Omyabond® 100 technology

Adhesives and sealants with improved mechanical properties and moisture management through sustainable calcium carbonate

THINKING OF TOMORROW

The eco-friendly revolution for adhesives and sealants

Can the production of adhesives and sealants be optimized for high performance, flexibility, and sustainability – without compromising on cost-efficiency and product performance?

The construction industry is evolving rapidly, driven by the need for **improved productivity, enhanced product functionality, safer formulations, and environmentally responsible solutions**. At the same time, manufacturers are navigating a complex landscape of global partnerships, local sourcing, and supply chain resilience.

Product performance must evolve to meet higher standards – combining advanced rheological profiles with excellent mechanical properties, all achieved sustainably and with fewer chemicals such as polymers or additives like moisture scavengers.

Pushing the boundaries of your sustainable formulations

The development of high-performance sealants and adhesives – capable of adapting to substrate movement while maintaining mechanical integrity – has become a strategic priority. Needless to say, achieving this without increasing environmental impact is a challenge.

What if the key to this balance lies in moisture management? What if by optimizing moisture control through advanced mineral technologies, formulators could **reduce polymer content, enhance formulation possibilities, and support resource-efficient production?**

FORMULATION
Less water introduced,
less scavengers needed

PRODUCTION
Less energy, quicker,
more stable production

GOODS MANAGEMENT
Better storage stability,
longer shelf life

END PRODUCT
Improved mechanics,
enhanced rheology

The Omyabond 100 technology provides support from formulation to application: containing almost no water, it delivers an excellent rheological profile with significantly reduced need for scavangers. During production, pre-drying is not required, leading to industrial energy savings and quicker, more stable processes. End-products benefit from its stability during storage and higher performance during application, with high strength.

Omyabond 100 technology: moisture management and sustainable productivity optimization

In today's landscape, the construction industry must deliver reliable and sustainable solutions, balancing resource conservation, long-term durability, carbon footprint reduction with productivity and energy use and cost efficiency. Omyabond 100 technology meets this challenge by offering natural functional minerals designed for optimal water control in the production of reactive adhesives and sealants.

Effective water management is crucial for moisture-curing adhesives and sealants.

Calcium carbonate, often the main component in these formulations (up to 60%), can introduce significant moisture, leading to unstable production, longer processing times, higher energy costs, increased use of chemical additives, storage challenges, and compromised shelf life in reactive systems.

Omyabond technology significantly mitigates the need for water removal, delivering a strong impact on production time, energy and chemical consumption, storage stability, and overall product performance.

Omyabond 120: outstanding performance for reactive adhesives & sealants

Omyabond 120 is a low-moisture, high surface area, treated calcium carbonate. It is especially recommended for SMP (Silyl Modified Polymer) systems, but also stands out when used with silicone and PU-based systems and any adhesive products curing with ambient humidity.

Omyabond 120 brings your low modulus formulation to the next level combining excellent elongation with high strength.

Omyabond 120 combines the advantages of ground calcium carbonate (GCC) and ultra-fine precipitated calcium carbonate (UFPCC). While maintaining the low moisture content and water pick up of Omya's GCCs, its fine particle size delivers superior rheology and reinforcement properties.

Uncompromised moisture control: Omyabond 120 reduces water levels during industrial production, enabling energy savings, while improving productivity and shelf-life stability.

Superior rheology & mechanical reinforcement: replaces conventional rheology modifiers like polyamide wax or fumed silica. Delivers higher elongation, elastic recovery, and good workability.

Formulation optimization & cost savings: the mechanical reinforcement provided by this ultra-fine GCC boosts overall performance, allowing polymer content reduction and formulation cost savings.

Simplified production: allows for fewer production steps with improved stability. Energy savings are achieved through lower mixing temperatures and no filler pre-drying.

Low PCF (Product Carbon Footprint): Omyabond 120 represents 262 kg CO_2eq/t of product

Omyabond 120 combines the advantages of ground calcium carbonate (GCC) and ultra-fine precipitated calcium carbonate (UFPCC).

