Bermocoll® cellulose ethers

High performance additives for modern building applications

Bermocoll®

Nouryon

Bermocoll® cellulose ethers make the difference

The pace of change in today's construction industry requires continuous development of drymix mortar formulations. Our high-performance cellulose ethers improve the quality and key properties of these building materials.

The need for better-performing, more sustainable and more cost-effective construction chemicals to meet these new challenges has never been greater.

We at Nouryon's Building and Construction business relish the opportunity to take on these challenges and enable our customers to address the new needs emerging in the construction industry. At Nouryon, as a global specialty chemicals leader, we produce essential chemicals and are experts in highly demanding chemistry.

Bermocoll® cellulose ethers, with more than 75 years of history in the construction industry are unique. Bermocoll® cellulose ethers have been developed to impart a range of properties in drymix mortars and bring additional performance to the most demanding applications.

With our unrivalled product portfolio, strong Research, Development and Innovation capabilities, technical support expertise and global manufacturing presence, we offer our customers formulation expertise, experience and product competence to ensure their continued success in a very demanding and everchanging industry.

Our Bermocoll® cellulose ethers make a difference in numerous building applications

Bermocoll® cellulose ethers are used as a building material additive for modern drymix mortars in construction. Our cellulose ethers improve the performance of products such as tile and building adhesives, levelling compounds, gap fillers, repair mortars, rendering, and mortars for thermal insulation composite systems.

- Flooring
- Tiling
- Grouts
- Repair
- Gypsum joint fillers
- Gypsum platsers
- Cement and lime-based renders
- Polymer binder systems
- ETICS

Binders

Cement
The type of cement and the amount used affect the properties of the mortar. With a high cement content, the strength of the mortar is increased and setting time is reduced.

Gypsum
The grade of gypsum varies depending on the source, level of impurities, method of production, etc. A retarder is generally needed to prolong the setting time.

Lime
Lime is often used in combination with cement or gypsum to improve workability, flexibility and to prevent cracking.

Latex
Latex can be used as the sole binder in tile adhesives or in a ready-to-use joint filler. It can also be used as an additive in cement or gypsum-based mortars.

Fillers

Fillers consist of an inert material and are used to improve the properties of the system in which thet are used.

Examples of filler:
- Quartz sand
- Silica flour
- Limestone
- Calcium carbonate

Additives

Additives which also optimize mortar formulations are:
- Water retaining agent
- Redispersible powder
- Air entrainer
- Pre-thickener
- Hydrophobic agent
- Preservative
- Retarder / accelerator

How to find the perfect fit

Our product portfolio comprises a wide range of Bermocoll® cellulose ethers. Whether used as standalone additive or in combination with other products, our products offer a powerful toolkit for the development of dry mix mortar formulations for the construction industry.

