ADDAPT
Chemicals BV

for tomorrow's
Technology

BioWet™

Wetting and Levelling Agents

Netz- und Verlaufsmittel

for tomorrow's
World

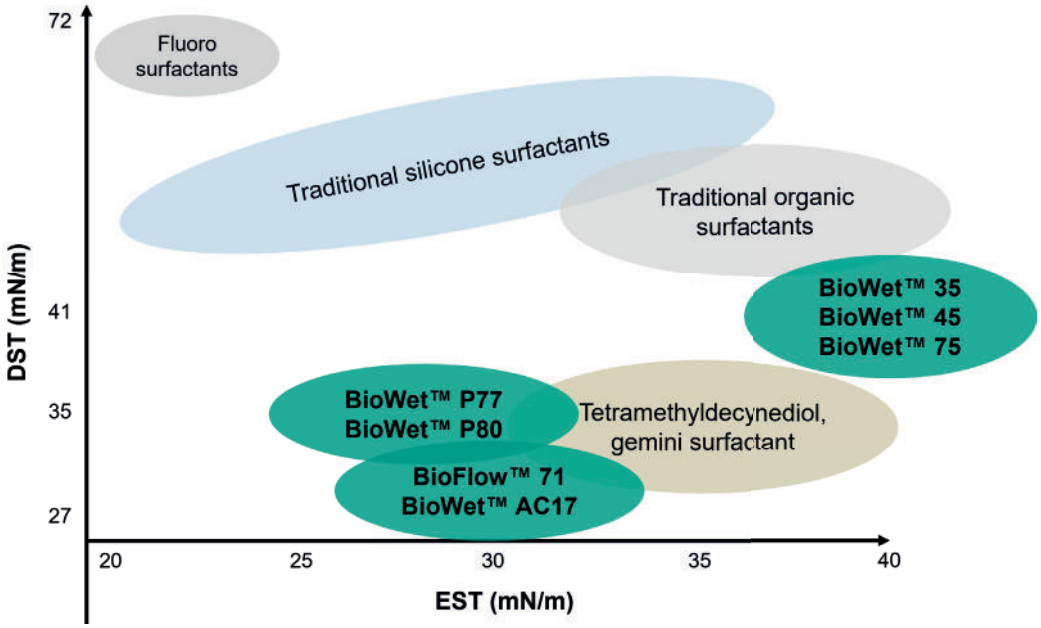
Performance benefits of BioWet™

The BioWet™ product range consists of VOC, silicone/siloxane free additives designed to enhance wetting, levelling, and open time in architectural paints, putties, and textured masonry coatings. These agents have no negative impact on (wet) scrub resistance, water resistance, or dirt pickup after drying. All grades are free of waxes, tallow fatty alcohols, ensuring a clean finish without emulsifier residue (snail trails). Additionally, all additives mentioned in this brochure are manufactured without the use of microplastics, heavy metals and PFAS (per- and polyfluoroalkyl substances).

These wetting and levelling additives are able to lower both equilibrium (EST) and dynamic surface tension (DST) values in liquid systems. **BioWet™ 35, BioWet™ 45** and **BioWet™ 75** grades maintain performance levels comparable to conventional surfactants in terms of surface tension reduction. However, they distinguish themselves by featuring enhanced sustainable and biobased profiles, making them the preferred choice for eco-friendly applications.

BioFlow™ 71 and **BioWet™ AC 17** provide significant reductions in surface tension, outperforming traditional organic and silicone-based surfactants. These wetting agents are well-suited for applications that require enhanced wetting and spreading performance.

Surface tension of 1.0% additive in demineralised water:



By reducing surface tension, BioWet™ enables coatings and inks to spread more evenly (levelling) and penetrate surfaces more effectively. This will reduce the formation of coating defects, such as cratering, fisheyes, orange peel, flow marks, roller marks, etc.

