

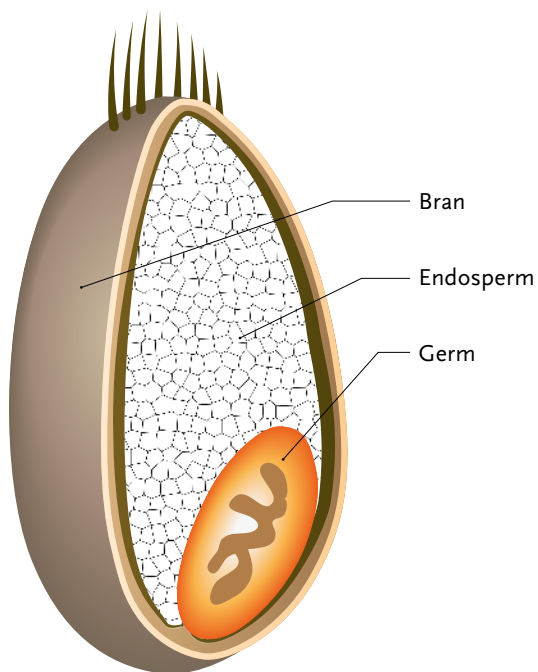


Matching today's expectations.
BeneoPro VWG Vital Wheat Gluten.

beneo
connecting nutrition and health

What are vital wheat gluten?

Gluten are a composite of proteins, derived from wheat seeds (wheat/wheat flour). The first practical applications of wheat gluten can be traced back to ancient China, where it was used as a vegetarian alternative to meat. Since this time, the range of applications for wheat gluten has grown significantly and it is now used in milling and flour fortification, bread and pastry, breadings and batters, breakfast cereals, pasta and noodles and meat. The ability of wheat gluten to form a viscoelastic mass when fully hydrated sets it apart from other commercially available vegetable proteins.



Gluten is uniformly distributed within the endosperm, with a concentration in the sub-aleurone-layer.

On average, the endosperm consists of 70% carbohydrates and 7-11% proteins (of which 4/5th are gluten). Another 15% is water and the remainder are fat (1%), fibres/vitamins (1%) and minerals (0.6%).



BeneoPro VWG: naturally sourced for excellent quality

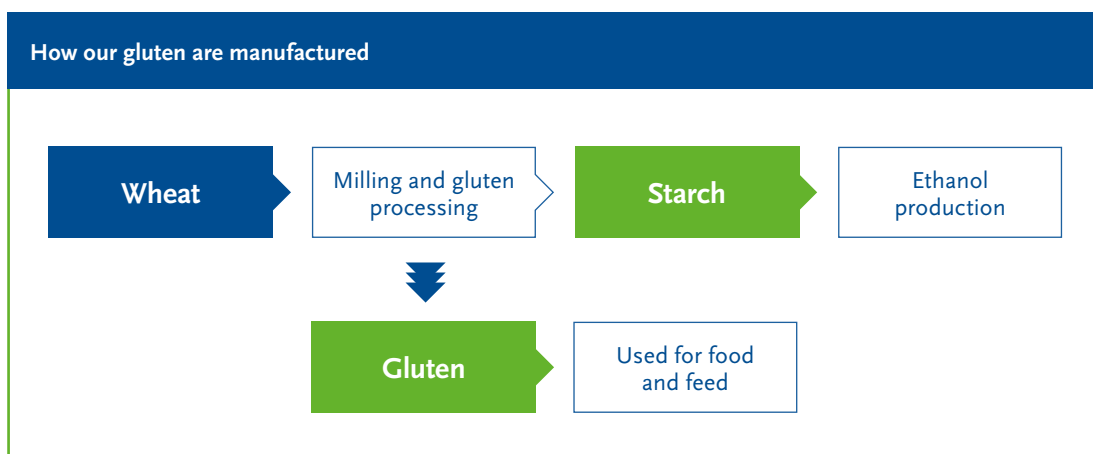
Vital wheat gluten (VWG) occurs naturally in all wheat and wheat-derived flours. It is obtained by washing the starch out of the wheat flour dough. The elastic mass of gluten is dried and milled to a cream-coloured powder which is used commercially as vital wheat gluten.

The vitality of gluten is a combination of water absorption and their degree of viscoelasticity. Deliberate heating of wet wheat gluten before drying results in devitalised wheat gluten. Typical value of the water absorption of our vital wheat gluten is between 140% and 160%.