Bermocoll® cellulose ethers

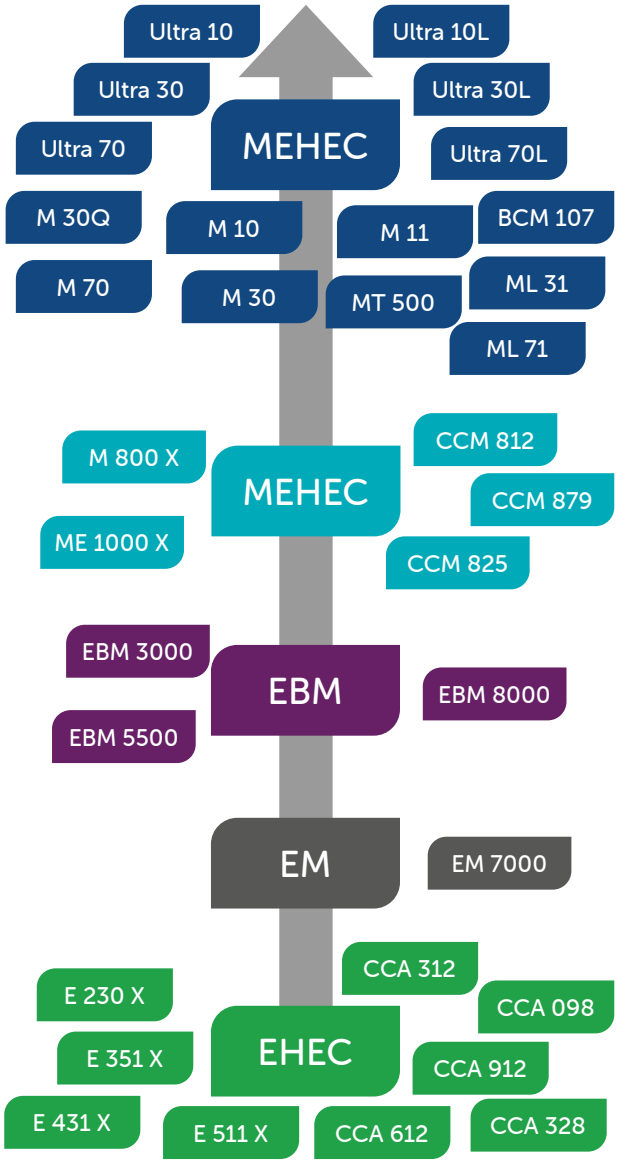
Our Bermocoll® products are based on cellulose, a natural polymer derived from wood or plant fibres. We offer the following main cellulose ether types: Ethyl Hydroxyethyl Cellulose (EHEC) and Methyl Ethyl Hydroxyethyl Cellulose (MEHEC). Both product groups are obtained through a chemical substitution process known as etherification.

In addition to the conventional uses of Bermocoll® cellulose ethers in dry mix mortar formulations, our products are also recommended as rheology modifiers for ready-to-use dispersion based pasty systems.

Bermocoll® products provide

- Optimized air pore stability for superior workability
- Increased water retention
- Improved consistency to make thin layer products workable
- Controlled rheology to provide sag resistance
- Reduced segregation of different formulation ingredients
- Improved adhesion on porous substrates
- Improved adhesion to polystyrene boards

Bermocoll® cellulose ethers tree showing grades with increasing methyl substitution



Key performance benefits

Water retention

We think that working with Bermocoll® cellulose ethers should be simple. Since the products have excellent water retention we are able to delay the rapid escape of water into nearby absorbent substrates. We also use Bermocoll® cellulose ethers to control consistency making it more easily workable. With Bermocoll® cellulose ethers we are also able to extend open time and enhance adhesion.

Water retention capacity

Bermocoll® cellulose ethers excellent water retention properties are dependent upon many factors. These factors include the levels of viscosity and solubility as well as the surrounding temperature and particle size. Different amounts of Bermocoll® cellulose ethers may be used depending on the absorbency of the substrates, mortar composition and layer thickness. It is also important to know that the particle size distribution of Bermocoll® cellulose ethers may also affect water retention capacity. If we use a more finely ground grade of Bermocoll® cellulose ethers, one which dissolves more rapidly than coarser grades, the water retention is improved.

Consistency, workability and stability

Bermocoll® cellulose ethers have excellent rheological properties. These properties improve the consistency, workability and stability of cement and gypsum based mortars. When we use a substitution of both ethyl and hydroxyethyl groups Bermocoll® cellulose ethers take on a surface-active character. This characteristic stabilizes the small air bubbles in the mortar that work as a lubricant between the solid particles.

Modified Bermocoll® cellulose ether grades

Modified Bermocoll® cellulose ethers grades, such as CCA, BCM, ML and CCM, need more water. This gives greater bulk, improved cohesion and reduces sagging of the wet mortar.

Tile adhesives – easy to work with

Cementitious and latex-based thinset tile adhesives formulated with Bermocoll® products are easy to work with, easy to apply and offer flexible, long-lasting performance of tiled areas.

The binder in tile adhesives is either cement or latex. Tile adhesives with latex as the binder is delivered "ready-to-use". Besides binder, tile adhesive contains filler, cellulose ether and other additives in order to enhance the properties of the mortar.

