-label rice starches as well as our modified rice starches can create stability and a unique smooth structure, while maintaining excellent fruit flavours. Both native regular or modified waxy rice starch can improve the structure of **dairy desserts**, such as rice pudding, in terms of smoothness and creaminess. They also provide a clean taste and improve glossiness.

In order to replace casein while maintaining firmness, shred- and melt-ability in **imitation cheese**, BENEO regular rice starch can be used alone or in combination with waxy rice starch. Our waxy rice starch can also be used to enhance the texture of **low-fat dairy** beverages; it provides a smooth texture with sufficient body and creaminess.

Our rice ingredients for dairy applications:

Product name	Description	Technical properties
Remy	Native regular rice starch	Texturising, creaminess
Remyline AX DR	Native waxy rice starch	Texturising, creaminess, gelatine replacement, improved spread-ability
Remyline XS	Waxy rice starch	Texturising, creaminess, casein replacement, improve melt-ability, process/acid stability
Remy DR7-111	Native regular rice starch	Texturising, creaminess, improve melt- and shred-ability, casein replacement
Remygel 663	Modified waxy rice starch	Texturising, creaminess, process/acid stability
Remygel 7-331	Modified regular rice starch	Texturising, creaminess, gelatin replacement, process stability, improve melt- and shred-ability
Rempure S	Functional native rice starch	Texturising, creaminess, process/acid stability



Dairy-alternative products: Excellent body and taste.

An increasing number of people switches from classic dairy to the dairy-alternative products. To address this growing market segment, BENEÓ has especially developed its unique Nutriz rice blends.

Nutriz M(O)L is the ideal solution for developing innovative **rice drinks** with an excellent body and mouthfeel, such as rice milk drinks, smoothies or non-dairy fermented drinks.

Nutriz powders, on the other hand, can be used to develop **non-dairy desserts with** comparable textures to the original dairy versions. The range offers clear solutions for desserts, chocolates, custards and instant products – even in the organic segment.

Our rice ingredients for dairy-alternatives:

Product name	Description	Technical properties
Nutriz CDO	Rice powder for dairy alternatives	Body & mouthfeel
Nutriz M(O)L	(Organic) rice powder for dairy alternatives	Body & mouthfeel
Nutriz MIC	Instant rice powder for dairy alternatives	Body & mouthfeel

Fine-tuning convenient and savoury meals.

BENEO rice starches, rice flours and Remypro serve all kinds of savoury convenient food. From soups and sauces up to meat and vegetables, our ingredients offer final products more creaminess and juiciness. They can fine tune food quality and offer clean label.

Soups and sauces: Perfectly creamy, reliably stable.

The BENEO range contains high quality starches for soups and sauces, providing excellent stability under high temperature, in neutral and acid condition. At the same time, these starches can contribute to a very creamy texture and mouthfeel. BENEO offers a full range of rice starches (native & modified, waxy & organic) excellent for improving the body and stability of savoury products with just the right ingredient.

For **instant sauces**, pregelatinised waxy rice starches contribute to texture and stability at room temperature as well as refrigerator temperature.

Because of these technical benefits, BENEO rice starches are suitable for **UHT soups and sauces**, **neutral sauces** (type Béchamel), **red sauces** (type tomato and ketchup) and **cold sauces** (dressings).

BENEO rice ingredients for soups & sauces:

Product name	Description	Technical properties
Remyflo R (P)	(Pregelatinised) Regular rice flour	Texturising, creaminess
Remyflo S	Waxy rice flour	Texturising, creaminess
Remy DR	Native regular rice starch	Texturising, creaminess, freeze-thaw stability
Remy O DR6 (P)	(Pregelatinised) Organic rice starch	Texturising, creaminess, freeze-thaw stability
Remyline (P)	(Pregelatinised) Waxy rice starch	Texturising, creaminess, freeze-thaw stability, acid stability, process stability
Remygel (P)	(Pregelatinised) Modified rice starch	Texturising, creaminess, freeze-thaw stability, acid stability, process stability
Rempure S	Functional native rice starch	Texturising, creaminess, freeze-thaw stability, acid stability, process stability





Meat and vegetables: Better yield and juiciness.

Thanks to its small granule size and low gelling temperature, BENEEO waxy rice starch ensures good water binding performance at low process temperatures of about 70–80 °C. This makes it the perfect clean label ingredient to control juiciness in meat, fish (shrimps) and vegetables (mushrooms) after vacuum **impregnation or injection**.

Beyond that, our rice starches and flours contribute to a high level of creaminess and as such can mimic fat. Therefore, BENEEO native pregelatinised and cook-up starches perfectly work as fat-replacers in **spreadable products** (i.e. pâté).

Food **coatings** serve to make products such as fries, chicken and meat more appealing and tasty. Currently, most of these coatings are based on wheat flour or wheat starch. However, today's market requires new solutions that bring extra functionality. BENEEO waxy rice starches and specialty flours can contribute to a better adhesion of the coating. BENEEO regular rice starch and rice protein are the optimal choice when it comes to creating crispier products.

Our rice ingredients for meat & vegetables:

Product name	Description	Technical properties
Remyflo R	Regular rice flour	Texturising, creaminess, crispiness
Remyflo S	Waxy rice flour	Texturising, crispiness
Remy B7	Native regular rice starch	Providing crispiness
Remy O DR6	Organic regular rice starch	Texturising, creaminess, yield improvement
Remyline AX DR	Native waxy rice starch	Texturising, creaminess, freeze-thaw stability, yield improvement
Remyline AX FG P	Pregelatinised waxy rice starch	Texturising and adhesion
Remypro N80+(G)	Rice protein	Crispiness

Convincing across all applications.