Omyabond 120 case study

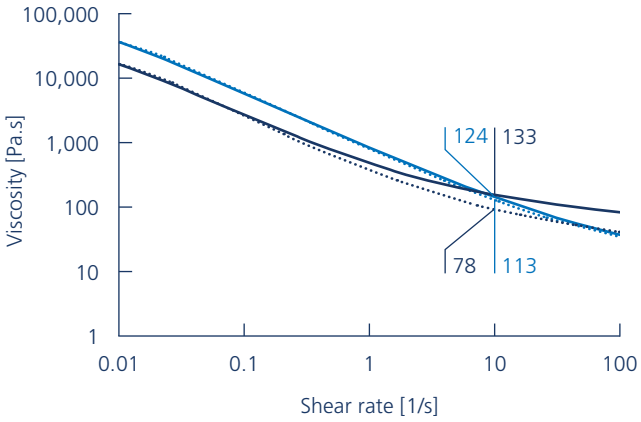
Planetary mixed formulation at 80 °C for 30 minutes, with further 45 minutes mixing at lower temperature at <50 mbar vacuum

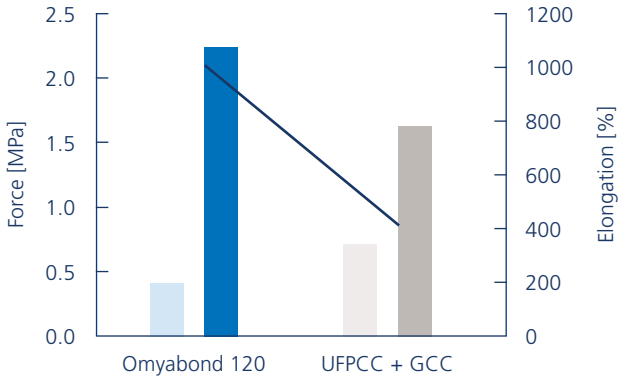
Component	Parts	Parts
SMP Polymer	30.0	30.0
Plasticizer	13.0	13.0
Omyabond 120	**55**	**–**
70 nm UFPCC	–	35
GCC	–	20
Additives	1.0	1.0
Moisture scavenger – VTMO	**0.5**	**1.0**
PCF of filler portion of formulation		
Omyabond 120 – 262 kg CO_2 e/dry metric ton	144.1	–
UFPCC – 458 kg CO_2 e/dry metric ton	–	160.3
Treated GCC – 314 kg CO_2 e/dry metric ton	–	62.8
Total kg CO_2 e/dry metric ton	144.1	223.1

Omyabond 120

Reduce chemical moisture scavenger and stabilize your process while improving sealant shelf life and mechanical properties

Storage stability test
Rheology profile
1 day at 23 °C, and 14 days at 50 °C

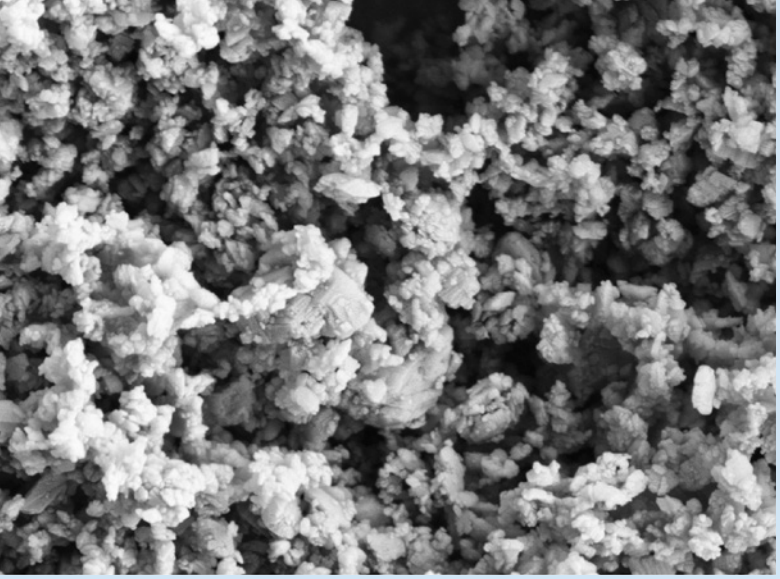




Omyabond 120 – 1 day 23 °C
Omyabond 120 – 14 day 50 °C
UFPCC + GCC – 1 day 23 °C
UFPCC + GCC – 14 day 50 °C
Modulus at 100%
Tensile Strength
Elongation

From data to insight

- Omyabond 120 with as low as 0.5 parts VTMO shows excellent storage stability.
- UFPCC + GCC blend gives a similar viscosity profile, however curing is seen after aging with 1 part VTMO addition.
- Omyabond 120 improves elongation, tensile strength and lowers modulus, making it easier to meet LM specifications – without other additives.
- Omyabond 120 also lowers the PCF of the whole formulation.