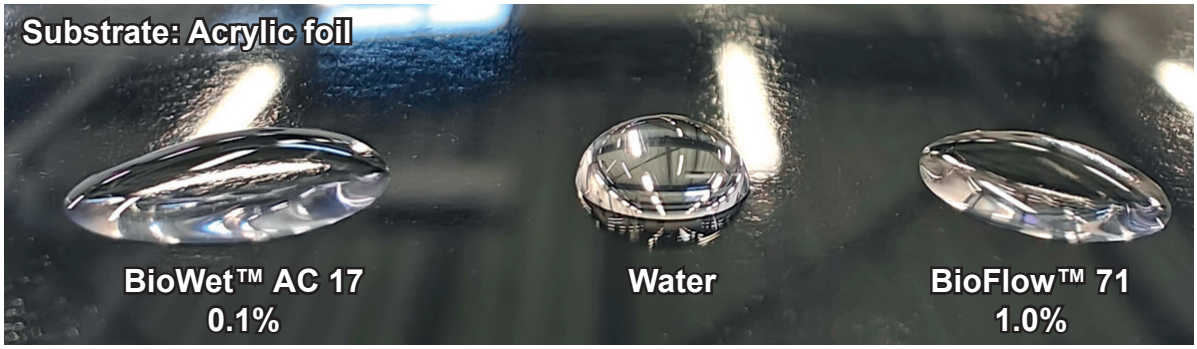
	PAINT - RENDER											LACQUERS	
BioWet™	**25**	**35**	**45**	**60G**	**75**	**150R**	**P 77**	**P 80**	**BioFlow 71**	**AC 17**		**25L**	**50L**
Application													
Emulsion paints (wall)						●	●	●	●				
Silicate paints/plaster						●	●	●	●				
Render (Putze)						●	●	●	●	●			
Primers	●		●		●	●			●			●	●
(Gloss) emulsion paints	●				●	●				●		●	●
Stains		●	●		●					●		●	
Wood adhesives	●	●	●		●	●			●				
Paper adhesives	●	●											
Pressure sensitive					●	●							
Tile adhesives						●	●	●	●				
Two pack systems			●									●	●
Gypsum						●	●	●					
Mortars						●	●	●					
Self levelling floors	●					●	●	●		●		●	●
Penetrating primers	●					●				●		●	
Cleaners	●			●	●	●				●			
Detergents	●				●	●				●			
Dishwashing	●			●	●	●							
Pigment preparations	●								●				
Clear lacquers									●	●		●	
Parquet lacquers									●	●		●	●
Furniture lacquers									●	●		●	●
Printing inks									●	●		●	●
Overprint varnish									●	●		●	●
Fountain solutions									●			●	●
Properties													
Low foaming	●	●	●	●	●	●			●			●	●
Biodegradable	●	●	●	●	●	●			●	●		●	
Adhesion promoter				●			●	●				●	
Colour strength	●						●	●	●	●		●	●
Dispersing properties	●		●		●	●	●	●	●	●		●	●
Flow/Open time regulation	●	●	●	●	●	●	●	●	●			●	●
Gloss improvement	●				●	●			●	●		●	●
Viscosity regulation	●			●	●	●	●	●	●	●			
Wetting performance	●	●	●	●	●	●	●	●	●	●		●	●
Defoaming properties							●	●	●				●
Anti-cratering							●	●	●	●		●	●