Apart from the general goodness of rice as a food ingredient, BENEО specialty rice ingredients offer innovative solutions across a whole range of different food applications – from easily digestible infant food to creamy soups and sauces. If you have any questions concerning the applications or the functionality of our ingredients, we are always available to help.

Nutritional solutions

- Hypoallergenic alternatives to dairy and gluten
- Replacing fat for low-fat foods
- Enrichment with hypo-allergenic rice protein

Texturizing your food applications

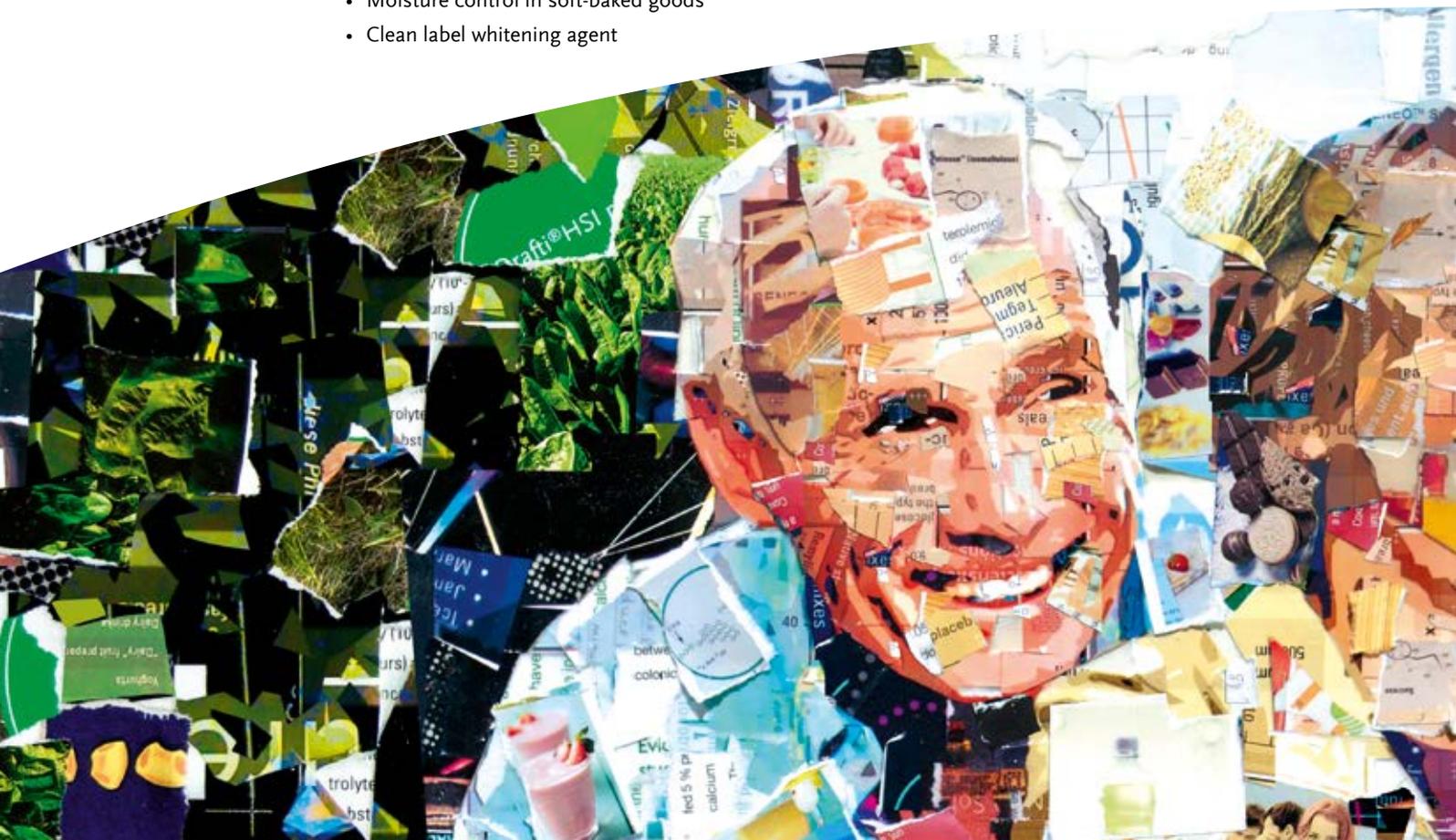
- Pleasant body and mouthfeel
- Improved crispiness & crunchiness in different food items
- Creaminess in low-fat savoury, dairy & dairy-alternative applications
- Fat-like properties in low-fat fillings, savoury & dairy products

Clean labelling

- Replacing food additives

Fine tuning your products with technical benefits

- Freeze-thaw stability in savoury applications
- Acid-stability in sauces and dairy fruit preparations
- Reduction of breakage in cookies and crackers
- Moisture control in soft-baked goods
- Clean label whitening agent



Always at your side: Profit from our interdisciplinary expertise.

Our experience comprises valuable insights. No matter if your question concerns process technology, if it is marketing related or if it is about legislation and regulations. With nutritionists, marketers, regulatory professionals, technical food engineers and a competent sales force throughout the world, there is always a BENEEO expert that can help you. It's the combination of advanced ingredients and specialist knowledge together with access to a global network of experts which makes BENEEO a unique business partner.

Also interested in other ingredients? Discover our complete range now.

The BENEEO range of ingredients also includes functional carbohydrates, functional fibres and functional protein.

Learn more about the other BENEEO ingredients online: www.beneo.com

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What can we do for you?

If you have any questions on our range of specialty rice ingredients or any other BENEEO ingredient group, please don't hesitate to contact us. We will be happy to help you.

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