Bermocoll® cellulose ethers for tile adhesives deliver high adhesive strength, high sag resistance, increased freeze-thaw stability and recognized for their superior working properties.

The growing trend towards large format tiles has created even more challenging performance requirements for thinset adhesives. Cellulose ethers help impart important properties such as sag resistance, open time, and adhesion strength which are critical to the delivery of a high-quality final product.

A new range of products designed for premium cementitious applications

Bermocoll® Ultra is a range of cellulose ethers with increased methyl substitution to deliver excellent adhesion under all circumstances. Bermocoll® Ultra cellulose ether is available in different viscosity levels and different levels of modification. Bermocoll® Ultra cellulose ether is especially designed for high quality and premium quality cementitious tile adhesives.

Benefits

- **Superior workability**
- **Excellent adhesive bond strength**
- **High wet strength values**
- **Long open time and sag resistance**
- **No slip with modified grades**

Blended cements

Cement is paying a significant contribution to the global CO_2 emissions. Blended cements (CEM II and CEM III) are increasingly used to help reduce the carbon footprint. These blended cements offer challenges with respect to open time and strength development when used in tile adhesives. Bermocoll® cellulose ethers can be used to optimize blended cement mortars and still offer excellent workability and adhesion properties.

Typical applications

Bermocoll® cellulose ethers can be used in a large variety of tile adhesive applications.

- High quality flexible adhesives suitable for indoor and outdoor applications
- Floor and wall tiling
- All different tile formats (large and small) of porous and non-porous tiles
- Mineral and non-mineral substrates

Bermocoll® cellulose ethers are available for all tile adhesives quality categories.

- Base quality / economic tile adhesives
- High quality C1 and C2 tile adhesives according to ISO 13007 / EN 12004
- Premium quality tile adhesives with additional flexibility (C2S), sag resistance (C2T) or open time (C2E) or combined requirements (C2TE) according to ISO 13007 / EN 12004

Cellulose ethers for tile adhesives

Base quality

• • • = excellent • • = very good • = good

Products	Bermocoll® cellulose ether	M 70	E 511 X	M 800 X	CCA 098
Physical properties	Water retention	• • •	• • •	• • •	• •
	Open time	•	• •	• • •	• •
	Anti-sagging	•	•	•	•
Comments		High viscosity	High viscosity	Very high viscosity	Modified, high visosity

High quality – C1, C1T, C2

Products	Bermocoll® cellulose ether	M 10	ML 11	M 30	ML 31	BCM 107
Physical properties	Water retention	•	•	• •	• •	• •
	Open time	• •	• • •	• •	• •	• •
	Anti-sagging	•	• •	•	• •	• •
Comments		Low viscosity	Modified, low viscosity	Medium viscosity	Modified, medium viscosity	Modified, medium viscosity

Premium quality – C2, E, T and/or S

Products	Bermocoll® cellulose ether	MT 500	Ultra 10	Ultra 30	Ultra 10L	Ultra 30L
Physical properties	Water retention	• •	•	• •	•	• •
	Open time	• • •	• • •	• • •	• • •	• • •
	Anti-sagging	• • •	•	•	• • •	• • •
Comments		Modified, low viscosity	Low viscosity	Medium viscosity	Modified, low viscosity	Modified, medium viscosity

Plasters and renders – durability inside and outside

Plasters and renders based on cement, gypsum or combined with hydrated lime are commonly used as interior leveling plasters for walls and ceilings.

They can be hand-applied or machine applied to increase efficiency. Using Bermocoll® cellulose ethers you ensure adhesion to all substrates, durability and perfect workability.

Plasters are applied in layers from a few tenths of a millimeter up to 40 mm. Different application methods are used and the plaster can be applied indoors or outdoors.

This places great demands on the cellulose ether as well as on the other raw materials and additives.

The plasters and renders can be divided into groups according to the type of binder used and also by application method, (manually or machine applied). There is always a suitable Bermocoll® cellulose ether for your purpose.