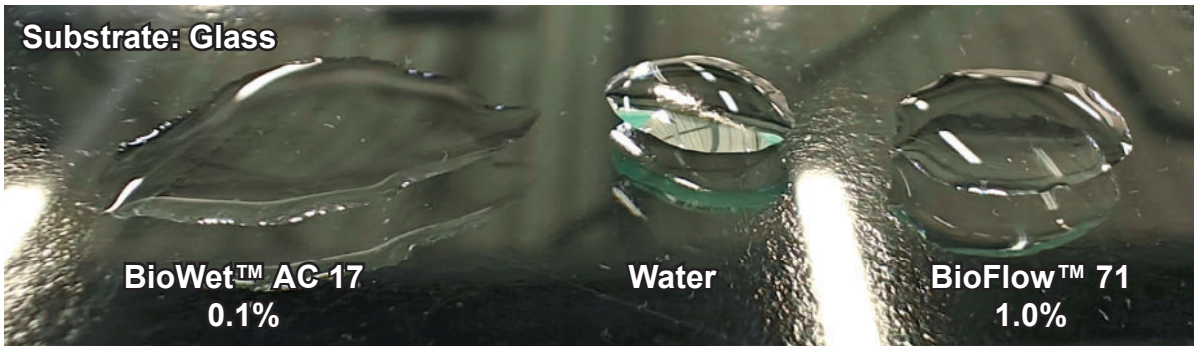
Wetting and Levelling agents	ADDAPT®	Netz- und Verlaufsmittel
Paint & Render		**Farbe & Putz**
Biodegradable wetting agent. Improves flow characteristics of both paper coatings and sizing, and wetting of pigment surface. Proves to be a very good carrier for water-soluble chemicals that have to be placed on/ in hydrophobic surfaces. Used in paper coatings and printing inks.	**BioWet™ 25**	Biologisch abbaubares Netzmittel. Verbessert die Fließeigenschaften bei Papierbeschichtungen und -leimung, sowie die Benetzung von Pigmenten. Überzeugt als sehr guter Träger für wasserlösliche Chemikalien in bzw. auf hydrophoben Untergründen. Zur Verwendung in Papierbeschichtungen und Druckfarben.
Wetting agent with excellent wetting properties for wood surfaces. Improves stability of (organic) pigment pastes and colour concentrates.	**BioWet™ 35**	Netzmittel mit hervorragenden Netzeigenschaften für Holzoberflächen. Verbessert die Stabilität von Pigmentpasten und Pigmentkonzentraten.
Excellent wetting agent for glass-surfaces, aqueous epoxy and PU systems. Prohibits gel formation in PU systems.	**BioWet™ 45**	Wirksames Netzmittel für Glasoberflächen, wässrigen Epoxy- und PU-Systeme. Beugt Gel-Bildung in PU-Systemen vor.
Wetting agent, glass adhesion promoter and glass corrosion inhibitor for aqueous systems on glass substrates (dishwashing applications).	**BioWet™ 60G**	Netzmittel; verbessert die Haftung von wässrigen Systemen auf Glasoberflächen. Korrosionsinhibitor für wässrige Systemen auf Glasoberflächen (Geschirrspülmittel).
Non-foaming wetting agent with excellent dynamic and static surface tension properties. Allows the necessary wetting and levelling/flow properties for water-based systems like PSA systems.	**BioWet™ 75**	Nicht-schäumendes Netzmittel mit sehr guten dynamischen/statischen Oberflächenspannungs-daten. Verbessert den Verlauf von wasserbasierten Systemen wie PSA-Systeme.
Exhibits excellent water retention properties; however, after drying the water resistance is not affected. Improves wet-edge (open time) of emulsion paints and lacquers.	**BioWet™ 150R**	Sehr gutes Rückhaltungsvermögen von Wasser; kein negative Einfluß auf die Wasserfestigkeit. Verbessert die Offenzeit von Dispersionsfarben und Lacken.
Universal additive to produce VOC-free emulsion-based renders and paints. Improves application time and gives good hydrophobicity. Allows drastic reduction of production time.	**BioWet™ P 77**	Universal Additiv zur Herstellung von Putzen und Farben. Lösemittelfrei. Optimiert die Verarbeitungszeit und Hydrophobie. Vereinfacht den Produktionsablauf.
- See the separate 'Universal Plaster Additive' -		*- Siehe Broschüre 'Universal Plaster Additive' -*
Universal additive to produce VOC-free emulsion-based renders and paints. Designed for use of tinting systems; optimises uptake of tinting pastes and rub-out. Improves application time and gives excellent hydrophobicity.	**BioWet™ P 80**	Universal Additiv zur Herstellung von Putzen und Farben. Besonders optimiert für den Einsatz in Abtönsystemen. Optimiert die Pastenaufnahme, Verarbeitungszeit und Hydrophobie.
VOC-free additive for increase of application time of emulsion based renders and paints. Excellent levelling agent for water based lacquers. Can be used in Silicate and Lime based systems. Improves flow properties of pigment concentrates.	**BioFlow™ 71**	VOC-freies Additiv, um die Verarbeitungszeit von dispersionsbasierten Putzen und Farben zu erhöhen. Hervorragendes Verlaufsadditiv für wasserbasierte Lacke. Findet Anwendung in Silikat- und Kalkbasierten Systemen. Verbessert die Fließeigenschaftenfähigkeit in Pigmentkonzentraten.
Solvent-free, readily biodegradable wetting and levelling agent that exhibits low surface tension values. It can be post added as an anticratering/ pinhole additive to coatings and inks. Also suitable as foaming agent for emulsion-based (acoustic) ceiling and wall paints.	**BioWet™ AC 17**	Lösemittelfrei und biologisch abbaubares Netz- und Verlaufsmittel, das niedrige dynamische und statische Oberflächenspannungswerte bietet. Das Additiv kann im Nachhinein der Rezeptur beigefügt werden, um Pinholes und Kraterbildung zu vermeiden. Ebenfalls als schaumstabilisierendes Additiv für emulsionsbasierte Decken (Akustik)- und Wandfarben einsetzbar.
Lacquers		**Lacken**
Excellent wetting and anti-cratering agent for water-based lacquers. Improves gloss, edge covering and levelling. Silicon-free.	**BioWet™ 25L**	Sehr gute Substratbenetzung mit hervorragender Anti-Krater-Wirkung. Verbessert den Glanz, die Kantenabdeckung und den Verlauf wässriger Beschichtungen. Silikon frei.
Excellent wetting and anti-cratering agent with adhesion promoter for water-based lacquers. Silicon-free.	**BioWet™ 50L**	Sehr gute Substratbenetzung und Anti-Krater-Wirkung für wässrige Lacke und Beschichtungen. Enthält zusätzlich einen Haftungspromotor für schwierige Untergründe. Silikon frei.

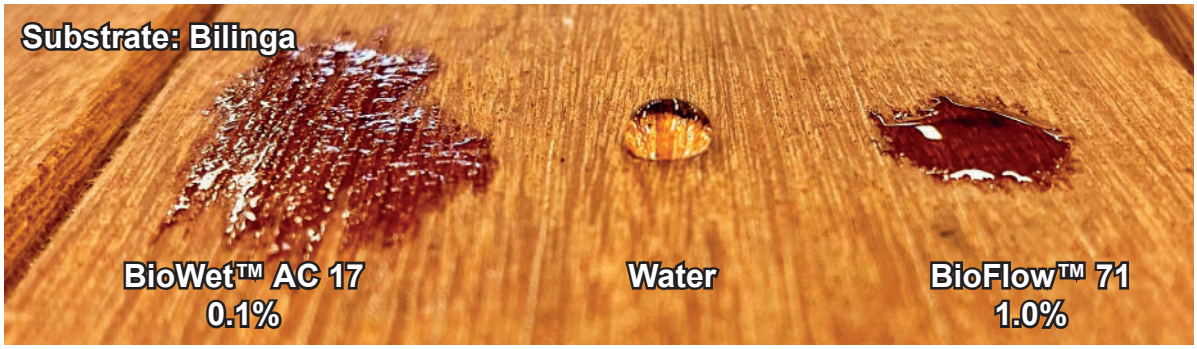
Optimised wetting solutions with BioWet™ technology