Scanning Electron Micrograph of Omyabond 120
at 10,000× magnification

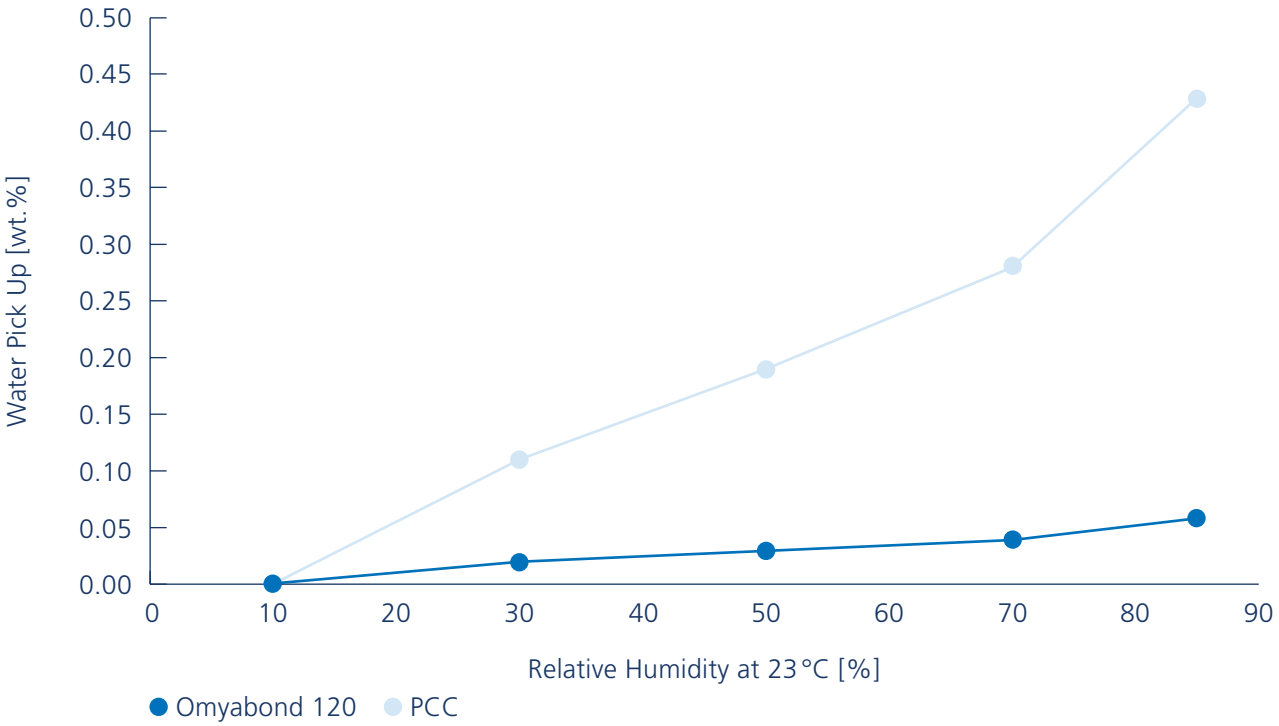
Omyabond 120	
Fineness[1]	• Median particle size (d50%, Omya GLS 041)[2]: 0.3 µm • Specific surface area (Omya GLS 067): 14 m^2/g • Residue on a 45 µm sieve (ISO 787-7): 25 ppm
Properties	• CIE* (ISO 11664-4): 95 • Moisture ex works (ISO 787-2): 0.15%

[1] Measured on untreated material [2] Sedigraph

Product properties

Low moisture, ultrafine, treated, **natural calcium carbonate** with a high surface area.

Omyabond 120 is recommended for the use in low modulus SMP (Silyl Modified Polymer) systems, silicone sealants – especially in alkoxy silicone sealants, polyurethane adhesives and coatings. It also enables process savings by avoiding pre-drying, reducing cooling times and energy expenditure, which increases machine productivity.



The graph shows the low sensitivity of Omyabond 120 to atmospheric humidity: low water pick up improves productivity regardless of climatic conditions.

Omyabond 160:
The sustainable rheology modifier for high-performance adhesives

Omyabond 160 is an ultra-fine treated calcium carbonate designed as a reinforcing filler for high-modulus adhesives and sealants. With its extremely low carbon footprint, it enables sustainable hybrid and silicone adhesive production with a clear competitive edge in modulus and tensile strength compared to conventional rheology modifiers such as fumed silica.

