Akucell® Cellulose Gum for the Food and Beverage Industry

Stabilize your formulation

AkzoNobel

Akucell Cellulose Gum

AkzoNobel's Akucell product line is a full range of high-performance cellulose gums that meet the demands of various food and beverage applications. These products are produced to strict quality standards at our modern facility located in the Netherlands.

The Right Ingredients

Food and beverage markets develop quickly, with new brands and trends constantly evolving in the global marketplace. Health-promoting and disease-preventing functional foods are well-known market segments with low-fat and zero-sugar products pushing the limits of food formulations. Stabilizers play an essential role in these formulations and selecting the right ingredients will provide the optimal mix of properties in every product. We at AkzoNobel are continuously improving our Akucell Cellulose Gum product range to meet the demands of this ever-changing food and beverage market.

Healthy and Safe Environment

Food and Beverage makers all over the world use Akucell Cellulose Gum because safety and quality is their top priority. Safety is one of our core competencies and it is embedded in every step of our manufacturing processes. Our complete range of products is made to the highest quality standards in facilities that are continuously monitored to ensure that not only our products are safe but the health and safety of our employees and the environment is protected as well. We believe that safety and food safety is a culture, and in AkzoNobel safety is embraced by top management and by every employee in the company.

Reliable and Cost-Effective

Akucell Cellulose Gum is a standard ingredient in the food and beverage industry. Our products deliver high-performance at extremely low dose rates. In many formulations, the addition of only 0.1 % Akucell can give a longer shelf life, better stability, improved sensory properties and even lower calories in some formulations. This makes Akucell one of the most cost-effective ingredients available.

Sustainability

Sustainability is used in our standard business processes and integrated in our strategy and management tools. The entire value chain, from raw material extraction to disposal or recycling of end-products is managed with sustainability goals and targets in mind. We view safety and security management as part of this standard and promote healthy social values that reflect the way in which we conduct our business and develop our employees. We deliver open communication with stakeholders through reporting and verification. Please visit our website www.akzonobel.com to learn more about our company and our commitment to Sustainability.

Renewable cellulose pulp is a raw material in our Akucell products and we use only cellulose pulp from reliable and approved sources. Our internal auditing team ensures that this renewable resource is being managed responsibly. Sustainability is a key issue for the cellulose pulp industry and all of our suppliers meet standards set by the Forest Stewardship Council (FSC) and Program for Endorsement of Forest Certification (PEFC).

Quality Standards

Akucell Cellulose Gums satisfy all standards established by the FAO/WHO Expert Committee on Food Additives (UN), The European Community, The US Food Chemical Codex and all common Pharmacopoeias. In Europe, cellulose gums are given the designation E466 and can be used in all processed food. The FDA in the USA has assigned GRAS status (Generally Recognized As Safe) to cellulose gum (FDA 21 CFR 128.1745). Akucell Cellulose Gum is produced in The Netherlands according to ISO 140001 & 9001, HACCP and QHSAS 18001 Quality Certification.

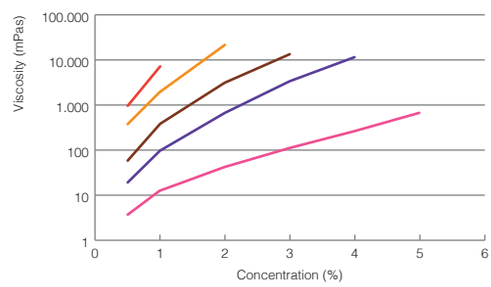
AKUCELL® CELLULOSE GUM

Key properties

AkzoNobel supplies Akucell Cellulose Gum in high, medium and low viscosity grades. Some thixotropic grades are able to absorb up to 250 times their own weight of water. Our Akucell products are high-purity and have minimum cellulose gum content greater than 99.5%.

Viscosity

Akucell Cellulose Gums increase the viscosity of water solutions at a variety of concentrations. Viscosities can be below 100 and above 10,000 mPas for 2% solutions depending on the grade. Special Akucell products can be selected that maintain viscosity in NaCl or $CaCl_2$ brines.

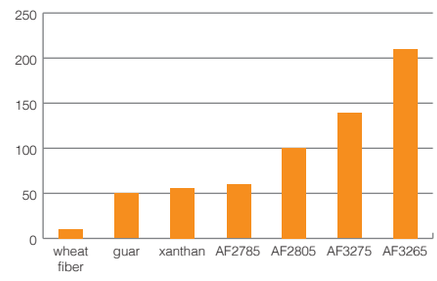


Viscosity of Selected Akucell Cellulose Gum Products

- AF3265
- AF2785
- AF2205
- AF1705
- AF0305

Water Absorption

In food systems such as meat, dairy and bakery, water absorption and retention have a major impact on the final properties of the product. Akucell Cellulose Gum absorbs and retains water inside many food products and can improve texture and consistency. It can reduce syneresis and prolong product freshness as well. Akucell Cellulose Gum has a higher water absorption capacity than other gums. Our thixotropic Akucell grades are able to absorb up to 250 times their own weight in water.

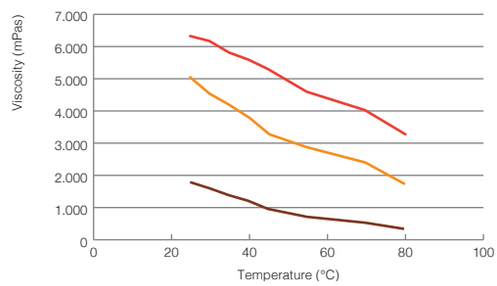


Water Absorption Capacity of Akucell

- water absorption (g/g)

Heat Stability

The viscosity of an Akucell solution will decrease with increasing temperature and the original viscosity is recovered even after the solution is held at 90 °C for two hours.