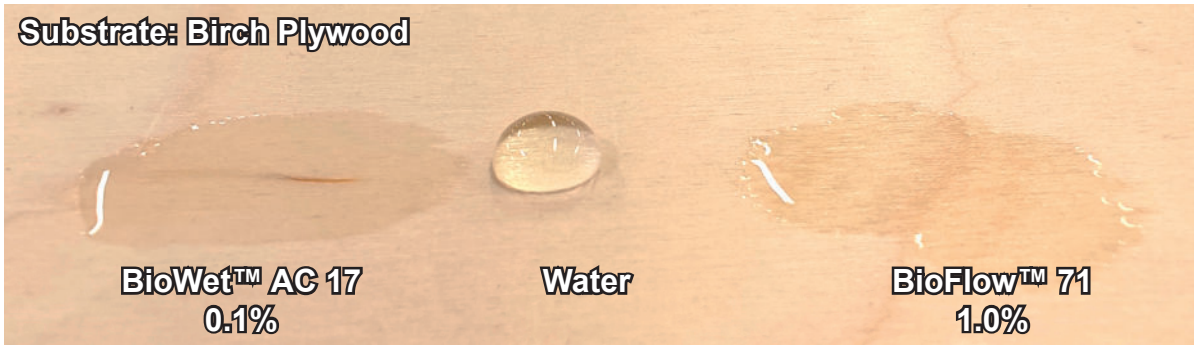
Achieving good substrate wetting can be a challenging task for water-containing products. These liquid systems are often repelled by the high surface energy of the substrate. This results in the formation of spherical droplets due to the high surface tension of the liquid.

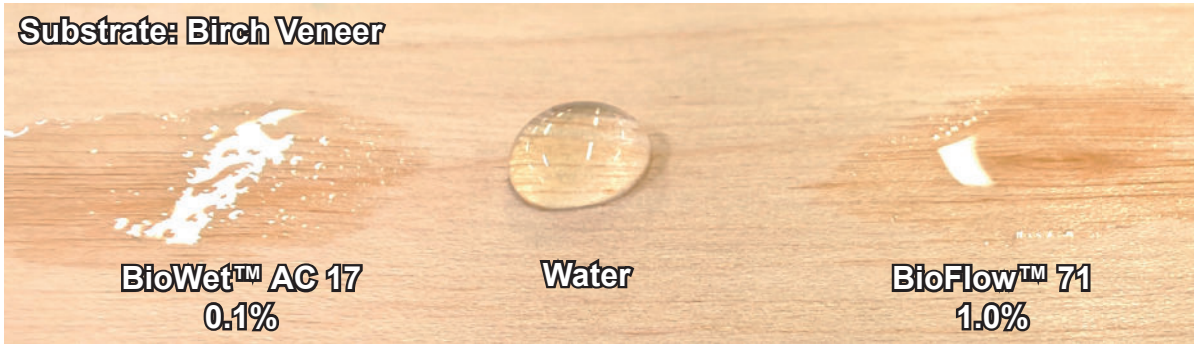
Adding BioWet™ to the liquid system reduces the surface tension which helps to overcome this issue. The BioWet™ molecules arrange themselves at the liquid-air interface, disrupting the cohesive forces and making the liquid spread more easily. This improved spreading enhances wetting, coverage and absorption across the substrate.