Machine plaster

Machine plaster is generally applied with a continuous plaster machine where the dry mix and the water are mixed instantaneously before the plaster is sprayed on the wall. Since the time between mixing and application is very short (approx. 30 sec) the cellulose ether must have an extremely fast dissolving time. During this short period of time the right consistency, to prevent sagging, must also be achieved. The plaster is often applied in a layer of 10–20 mm in thickness and is levelled, sponged and steel trowelled according to different procedures.

Hand plaster

Since hand plaster is mixed in batches, dissolution speed is not as important as in the case of projection plaster. This means that other types of Bermocoll® cellulose ethers are preferred. The addition level of Bermocoll® cellulose ether is somewhat lower for hand plaster than for projection plaster.

Skim coat

This kind of plaster has many different names and its purpose is to create the best surface finish possible. The plaster is applied by hand in layers down to 0.5 mm in thickness.

Benefits

- Improved adhesion and water retention
- Improved consistency and stability
- Improved workability and sag resistance

Typical applications

- Interior and exterior base coat renders
- Interior and exterior finishing renders/skim coats
- Interior projection and hand plasters

Cellulose ethers for gypsum based plasters

• • • = excellent • • = very good • = good

Products	Bermocoll® cellulose ether	CCA 312	CCA 612	CCA 912	CCM 812
Physical properties	Water retention	• •	• • •	• •	• • •
	Sag resistance	• •	• • •	• • •	• • •
Applications	Hand applied interior base coat plaster				• •
	Machine applied interior base coat plaster	• • •	• •	• • •	
	Interior finishing / skim coat plaster				• •
Comments		Modified, medium viscosity	Modified, high viscosity	Modified, medium viscosity	Modified, very high viscosity

Cellulose ethers for cement based renders and skim coat

• • • = excellent • • = very good • = good

Products	Bermocoll® cellulose ether	M 30	ML 31	M 70	ML 71
Physical properties	Water retention	• •	• •	• • •	• • •
	Sag resistance	•	• • •	• •	• • •
Applications	Interior and exterior base coat render	• • •	• •	•	• •
	Interior and exterior finishing render / skim coat	• •	• •	• • •	• • •
Comments		Medium viscosity	Modified, medium viscosity	High viscosity	Modified, high viscosity

ETICS/EIFS mortars – sustainability through energy savings

The use of Bermocoll® cellulose ethers is essential for the workability, water retention, open time and general physical properties of the mortars.

External Thermal Insulation Composite Systems (ETICS) also known as External Insulation Finishing Systems (EIFS) are types of wall cladding systems which provide insulation, water resistance, and surface finish for homes and commercial buildings.

The systems use an adhesive mortar, a basecoat mortar, insulating slabs, and reinforcing mesh. This has proven to be effective for improving thermal efficiency.

Cellulose ethers are used to enhance adhesion strength (bonding the insulation slabs to the substrate), application properties, and durability of the ETICS mortar.

Benefits

- Increased adhesion, especially on EPS, XPS and MW boards
- Increased long-term performance
- Improving water retention, consistency, workability and strength

Typical applications

- Adhesive mortars
- Base coat
- Top coat

Cellulose ethers for adhesive mortar

• • • = excellent • • = very good • = good

Products	Bermocoll® cellulose ether	Ultra 30	Ultra 30L	Ultra 70	Ultra 70L
Physical properties	Water retention	• •	• •	• • •	• • •
	Open time	• • •	• • •	• • •	• • •
	Sag resistance	• •	• • •	• •	• • •
Comments		Medium viscosity	Modified, medium viscosity	High viscosity	Modified, high viscosity

Cellulose ethers for base coat

• • • = excellent • • = very good • = good

Products	Bermocoll® cellulose ether	M 30	ML 31	M 70	ML 71
Physical properties	Water retention	• • •	• •	• • •	• • •
	Open time	• •	• •	• •	• •
	Sag resistance	• •	• • •	• •	• • •
Comments		Medium viscosity	Modified, medium viscosity	High viscosity	Modified, high viscosity

Smooth joint fillers

Joint fillers are generally used between gypsum boards in combination with paper strip as reinforcement to give a strong and even surface for further processing with paint, wall paper or finishing plaster.