Our plants produce wheat gluten of **high and reliable non-GMO quality** by grain milling separation of vital wheat gluten, which is then dried. Due to its well-known nutritional and visco-elastic properties, our vital wheat gluten is used in food applications, such as milling & baking products.

Our vital wheat gluten is distributed via our Belgian BENEEO office, a subsidiary from Südzucker AG, under the brand name BeneoPro VWG. Together with the other BENEEO offices and our sales network partners across the world, we ensure a reliable **worldwide supply**. As multiple plants produce our high-quality vital wheat gluten, we can ensure availability and a further capacity increase is likely over the coming years. The below chart shows how our gluten are manufactured.

The high protein content, as well as the particular protein quality and visco-elastic properties of this IFS-certified ingredient (International Food Standard) are highly valued by our customers. In the food industry, our vital wheat gluten is particularly used to enhance bakery products.



Technical benefits in food applications

Thanks to their viscoelastic behaviour, wheat gluten is used in different food products. In bread making, our wheat gluten proteins contribute to dough properties, bread loaf volume, and structure. In cereals, BeneoPro VWG not only contributes to the flake strength, it can also improve the nutritional profile of your product. In pasta, gluten proteins deliver the desired cooking quality. Furthermore, the structure and texture of soft wheat products are to some degree, shaped by gluten proteins.

Wheat gluten is a natural ingredient. One of the primary uses of BeneoPro VWG is to adjust flour protein levels to guarantee consistent quality, whatever the original flour mix or desired quality requirement.

Milling & baking: VWG visco-elasticity for optimal texture

Vital wheat gluten's unique visco-elasticity improves dough strength, mixing tolerance and handling processes. It is known for its water absorption capacity, **improving the yield, softness and shelflife** of baked products. It is also regularly used in hard rolls and multigrain, high-fibre and other specialty breads at levels ranging from 2-10% (in flour basis).

Low-protein flours in baked goods can be fortified with BeneoPro VWG, thus increasing dough strength, gas retention and improving the texture. With only a small addition of our vital wheat gluten, the flour quality for bakery products can significantly be enhanced. VWG is recommended in particular for bread and bakery products in which the protein content needs to be higher. By adding 2-5% to the flour, a better texture and crumb strength, a superior loaf quality as well as a bigger volume can be delivered. As the moisture evaporates from the heat of the oven during baking, the stretched flour proteins in the bread or pastry become rigid, setting the product into a uniform, highly-controlled structure.

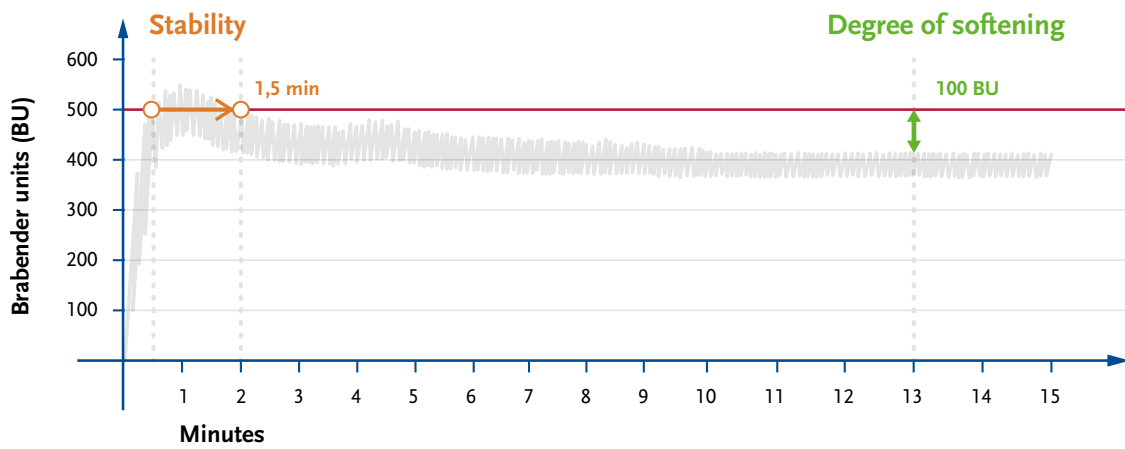
To answer the needs of the modern milling & food industry, our gluten can be used to **standardise wheat flour** produced from wheat outside Europe. Many millers use gluten to streamline production and supplement lower-protein from local wheat, as such meeting bakery flour standards. Used as a **natural ingredient**, there are no limits to the amounts that can be used in achieving product quality objectives.

