Celanese

The chemistry inside innovation™

FORMULATING YOUR VISION

WITH OUR EXPERTISE

Celanese Dispersions Product Overview

FORMULATING YOUR VISION WITH OUR EXPERTISE

The company

We are a global technology and specialty materials company based in Dallas, Texas, operating in key geographic locations worldwide.

At Celanese, we are continuously working on innovation and process improvement and are always looking for exciting new opportunities. In all the industries we serve, our products hold leading positions worldwide. We are offering an advanced product portfolio complemented by large global production capacity, operating efficiencies, proprietary production technology and competitive cost structures.

- Celanese is a real solution provider. We help our customers address problems and accelerate product development or deliver new solutions for their customers.
- Celanese is a company of world-class chemists, material and polymer scientists, engineers, operators and professionals across the globe.
- Celanese is represented by diverse backgrounds and cultures with diverse capabilities and expertise

Our two core business areas are:

- Materials Solutions: Specialty thermoplastics, cellulose derivatives and food ingredients
- Acetyl Chain: acetic acid, vinyl acetate monomer, other acetyl derivatives such as solvents, plasticizer, maleic acid esters, polymer dispersions for paints & coatings, adhesives and specialty fibers and EVA polymers for different applications

Celanese Emulsion Polymers business

- Partnering with our customers to fulfill real industry and consumer needs
- Global expertise in its wide array of applications
- Manufacturer of both high-pressure (VAE) and conventional (atmospheric, ATM) dispersions

Celanese Emulsion Polymers is one of the largest and most experienced suppliers of dispersion technology for waterborne coatings in the world. We have manufacturing plants and technical support in all major regions of the globe and are ready to help you add value to each of your coating products. We have been an active leader in European paints and coatings for decades, and we have gained deep understanding of the markets, products, applications and issues affecting our industry today.

Innovation and expertise

Our goal is to help our customers drive innovation into their products by assisting them with their product development. Celanese is closely watching market and industry trends, as well as regulatory requirements, to be at the forefront of innovation. Celanese is ready to help you meet your requirements for high-quality waterborne coatings.

Understanding customer and industry needs

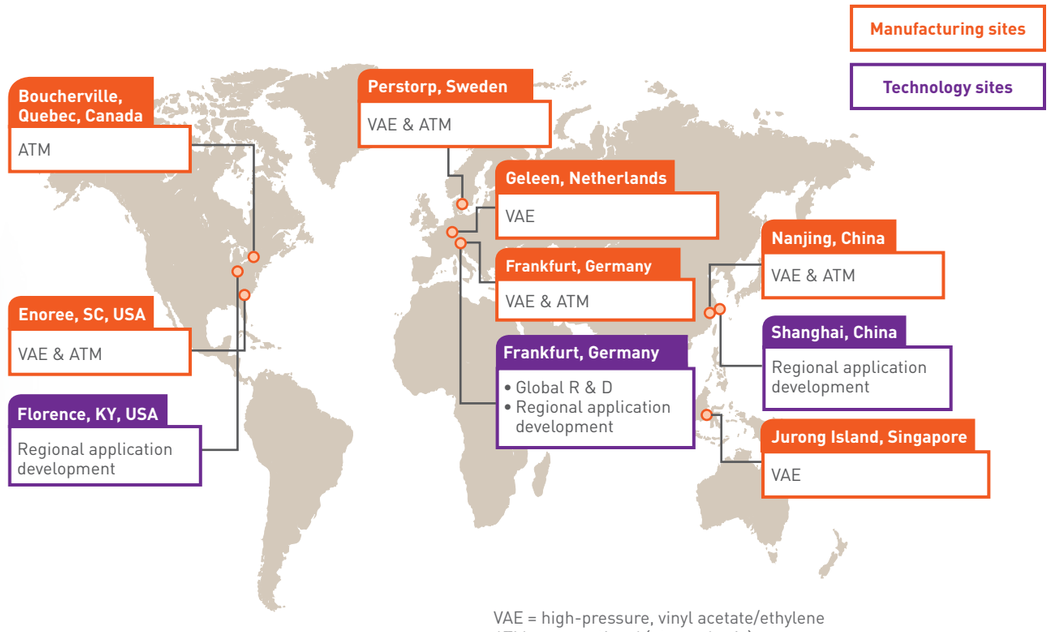
The Celanese technical team consistantly strives to meet the needs of our customers, including their formulated coating products. We are constantly updating our laboratory with modern equipment to aid us in designing and adapting our products to meet real-world application profiles to enable product testing according the latest standards and norms.