This product achieves the mechanical and rheological performance of ultra-fine precipitated calcium carbonate (UFPCC) while offering the lower carbon footprint of ground calcium carbonate (GCC).

Extremely LCF (Low Carbon Footprint): independently assessed at just 214 kg CO_2e per dry metric ton, making it one of the most sustainable ultra-fine options available. It contributes to a more sustainable industry.

Excellent mechanical & rheological properties:

- Demonstrates excellent shear thinning, anti-slump behavior, and yield control – providing substantial viscosity at low shear rates.
- Improves mechanical properties, adhesion, modulus, and tensile strength.
- Provides enhanced reinforcement for demanding applications such as MS Polymer, SMP, STPE, SPUR.

Sustainable fumed silica replacement: it's a more sustainable alternative to fumed silica-based solutions, delivering comparable rheology, elongation, and storage stability – but with superior adhesion.

Process optimization & consistency: offers excellent dispersibility for efficient processing. High consistency ensures more predictable formulation behavior over time.

Omyabond 160 case study

Component		Parts	Parts
High modulus SMP Polymer		30.0	30.0
Plasticizer		13.0	13.0
Additives		3.0	3.0
Omyabond 160		–	**54.0**
Fumed Silica		4.0	–
Treated GCC – 1 µm d50%		50.0	–
Rheology			
1 day, measured at 23 °C			
Viscosity at 0.1 1/s	[Pa.s]	2820	4112
Viscosity at 10 1/s	[Pa.s]	75	142
2 weeks, 50 °C, measured at 23 °C			
Viscosity at 0.1 1/s	[Pa.s]	4113	3114
Viscosity at 10 1/s	[Pa.s]	124	202
Mechanical			
Skin over time			
SOT after 1 day 23 °C	[min]	55	40
SOT after aging 2 weeks 50 °C	[min]	55	45
ISO 37			
Modulus at 100%	[MPa]	1.3	1.5
Tensile Strength	[MPa]	2.8	2.8
Elongation	[%]	510	405
PCF of filler portion of formulation			
Omyabond 160 – 214 kg CO_2 e/dry metric ton		–	115.6
Fumed Silica[1] – 2420 kg CO_2 e/dry metric ton		96.8	–
Treated GCC[2] – 314 kg CO_2 e/dry metric ton		157.0	–
Total PCF in filler portion		253.8	115.6

[1] CEPE Database [2] CCA (Calcium Carbonate Association) Europe

Driving low carbon footprint solutions for reactive adhesives

Omyabond 160	
Fineness[1]	• Median particle size (d50%, Omya GLS 041)[2]: 0.3 µm • Specific surface area (Omya GLS 067): 14 m^2/g • Residue on a 45 µm sieve (ISO 787-7): 25 ppm
Properties	• CIE* (ISO 11664-4): 95 • Moisture ex works (ISO 787-2): 0.3%

[1] Measured on untreated material [2] Sedigraph

- Omyabond 160 is suitable for use in higher modulus formulations
- Good elongation in ISO 8339 testing
- Sound rheological performance from ultrafine product
- Low carbon footprint, ultrafine, treated, natural calcium carbonate with a high surface area

Product properties

Ultrafine, treated, **natural calcium carbonate for high modulus and extremely low carbon footprint,** sustainable adhesives and sealants.

Compared to formulations using fumed silica and standard filler, Omyabond 160 shows similar rheology, elongation and storage stability. Omyabond 160 provides higher modulus, superior tensile strength and adhesion, especially to typical substrates used in the construction industry.

Omyabond 100 series benefits

Advanced moisture control
Ensures consistent moisture content regardless of climate or moisture levels.

Simplified production
With no need to pre-dry the filler and optimized processes, production becomes more stable and more efficient.

Reduction of substances of concern
Moisture control reduces the need for chemical moisture scavengers and allows for VTMO reduction.

Intrinsic sustainability
Calcium carbonate is a sustainable raw material. Omyabond 100 technology supports a more sustainable industry thanks to its very low carbon footprint and reduced environmental impact.

Energy savings
Achieved through lower mixing temperatures, elimination of filler pre-drying, and shorter cooling times – all boosting production capacity. Using Omyabond 100 technology can result in reduced cycle times and lower energy use during production.

Batch-to-batch consistency
The Omyabond 100 technology is known for its stable moisture content and high batch-to-batch consistency, ensuring reliable formulation behavior over time.

Omyabond 120

Omyabond 160

Source: Omya International (2025/09)