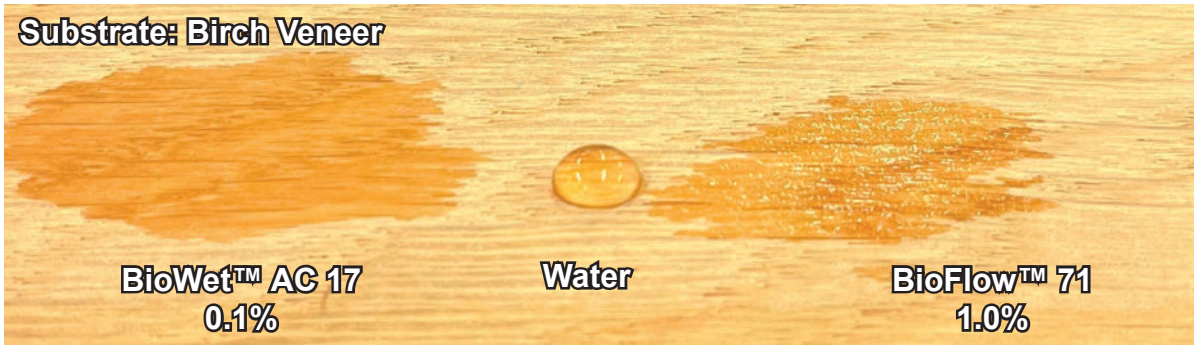










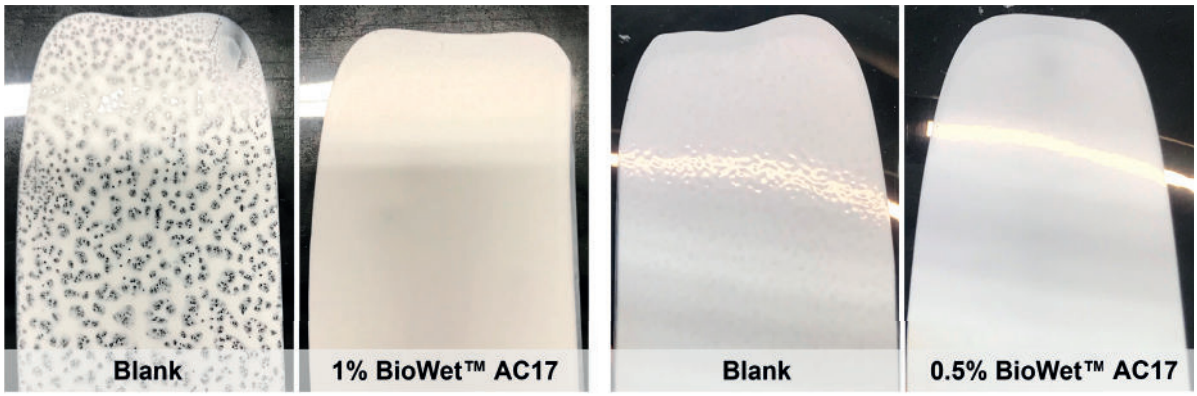


BioWet™ offers an effective solution for a wide range of substrates. ***BioFlow™ 71*** *and* ***BioWet™ AC 17*** *enable the wetting and spreading of aqueous solutions, performing efficiently on surfaces ranging from relatively easy-to-wet materials like glass and wood to challenging, hard-to-wet surfaces such as plastics, including acrylic sheets.*

Solving surface defects with BioWet™ AC 17

In coatings and inks, surface defects like craters can be formed when incompatible materials are present in the liquid phase or on the substrate. This incompatibility is caused by differences in surface tensions between the high surface tension aqueous carrier and low surface tension components or contaminants like (silicone) oils and greases. The presence of these oily materials creates local dimples or depressions as the polar carrier liquid is forced away from the contaminated area.

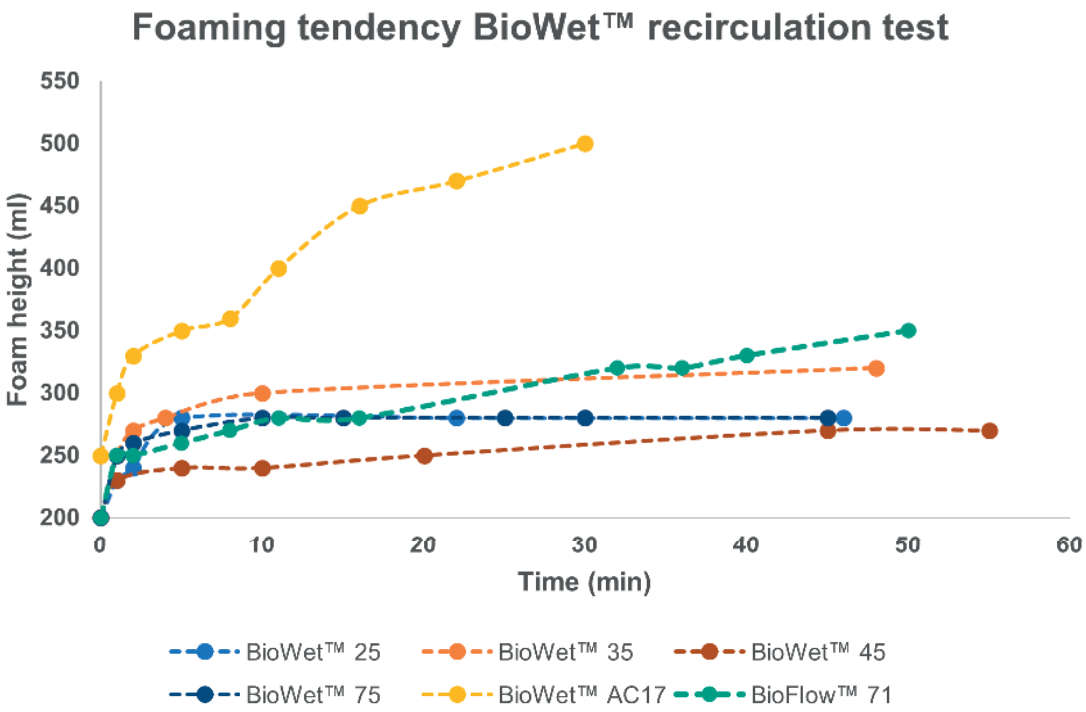
Wetting agents play a crucial role in countering these defects by reducing surface tension and promoting uniform spreading of the coating over the substrate. They help to overcome surface tension differences, which prevents material flow disruptions and reduces the likelihood of crater formation caused by contaminants or substrate irregularities.