Advanced technology for a sustainable future

Celanese offers high-performance dispersions for the entire coatings market. These water-based dispersions do not contain solvents, or necessarily plasticizers. This leads to lower emissions, lower odor and a lower environmental impact, making them the right binder choice for the next generation of high-performance coatings.

Global reach

The global research and development center for Celanese dispersions (Frankfurt Technology Center) is located in Germany. The center closely cooperates with the other Celanese regional application development centers in Florence, USA, and in Shanghai, Asia. These regional facilities enable us to rapidly develop new products and to assist regional customers with their development projects. We have manufacturing plants and technical support in all major regions. In Autumn 2016, an additional VAE production unit on Jurong Island, Singapore went live to support the growing demand for ecologically friendly dispersions in the South East Asia region including Australia, India and New Zealand.



VAE = high-pressure, vinyl acetate/ethylene
ATM = conventional (atmospheric)

DISPERSIONS FOR EVERY COATING

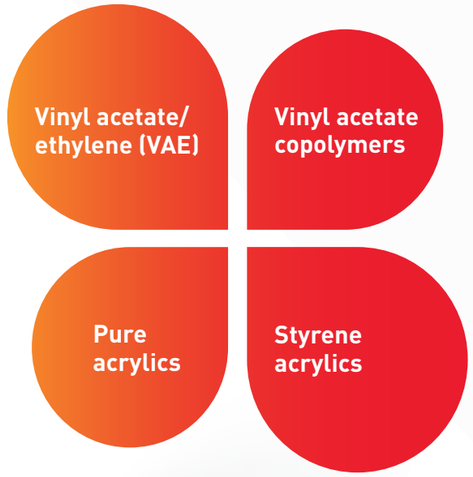
The Celanese Emulsion Polymers business offers one of the broadest and most comprehensive portfolios of waterborne dispersions in the world. Though VAE-based systems are our specialty, we are also experts in pure acrylic, styrene acrylic and VAM co-polymers.

Celanese is not only a leading producer of vinyl-based dispersions globally, but also a leading worldwide producer of VAM (vinyl acetate monomer) and acetic acid. The backward integration offers security of supply for this essential raw material.

Whether you are developing an environmentally friendly interior or a tough exterior architectural paint, or formulating an industrial coating for wood or metal, we have the right dispersion for your needs.

MOWILITH® – Supreme solutions for your coatings challenges

Mowilith® dispersions represent the premium class for quality and performance in the European paint and coatings market. The Mowilith® portfolio continues to grow, allowing you to expand your product offerings and capitalize on the major trends in the industry including low-emission paints.



Coatings application areas

Interior
- Paints and Plasters

Exterior
- Masonry
- Plasters
- ETICS
- Elastomeric wall coatings (EWC)

Gloss paints, lacquers and varnishes
- Gloss paints
- Wood stains
- Trim Paints

Construction
- Fillers, putties, primers
- Roof Coatings
- Flexible sealings and ceramic tile adhesives

Industrial applications
- Joinery, furniture and parquet coatings
- Plastic and metal coatings
- Fiber cement coatings
- Fire retardant paints

A PASSION FOR INNOVATION THAT STARTS WITH THE MOLECULE

The paints and coatings industries demand cutting-edge solutions to serve the challenging desires of the evolving markets. Celanese has pioneered technology that has enabled the coatings industry to create breakthroughs for the environment. We were the first company to develop a totally non-solvent binder technology for low VOC interior paints more than two decades ago. This VAE dispersion dramatically reduced VOC levels in interior wall paints, achieving eco-friendly labelling and meeting consumer requirements for environmentally friendly products with good performance.