Gypsum-based filler materials are used to fill the gaps between board divisions and for smoothing and filling irregularities in walls and ceilings. Whether you need to ensure adhesion and cohesion or improve the workability properties, the Bermocoll® cellulose ether range have been designed to help you meet all requirements.

The joint filler is either based on gypsum or latex as binder. The advantage of using gypsum based joint filler is that the setting time can be controlled and shrinkage is kept to a minimum. Latex-based has the advantage of ready to use when it is delivered as a paste, no mixing procedure at the building site.

Gypsym

For gypsum-based systems, the choice of Bermocoll® cellulose ether is dependent on the quality of the gypsum, purity, particle size, water demand and the character of the surface structure. It is very important that the right consistency and optimal mixing qualities are achieved in the gypsum-based joint filler. These demands are satisfied by choosing the right Bermocoll® cellulose ether.

Latex-based

Joint compounds are premixed product used to seal joints between sheets of drywall to create a smooth surface. A high quality joint compound will offer quick drying and easy sanding. Specialty additives can enhance the applicability and final end properties of the joint compound. Different grades of Bermocoll® cellulose ether provide different characteristics. They give excellent wet mixing and application properties. When choosing a non modified Bermocoll® cellulose ether quality, the use of a pre-thickener such as Attagel or Bentonite may be needed.

Mixing

All grades recommended for latex-based joint filler have a pH dependent dissolving behaviour. This means that the cellulose ether can be dispersed in the mixing water if it is kept at pH 7 or below. The other wet ingredients are then added to the mixing water followed by the dry raw materials.

Benefits

- Increased water retention
- Improved workability
- Smooth creamy consistency and easy leveling
- Control over setting time
- No shrinking and easy mixing
- Excellent tape adhesion and adhesion to substrate
- Sag resistance
- Increased sandability with low dust
- Increased dry surface abrasion resistance

Typical applications

- Gypsum based trowelling
- Latex based jointing compounds

Cellulose ethers for gypsum based joint fillers

• • • = excellent • • = very good • = good

Products	Bermocoll® cellulose ether	CCA 312	CCA 328	BCM 107
Physical properties	Water retention	• •	• • •	• •
	Sag resistance	• • •	• • •	• • •
Comments		Modified, medium viscosity	Modified, high viscosity	Modified, medium-high viscosity

Cellulose ethers for latex-based joint compounds

• • • = excellent • • = very good • = good

Products	Bermocoll® cellulose ether	EBM 5500	CCA 098	M 30 Q
Physical properties	Water retention	• •	• • •	• •
	Sag resistance	• •	• •	• •
Comments		High viscosity	Modified, high viscosity	Medium viscosity

Flooring and Grouts

Bermocoll® cellulose ethers provide, stability, water retention and workability to a full range of flooring products and grouts. Our products improve the ease of on-site application and ensure smooth. defect free surfaces.

Flooring

In the finished flooring, our products enhance all of the key physical characteristics required of modern flooring. Continuous improvement of our product range ensures that our products enable you to reach lowest VOC emission levels required in the industry.

Benefits

- Improved consistency and stability
- Improved water retention
- Superior anti-bleeding and prevention against segregation

Typical applications

- Industrial and residential flooring
- Cement based self-leveling compounds
- Gypsum based floorings
- Pumpable and hand-applied compounds

Recommended products

- Bermocoll® E 230 X

Grouts

We offer the broadest range of products to improve properties across the complete range of grouting mortars. Our products have been designed to improve workability, filling performance and sag resistance of wall grouts.