BioWet™ AC 17 *is a highly effective wetting and levelling additive which eliminates craters caused by surface energy imbalances on the substrate (left). It also counters minor defects like the orange peel effect arising from an incompatibility between the various components in the coating (right).*

Low foaming tendency of BioWet™

Traditional surfactants tend to promote foam formation and stabilisation, which causes various issues. For example, during the filling process, foamy solutions may overflow, disrupting operations. In paint applications, stabilised foam results in surface defects such as pinholes and mud cracking. The presence of foam in coatings would also worsen coating properties, as foam would create channels, resulting in the formation of a permeable coating.

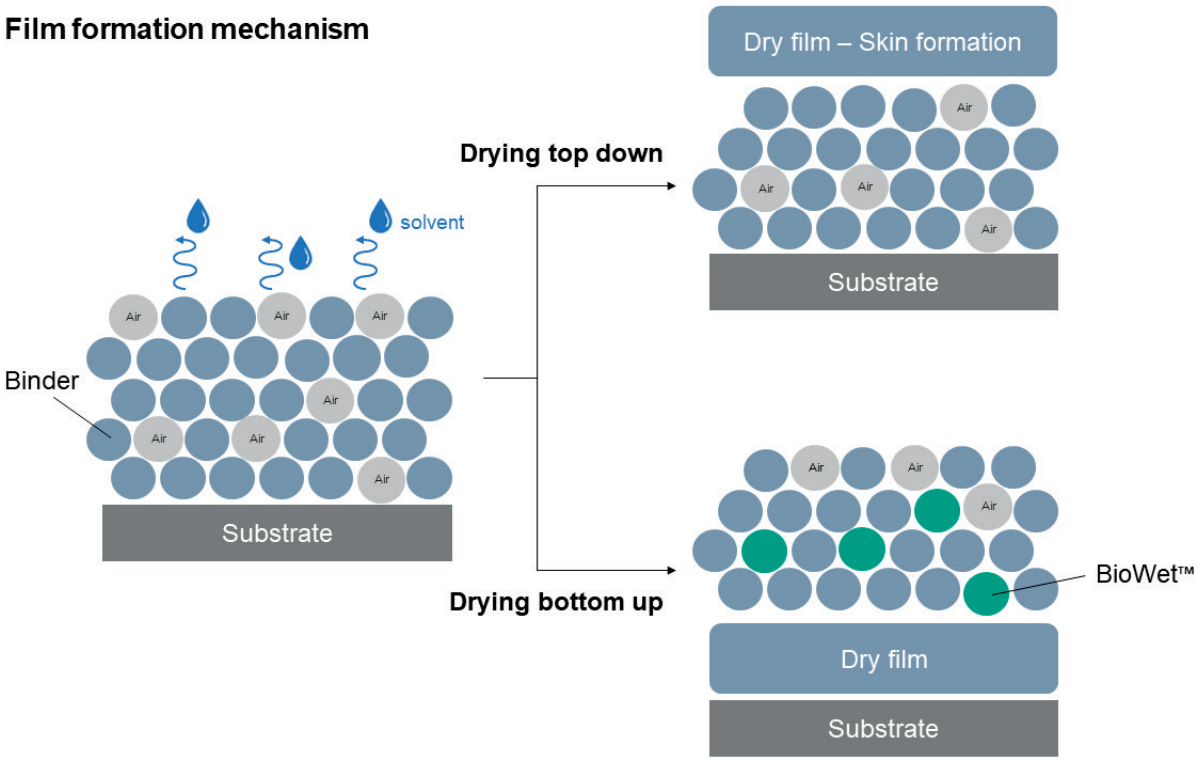


The foaming tendency of the wetting agents were evaluated following an internal test method which is derived from the ASTM D1173 test. Solutions of 1% BioWet™ in tapwater were prepared, and was allowed to recirculate with a flow rate of 75 ml/min. The foam height was monitored over approx. 60 minutes duration. ***BioWet™ 25, BioWet™ 35, BioWet™ 45, BioWet™ 75 and BioFlow™ 71*** *show minimal foam build up, decreasing the risk of unwanted foam during application.*