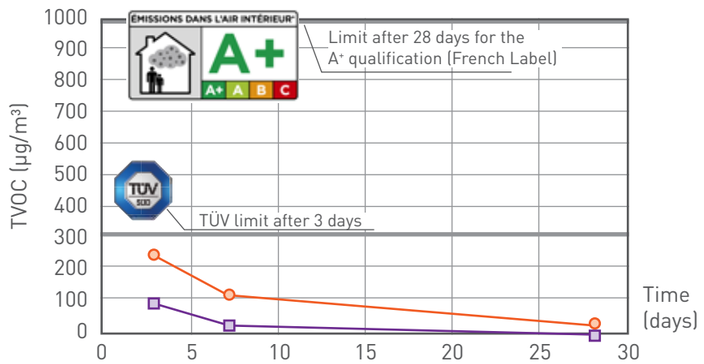
Most of the air we breathe in is indoor air

All around the world, the paint and coatings industry is under pressure to reduce VOC emissions. Although most interior decorative paints are already water-based, many formulations based on traditional polymers still contain solvents and plasticizers affecting the indoor air quality of the painted rooms. Therefore, paint formulators strive to develop "near to zero VOC" interior coatings. VOCs evaporate from the paint film relatively fast, and emissions occur directly after application.

But to consider only VOC is not enough. Paints based on traditional polymers can also contain Semi-VOCs (SVOCs). Due to their higher boiling points, these substances evaporate slowly and produce emissions over a longer period of time. In the future, the summation of VOCs and SVOCs will probably have to be considered when classifying and regulating paint emissions.

The use of VAE dispersions with MFFT 0 °C enables the formulation of paints without any solvents and plasticizers. Detectable emissions after 28 days are far below the A+ TVOC limit of 1000 µg/m³, which is required by French Labeling. Even after three days, the TVOC emissions are far below the requirements of some non-mandatory labels.

Chamber emission tests



Paint (pvc 72 %) – matt:
- 16 % Mowilith® LDM 1871
- WSR Class II (EN 13300)

Paint (pvc 31%) – satin:
- 46 % Mowilith® LDM 1871
- WSR Class I (EN 13300)

VAE Dispersions for high-performance paints

The reduction of VOC/SVOC emissions is an ongoing challenge in the coatings industry. Mowilith® VAE (Vinyl acetate-ethylene) dispersions have been used for low-emission interior paints for many years and became market leaders in Europe. Mowilith® VAE dispersions provide excellent application performance in combination with regulatory properties following the strictest demands of mandatory and non-mandatory regulations and EcoLabels on the market.

Besides the impact on indoor air quality, interior paints also must fulfill certain application properties in order to meet the expectations of the consumers. In favor of this request, VAE dispersions show a unique feature called "hydroplastification". Due the hydrophilic nature of VAE polymers, water can soften the polymer during the film formation. As a result, VAE dispersions show a substantially higher Glass Transition Temperature (Tg), at the same Minimum Film Forming Temperature (MFFT) compared to competitive polymer systems (e.g. Styrene/Acrylic). This allows paint manufacturers to create formulations free of coalescing agents at an adequate polymer hardness, which is needed to achieve excellent wet scrub and blocking resistance.

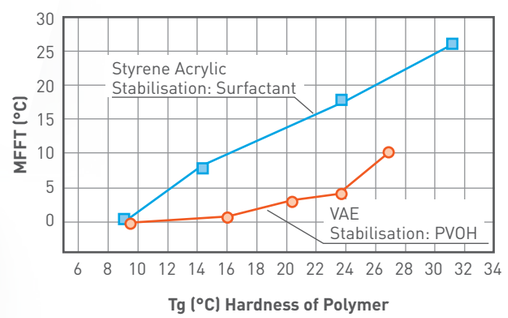
Furthermore, protective colloid stabilized VAE dispersions also have a positive impact on the hiding power of high PVC interior paints where the polymer can act as spacer between pigments and fillers. By using VAE dispersions paints, manufacturers could optimize the use of titanium dioxide which has a direct positive impact on the formulation costs.