Benefits

- Improved adhesion to tile edges
- Improved water retention, consistency and workability

Typical applications

- Flooring and wall grouting
- Cement based grouts CG1 and CG2 (EN 13888)
- All different format porous and non-porous tiles
- Indoor and outdoor applications

Recommended products

- Bermocoll® E 351 X
- Bermocoll® M 10
- Bermocoll® Ultra 10

Bermocoll® cellulose ether selection for building and construction industry

		Cement based						
	Bermocoll® product	Tile adhesive	Grouts	ETICS	Projection plaster	Skim coat	Flooring	Repair
EHEC	E 230 X						•	
	E 351 X		•					
	E 431 X							
	E 511 X	•				•		
	CCA 098	•				•		
	CCA 312	•						
	CCA 328							
	CCA 612							
	CCA 912							
MEHEC	M 800 X	•				•		
	CCM 812							
	CCM 825	•				•		
	CCM 879							
	ME 1000 X	•						
	M 10	•	•		•			•
	M 30	•		•	•	•		•
	M 70	•		•		•		
	ML 11	•			•	•		
	ML 31	•		•	•	•		
	ML 71	•				•		
	MT 500	•						
	BCM 107	•						
	M 30 Q							
	EBM 3000							
	EBM 5500							
	EBM 8000							
High performance MEHEC	Ultra 10	•			•			
	Ultra 10L	•			•	•		
	Ultra 30	•		•	•	•		
	Ultra 30L	•		•	•	•		
	Ultra 70	•		•		•		
	Ultra 70L	•		•		•		

Our product portfolio comprises a wide range of Bermocoll® cellulose ethers. Whether used as standalone additive or in combination with other products, our products offer a powerful toolkit for the development of drymix mortars and dispersion based formulations for the construction industry.

Gypsum based				Dispersion based			
Projection plaster	Hand plaster	Satin plaster	Joint fillers	Tile adhesive / Joint filler	Viscosity spec (1%, mPa.s)	Modification	Particle size
				•	260-360*	None	Fine
			•		4250-6000*	None	Fine
			•		1700-2400	None	Fine
					6500-8000	None	Fine
			•	•	8000-12000	Delayed solubility	Fine
•			•		2300-3000	Medium	Extra fine
			•		5000-7000	Strong	Fine
•					5500-7500	Strong	Extra fine
•			•		2200-3200	Strong	Extra fine
					10000-14000	None	Fine
•		•			10000-14000	Strong	Extra fine
		•			10000-14000	Low	Fine
	•		•		10000-14000	Very strong	Fine
					10000-14000	None	Fine
					750-1200	None	Fine
					2500-3500	None	Fine
					6000-9000	None	Fine
					1100-1600	Low	Fine
					2900-3900	Low	Fine
					6200-9200	Low	Fine
					3000-6000*	Very strong	Fine
			•		3400-4600	Medium	Fine
				•	2500-3500	Delayed solubility	Fine
				•	2000-3000	Delayed solubility	Fine
				•	5000-6500	Delayed solubility	Fine
				•	7000-9000	Delayed solubility	Fine
					750-1200	None	Fine
					1100-1600	Low	Fine
					2500-3500	None	Fine
					2900-3900	Low	Fine
					6000-9000	None	Fine
					6200-9200	Low	Fine

*2%

Who we are and what we do

Nouryon's Building and Construction business is part of the Paints and Coatings business line. It has a unique technology base and profound experience of high quality cellulose ethers as well as surfactants, lightweight microspheres, colloidal silica and chelates.