Boost efficiency: extend open time and improve drying with BioWet™

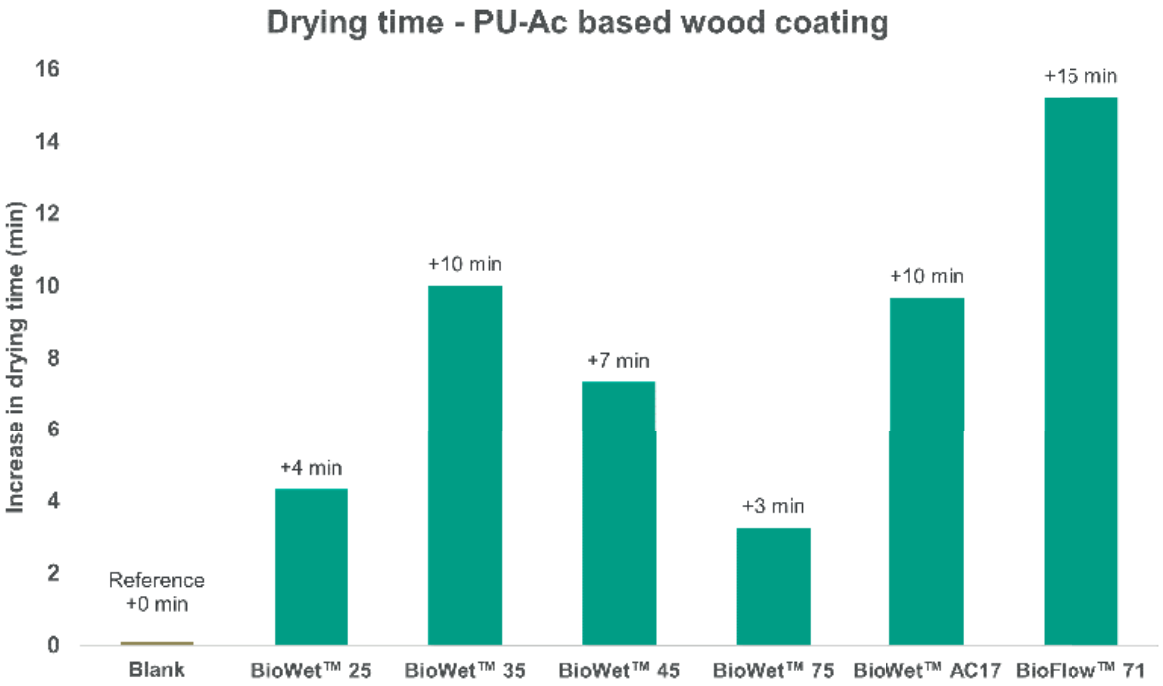
The drying time of a coating is an important factor in the application process. Wetting and leveling agents can extend the open time, allowing for better leveling of the coating film. This enhancement facilitates a smoother finish across various application methods, such as rolling, brushing, or spraying.

Film formation mechanism



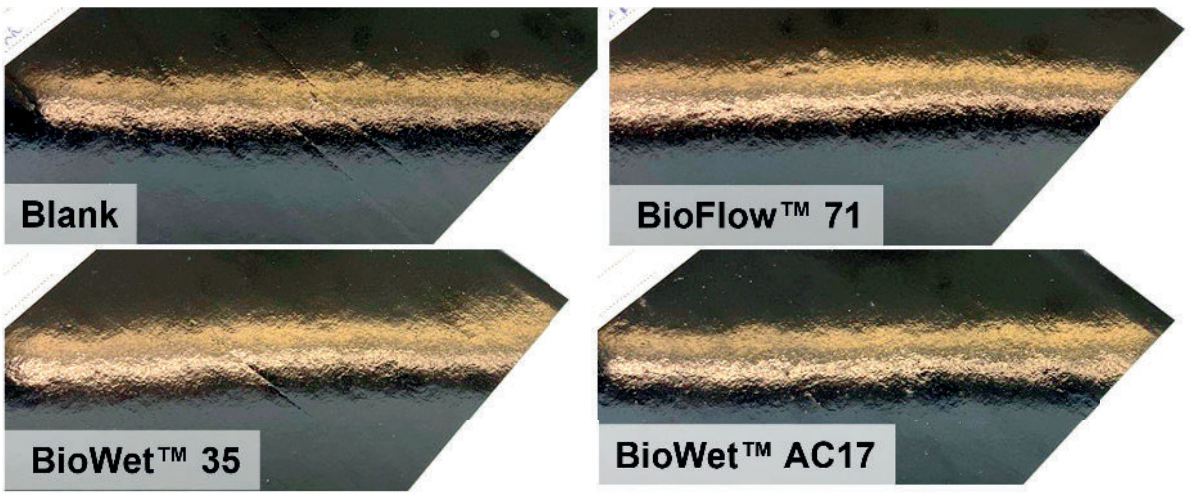
The drying of a coating film typically begins with the evaporation of the solvent at coating surface-air interface and gradually progresses downwards to the substrate as the solvent evaporates further. However, if the drying process happens too quickly, a dried surface film can form prematurely (skin formation) trapping the remaining solvent underneath. The remaining solvent can negatively impact subsequent applications and increase the risk of blister formation and worsening the coating properties.

The BioWet™ product range offers a solution by improving open time through an alternative bottom-up drying process. Formulated with humectant components, BioWet™ retains the moisture within the coating layer for longer, enabling the solvent to evaporate more evenly. This ensures the surface to remain wet longer during drying, promoting a smoother and more reliable application outcome.