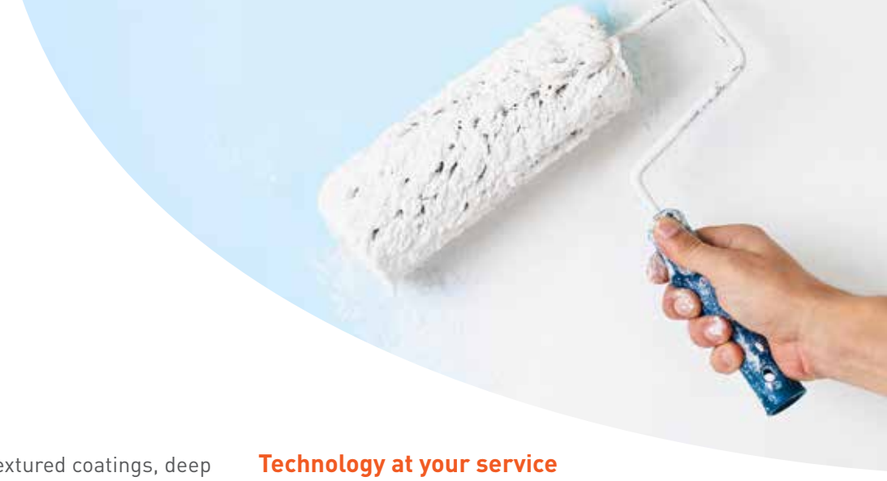
Mowilith® LDM 1871
is the first-choice binder for low-emission interior mat and satin paints. Paints formulated with Mowilith® LDM 1871 offer excellent wet scrub resistance and hiding power. Due to the optimized shear stability, this versatile binder can also be formulated into low-emission plasters and textured coatings.

Mowilith® LDM 1852
is the first heterogeneous VAE dispersion especially developed for low-emission satin paints. The binder offers optimized gloss and improved blocking for high binder containing paints in the medium PVC range.

Mowilith® LDM 1828
is a new dispersion based on a VAE/vinyl ester copolymer that facilitates the formulation of low-emission interior silicate paints free of biocides. The binder shows a good compatibility with water-glass, which allows the formulation at high pH alkaline conditions. Paints formulated with Mowilith® LDM 1828 show an excellent wet scrub resistance in combination with a mineral-like surface appearance.

Hydroplastification effect with VAE copolymers





FORMULATING YOUR LOW EMISSION PAINTS WITH OUR EXPERTISE

Interior coatings provide the backdrop to our everyday lives. In fact, we spend 90% of our time indoors. Today's consumer demands paints that are easy to apply, dry to a beautiful finish and will maintain their look for years.

Celanese offers the technology and formulating assistance that can help you create paints that will delight consumers. We can assist you in your environmental, performance and cost goals in flat and semi-gloss paints, plasters and textured coatings, deep shade paints, specialty primers and more. Celanese VAE dispersions are the premium class for low-emission, environmentally friendly paints. Our acrylic dispersions offer good block resistance and wet adhesion for semi-gloss paints. Our styrene acrylic dispersions are ideal for conventional paints containing coalescing agents and for primers. Look to our vinyl ester polymers for use in conventional paints and deep shade paints.

Technology at your service

With Celanese technology, you can address virtually any type of interior paint functionality you can imagine. We can help you with challenges regarding color, workability, blocking, penetration, adhesion and many other demands you must face. Our technical assistance teams are experienced in putting our technology to work for optimized performance and addressing your formulating issues.