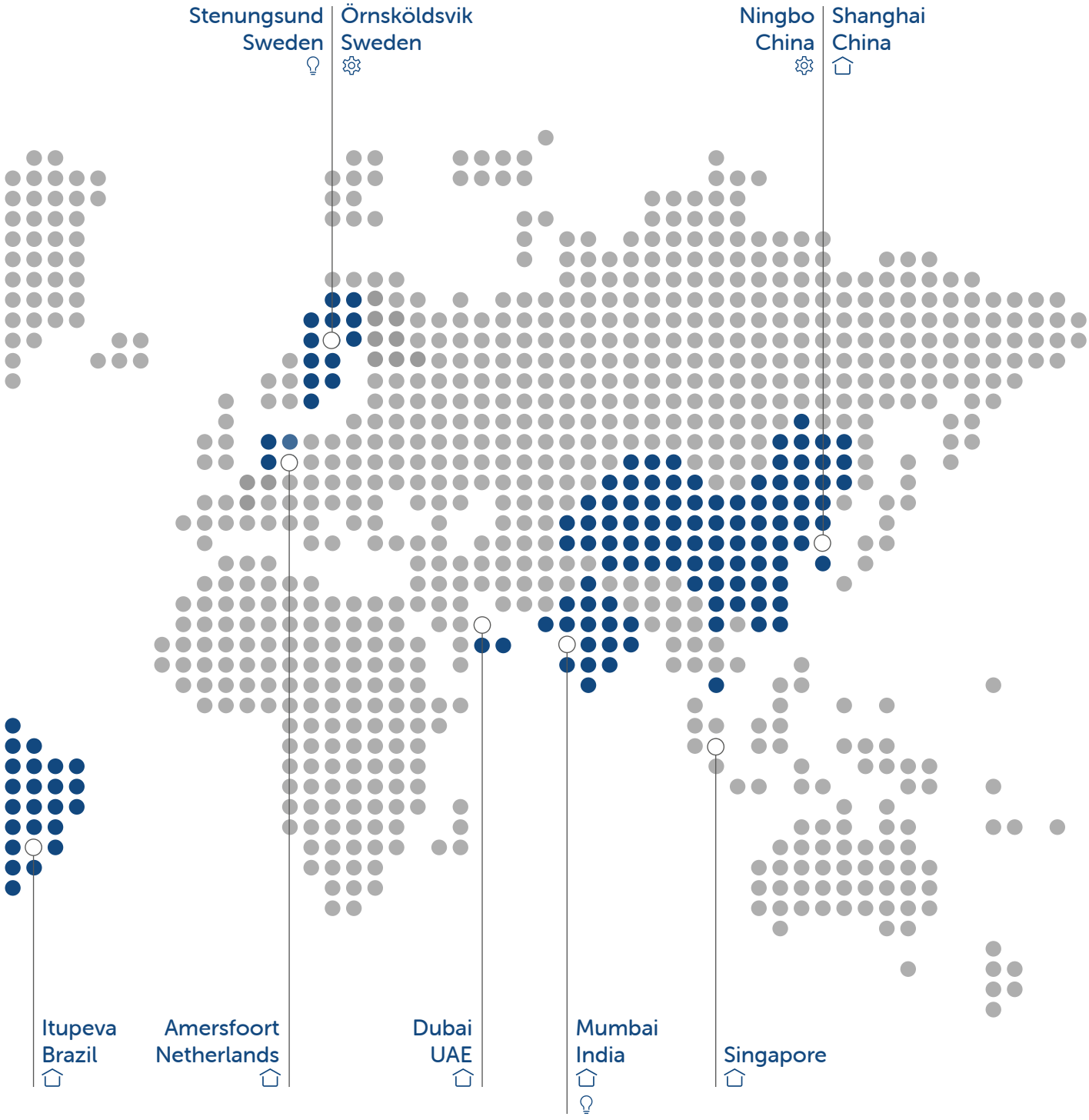
Reliable rheology solutions

Bermocoll®, our well-known range of non-ionic cellulose ethers, are used as rheology modifiers, stabilizers and water retaining agents for building and construction materials. Our research and product development has always been guided by our customers and their requirements.

Our Building & construction

worldwide operations

Production site | R&D / Technical support location | Sales office



Contact us directly for detailed product information and sample request.
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Nouryon

Nouryon is a global, specialty chemicals leader. Markets and consumers worldwide rely on our essential solutions to manufacture everyday products, such as personal care, cleaning goods, paints and coatings, agriculture and food, pharmaceuticals, and building products. Furthermore, the dedication of approximately 8,200 employees with a shared commitment to our customers, business growth, safety, sustainability and innovation has resulted in a consistently strong financial performance. We operate in over 80 countries around the world with a portfolio of industry-leading brands. Visit our website and follow us @Nouryon and on LinkedIn.

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