Adding VWG to pastry ensures an **improved machinability**. The pastry is easier to roll out and can be formed into thin, processable sheets.

Wheat gluten provide extra elasticity and increase the water absorption of wheat flour. The Farinogram graphs here below show the difference in dough stability and mixing tolerance – with or without BENEIO gluten. A lower degree of softening is reached when gluten is added.

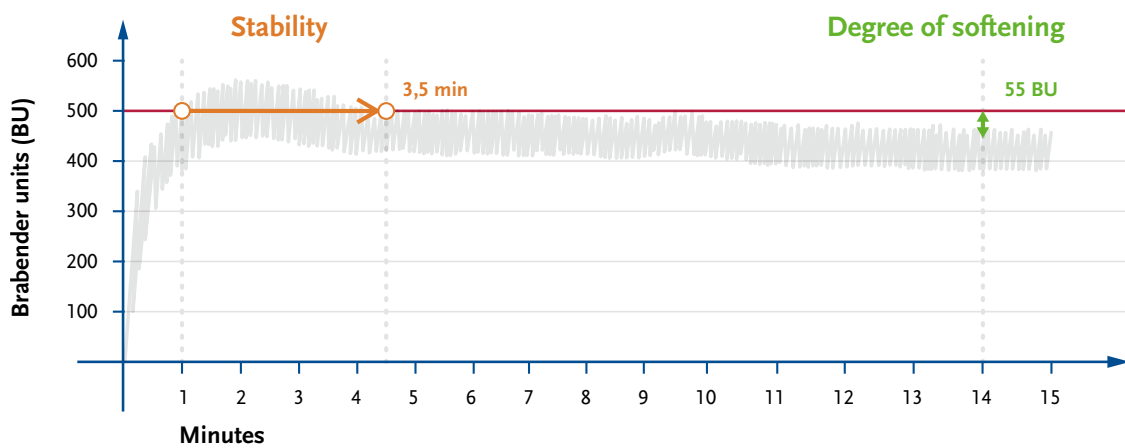
Wheat flour only

Water added: 58%



Wheat flour with BeneoPro VWG

Water added: 61%





Cereals: VWG for enriched morning nutrition

Thanks to their improved taste and nutritious image, breakfast cereals enhanced with wheat gluten have been accepted by consumers worldwide. For one, BeneoPro VWG provides the protein for the much sought-after nutritional claim with the breakfast cereal. In addition, it binds vitamin-mineral enrichment components to the cereal or grain berry during processing. On top, it contributes to the strength of the cereal flakes and reduces the risk of breakage.

Improving strength & dough quality for numerous other applications

Pasta and Noodles

Quality control – by using BeneoPro VWG, high quality pasta can be consistently produced, smoothing out the fluctuations in quality of the original durum wheat.

Improved strength and structure – the addition of wheat gluten strengthens the pasta dough, allowing it to be extruded into strong, yet thin sheets or other forms, as required. It also improves the pasta's resistance to overcooking.

Breadings and Batters

Improved adhesion and shelflife – BeneoPro VWG improves the adhesion of batters to fried foods and in addition, acts as a barrier to moisture migration.

Improved crispiness – due to the structure of wheat gluten, extra crispness is provided to the end product.

Meat

Superior texture – BeneoPro VWG is the ideal alternative to traditional vegetable proteins. The extruded gluten provides a texture that is very similar to meat and can be used in products as a replacement for red meat, poultry and seafood.

Highly versatile – wheat gluten can be used as an effective aid in binding meat chunks together to form restructured steaks or chops. In addition, it can be used as a protein binder in sausages and other meat emulsified products, all whilst providing optimal emulsion stability.



Convincing in every sense

BeneoPro VWG offers a wide range of benefits – for manufacturers and consumers alike. Our vital wheat gluten can help you produce tasty food products that will perfectly match today's expectations.

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 BENEIO expert that can help you. It's the combination of consistent quality ingredients from a reliable worldwide supply, and a specialist knowledge, together with access to a global network of experts and support services, which makes BENEIO a unique business partner.

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

The BENEIO range of ingredients also includes functional carbohydrates, functional fibres, specialty rice ingredients and textured wheat proteins. Learn more about the other BENEIO ingredients online:
www.beneo.com

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What can we do for you?

If you have any questions on our BeneoPro VWG or any other BENEEO ingredient group, please don't hesitate to contact us. We will be happy to help you.

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