Product		Specifications							Features/Benefits	Suggested applications									Product
	Mowilith®	Stabilisation*	Solids content (%)	MFFT-approx. (°C)	Tg-approx (°C)	pH	Particle size - approx. (µm)	Brookfield viscosity (mPas)		Interior paints; low emission	Satin paints; low emission	Plasters & textured coatings; low emission	Interior paints; containing coalescent agents	Satin paints; containing coalescent agents	Dispersion silicate paints	Primers	Easy-to-clean	Lime paint	Mowilith®
VAE/Vinyl ester	LDM 1828	E/C	50	0	-3	7.0	0.1 – 0.55	100 – 1500	Good compatibility with water-glass						••				LDM 1828
VAE	LDM 1852	E/PVOH	50	4	21	4.5	0.18	500 – 1900	Optimized gloss and blocking; first "heterogeneous" VAE-dispersion	•	••								LDM 1852
	LDM 1871	E/PVOH	53	0	13	4.5	0.10 – 0.45	1000 – 4000	Good pigment binding power, workability and shear stability very versatile; excellent for low emissions paints	••	••	••							LDM 1871
	LDM 1880	E/C	55	0	13	5.0	0.10 – 0.55	1000 – 3000	For thixotropic paints with improved wet scrub	••	••	••							LDM 1880
	LDM 1881	E/C	60	0	10	4.5	0.15 – 0.40	3000 – 6000	Particularly suited for thixotropic paints	••	•	••							LDM 1881
Vinyl ester	LDM 2110	E/Polymer	50	8	15	4.3	0.10 – 1.00	9000 – 15000	Good performance in lime paints									••	LDM 2110
	LDM 2454	E	50	11	19	6.0	0.15	50 – 350	Improved pigment binding power; very versatile				••	••					LDM 2454
	LDM 2383	E/PVOH	53	14	29	4.5	0.10 – 0.30	500 – 2500	Standard Vina-Copolymer binder for coalescent agent containing flat paints				••	•					LDM 2383
	LDM 2416	E/C	55	11	25	5.0	0.20 – 0.40	4000 – 7000	Improved gloss				•	••					LDM 2416
Styrene acrylic	LDM 6119	E	50	1	3	8.0	0,.13	1000 – 4000	Good compatibility with water-glass	•	•	•			••	•			LDM 6119
	LDM 6159	E	48	0	1	8.5	0.15	2000 – 7000	Good barrier protection against, e.g. nicotine and wood ingredients							••			LDM 6159
	LDM 6911	E	50	18	25	8.0	0.15	100 – 500	Standard styrene acrylic dispersion for coalescent agent containing coatings				••	•		•			LDM 6911
	NEW LDM 7601	E	34	0	-4	8.0	0.06	10 – 60	Good penetration properties							••			LDM 7601
	LDM 7667	E	34	2	7	8.5	0.06	10 – 90	Good penetration properties; very versatile, compatible with water-glass							••			LDM 7667
Acrylic	LDM 7412	E	46	1	-7/45	8.5	0.12	50 – 150	Low emission, easy to clean	••	••						••		LDM 7412
	LDM 7431	E	50	0	-10/50	8.5	0.10	3000 – 7000	Good wet adhesion; particularly suited for wet room paints		••						•		LDM 7431
	LDM 7451	E	47	8	13/65	8.5	0.10	2500 – 6500	Good block and chemical resistance, high performance trim paint					••			•		LDM 7451
	LDM 7729	E	48	0	-2	8.7	0.12	100 – 700	Improved wet adhesion and optimized elasticity for coalescent agent-free house paints	•	•								LDM 7729

*E = emulsifier C = cellulose derivatives PVOH = polyvinyl alcohol

• Recommended •• Highly Recommended

FORMULATING YOUR DURABLE COATINGS WITH OUR EXPERTISE

Pure acrylic dispersions are known for their outstanding versatility, durability and UV resistance on a variety of substrates including minerals, woods and metals.

For architectural coatings, Celanese offers a broad product portfolio of high-quality acrylic dispersions for façade paints and concrete protection paints.

Mowilith® LDM 7717 combines good hardness and low water uptake, which translates into excellent weathering behavior.

Especially for tinted paints and marble chip plasters, Celanese has developed the new acrylic dispersion **Mowilith® LDM 7718**, which provides excellent color retention in combination with organic pigments and very low blanching under wet conditions in transparent formulations.

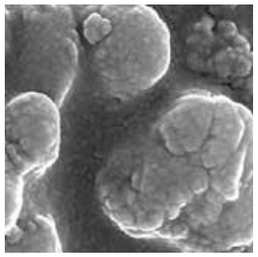
The softer **Mowilith® LDM 7719** and the harder **Mowilith® LDM 7714** enable the formulator to select the right hardness for their specific requirements. Both dispersions contain the same adhesion promoter technology to achieve excellent adhesion on critical substrates, such as old alkyd paints or metal which makes them especially suitable for house, wood and concrete protection paints. To address the requirements especially for stains and lacquers and high-gloss formulations at low-pigment volume concentration, where exceptionally long durability, good adhesion on different substrates and good elasticity are essential, Celanese has just developed the new **Mowilith® LDM 7774.**

Our first choice for wood protection paints is **Mowilith® LDM 7713**, which was especially improved regarding wet adhesion on alkyd paints.