*The drying time was evaluated using a drying time recorder in accordance with the ASTM D5895 standard. The wetting additive (0.6 wt% based on solid content) was added to a polyurethane-acrylic-based wood coating. Application with a wet film thickness of 100 microns, and the tests were conducted at ambient temperature. The results demonstrate that **BioWet™ 35** and **BioFlow™ 71** significantly prolonged the drying time, thereby improving film-forming properties.*

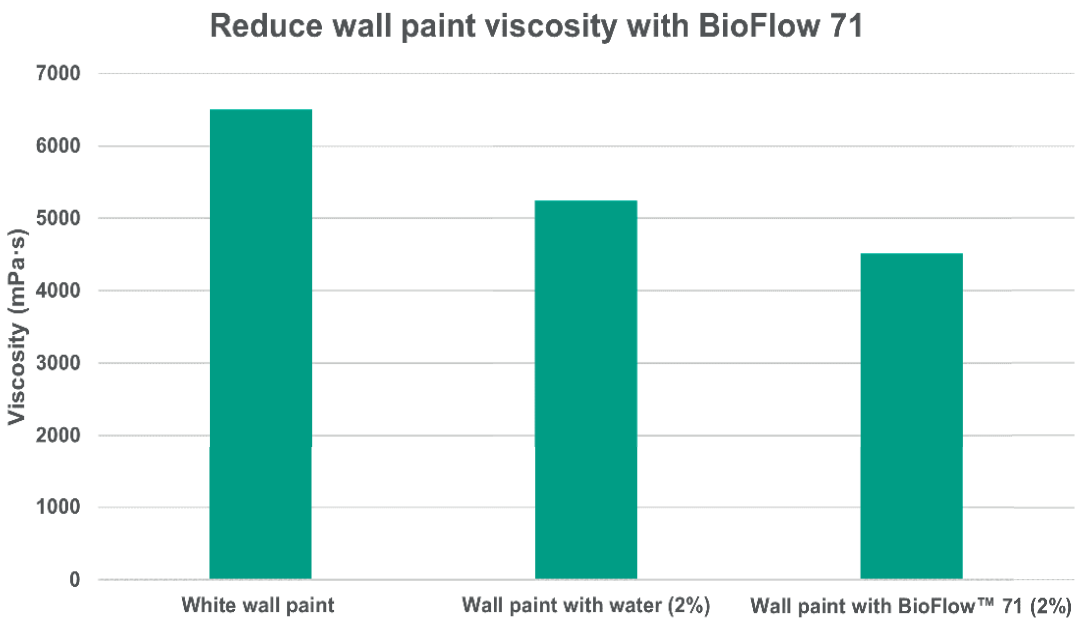
Improving open time in coatings enhances the flow and leveling characteristics, it would allow the material more time to spread evenly across the surface. This extended working time reduces the likelihood of defects such as streaks or uneven surfaces, leading to a smoother finish. As a result, coatings achieve a more uniform appearance and better overall performance.



The wetting additive (1 wt% based on solid content) was added to a parquet lacquer. Application by brush on a Form 2DX Leneta chart. Brush marks were clearly visible in the coating film when no wetting and leveling agent was used. In contrast, coatings containing BioWet™ displayed a smoother surface, with a cleaner reflection and minimal brush marks.

Improving flow of liquid pigment dispersions

BioFlow™ 71 has a unique ability to reduce the viscosity of certain paint systems. This is achieved by enhancing the wetting of pigments, which improves particle distribution and optimises interactions in the paint system.



High paint viscosities occur when pigment particles agglomerate in a binder or due to improper pigment wetting. This poor homogeneity results in increased flow resistance, making the paint thicker and more difficult to apply which results in an uneven texture and finish. Adding ***BioFlow™ 71*** *to a VA/VeoVa-based wall paint could significantly reduce its viscosity, thereby improving the paint's workability.*

BioFlow™ 71 can also be used during the preparation of pigment concentrates. It improves the flow of the pigment dispersion during grinding, which helps to achieve more efficient pigment dispersions.

BioWet™ P 77 and BioWet™ P 80: A Formulated Solution

Usage of BioWet™ P 77 and P 80 allows ease of formulation of various renders (putz): emulsion based, silicone resin based as well as silicate based renders. These can now be formulated from only one ‘master batch’.

When using BioWet™ P 77 and P 80 renders of 0.5 mm up to 3.0 mm can easily be created. At the same time, usage of these additives leads to very good flow of the render and also paint. Pinhole and mud cracking-free renders (putz) can be obtained.

Benefits

Unique features of BioWet™ P 77 and P 80 are the good drying profiles at both high temperatures (>30°C) and low temperatures (5°C). Also, BioWet™ P 77 and P 80 are VOC- and label-free and exhibit extreme low odour.

Another feature of BioWet™ P 77 and P 80 making various ‘basic’ chemicals no longer necessary (the ‘master batch’ approach). No separate additives like dispersants, glycol’s, open time and separate drying additives are needed. This means that stock levels of raw materials can drastically be reduced. Because these raw materials can be left out, production cycles can be reduced up to 50%.

Compared to BioWet™ P 77, BioWet™ P 80 shows much more profound colour development in tinted systems.

Both BioWet™ P 77 and P 80 allow binder systems like pure acrylic, styrene-acrylic, VA/VeoVa, VAE and VA-systems to interchangeable without the need of adjusting/reformulating the final formulation. Starting Point Formulations are available upon request.

“For more information please take a look at the **Universal Plaster** brochure”

CONTACT INFORMATION

ADDAPT Chemicals B.V.

Speltdijk 1
5704 RJ Helmond
The Netherlands

Tel.: +31 (0)492 59 75 75
E-mail: info@addapt-chem.com
http://www.addapt-chem.com

Liability
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