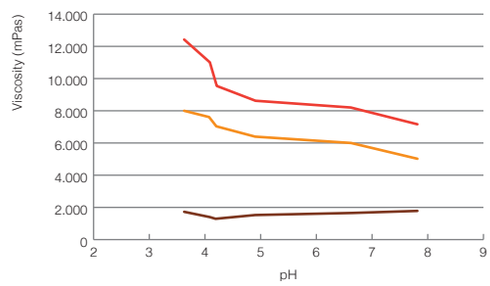


Viscosity of Akucell Solutions

- AF3265
- AF3275
- AF2785W

Acid Stability

Stability is critical in low pH formulations. The addition of citric acid to an Akucell Cellulose Gum solution has minimal effect on the viscosity. The pH of a solution of Akucell can be decreased to four with no adverse effects.



Low pH has Minimal Effect on Akucell Viscosity

- AF3265
- AF3275
- AF2785W

Featured applications

Akucell Cellulose Gum will improve the quality of numerous food and beverage products in many applications. With years of experience serving the industry, we make choosing the right Akucell product is easy.

Desserts

Ice cream, milkshakes, puddings, sherbets as a basic stabilizer

- Improves mouth feel
- Gels and thickens
- Improves syneresis
- Stabilizes proteins
- Prevents the formation of ice and lactose crystals
- Imparts silky smooth texture

Syrups, toppings and icings

- Thickens
- Improves flow control
- Prevents sugar crystallization
- Inhibits topping migration into pancakes, waffles and toast
- Improves mouth feel

Instant/quick cook cereals

Pasta, noodles

- Strengthens gluten network
- Prolongs freshness / shelf life
- Reduces oil uptake during frying
- Prevents soggy noodles and cereals

Diet foods

- Improved mouth feel
- Prevents syneresis
- Thickens without adding calories
- Simulates texture of fats/oils

Dairy

Yoghurt, milk beverages, processed cheese, spreadable cheese

- Prevents casein precipitation at low pH and high temperatures
- Introduces improved mouth feel of instant cappuccino and chocolate drink powders
- Stabilizes milk proteins
- Binds proteins in processed cheeses
- Reduces syneresis

Liquid preparations

Milk, fruit and diet drinks

- Improves mouth feel
- Adds body
- Stabilizes proteins
- Suspends solids
- Enhances flavors

Fruit preparation

Drinks, preserves

- Disperses fruit pulp
- Stabilizes proteins
- Releases flavor
- Imparts texture through gel properties

Processed meat

Sausages, hot dogs, hams, hamburgers

- Improves yield
- Improves bite
- Reduces syneresis

Bakery

Donuts, dough products, meringues, tortillas

- Controls batter viscosity
- Increases volume
- Prevents oil absorption
- Retains moisture
- Prolongs freshness
- Improves freeze / thaw stability
- Inhibits syneresis in meringues
- Improves process efficiency

Beverages

Hot chocolate, cappuccino, breakfast, energy and sport drinks, fruit-flavored drinks, squashes

- Improves mouth feel
- Adds body
- Enhances flavors
- Prevents oil-ring formation

Wine

- Prevents tartaric acid crystal growth
- Gives long term stability in wines
- Prevents the use of time-consuming and expensive cooling procedures

Soups and sauces

- Improves mouth feel
- Adds body
- Suspends solids
- Improves temperature stability

Product overview

The Akucell line has products with viscosities between 10 and 10.000 mPas, particle sizes in granular to extra fine forms and with tailored hydration properties to meet the needs of your processing equipment and formulation. AkzoNobel can develop customized Akucell products upon request at our state-of-the-art research facility.

Akucell Cellulose Gum Product Range

Akucell	Viscosity range (mPas)*	Category
AF3265 AF3275	5,000 - 10,000 3,000 - 7,000	Thixotropic
AF2805 AF2785	2,500 - 4,500 1,500 - 2,500	High viscosity
AF2405 AF2205 AF2085 AF1985	800 - 1,200 300 - 500 200 - 400 110 - 200	Medium Viscosity
AF1705 AF1505 AF0305	70 - 110 40 - 70 10 - 15	Low Viscosity

** in 1% solution, Brookfield LV, 30 rpm, 25 °C*

Typical Specifications of Akucell Grades

Viscosity (depending on type grade)	10 - 10.000 mPas
Particle size (depending on type grade)	0.1 mm - 1.0 mm
Degree of substitution (DS)	0.70 - 0,95
Sodium CMC content	Min. 99.5%
Salt (NaCl and Na glycolate)	Max. 0.5%
Moisture content	Max. 8%
pH of 1% solution	6.5 - 8.5
Bulk density	300 - 900 g/l
Heavy metals	Max. 10 ppm

Nutritional Information per 100 grams

Moisture	Max. 8.0 g
Calories	0
Fat	0
Cholesterol	0
Sodium	Approx. 9.5 g
Calcium	Max. 5 mg
Iron	Max. 1 mg
Carbohydrate	0
Dietary fiber	Min. 85.0 g
Soluble fiber	Min. 85.0 g
Insoluble fiber	Max. 0.1 g
Protein	0
Vitamins	0
Food Code	E466

Akucell cellulose gum
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Note that Akzo Nobel's Akucell® grades are supplied by specialized agents and distributors around the world (names and addresses are available on request).
More detailed technical information is available on request.

www.akzonobel.com

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