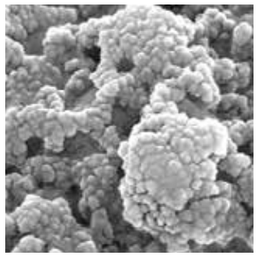
Acrylics with lower Tg and MFFT like **Mowilith® LDM 7729** and **Mowilith® LDM 7719** offer higher elasticity, good adhesion and a low MFFT of 0 °C. This is an advantage for wood and crack bridging coatings and enables the manufacturer to formulate coalescent-free, low-emission paints. The first choice for solvent-free façade paints, plasters and silicate paints is **Mowilith® LDM 7709**, which offers excellent outdoor weathering behavior in coalescent free formulations.

Innovation by combining technologies

Celanese Nano hybrid dispersion combines organic and inorganic chemistry to yield the best of both worlds. **Mowilith® Nano 9420** is built from an organic, pure acrylic polymer and an inorganic SiO_2 phase. By using this dispersion, it is possible to create a unique nano structure on the paint surface. The inorganic nano structure reduces the thermoplastic behavior of the paint surface and leads to improved dirt pickup behavior in exterior paints. Due to the open-film structure, it is possible to achieve the highest standards for water vapor permeability—an important parameter for masonry paints applied on mineral substrates.



Standard paint

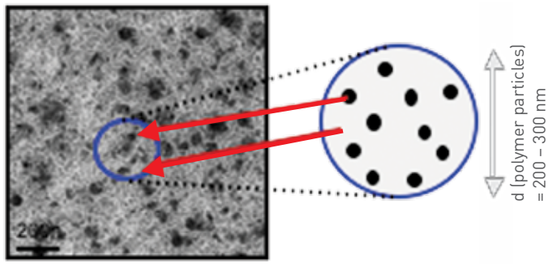


Nanohybrid paint

Think VAE inclusion technology

Mowilith® LDM 1865 is based on the patented inclusion technology, which allows the introduction of hard acrylic monomers into the VAE polymer matrix without increasing the MFFT. This results in a combination of the best of both monomer systems, (including excellent durability), and color retention – especially in combination with organic pigments. Mowilith® LDM 1865 represents the next generation of VAE-based dispersions designed for exterior paints and plasters.

VAE inclusion technology:



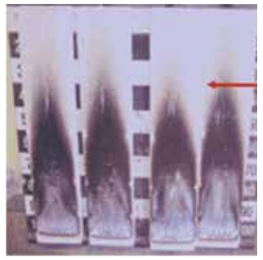
TEM picture: Polymer film showing evenly distributed domains of the hard polymer, which are significantly smaller than the size of the emulsion particles

Mowilith® LDM 1865 dispersion also offers good fire-retardant characteristics. This is especially important for External Thermal Insulation Composites System (ETICS), which must meet the requirements for the classification B1 according DIN 4102 (German Brandschacht Test) or the Euroclass B classification, according to the European SBI test DIN EN 13501. The low MFFT of approx. 3 °C makes it possible to reduce the content of solvent and plasticizers, which represents the next ecologically friendly trend for low VOC Exterior paints.

Brandschacht test results

Pure acrylic

VAE Inclusion



At least 15cm residual length needed to pass the test for class B1.

SBI test results

ETICS based on	FIGRA [W/s]	THR [MJ]	SMO-GRA [m²/s²]	TSP [m²]	Class [1]
VAE inclusion	113.2	2.5	10.9	45.2	B s1 d0
Pure acrylic	157.7	5.3	4.7	60.7	C s2 d0

[1] Classification according DIN EN 13501-1

SURFACE PROTECTION

Exterior coatings must protect the surface while providing a beautiful finish. Celanese offers a wide range of dispersions based on different polymer chemistries to provide the best solution for each kind of exterior coatings, including masonry paints, silicate paints, plasters or wood coatings. Our product portfolio includes standard binder technologies for exterior coatings such as pure acrylic, styrene acrylic, vinyl ester and VAE dispersions. Celanese has recently developed new dispersions by combining and improving the advantages of different chemistries and technologies such as nano-hybrid technology and VAE inclusion technology to reach the next level of performance. Learn more about our nano and VAE inclusion technology products on pages 10 and 11. Mowilith® LDM 1865 is a VAE dispersion based on Celanese Inclusion Technology that is designed for exterior paints. Suggested applications include low-emission masonry paints, weather-protection wood paints and exterior plasters including External Thermal Insulation Composites System (ETICS).

Product		Specifications							Features/Benefits	Suggested applications									Product
	Mowilith®	Stabilisation*	Solids content (%)	MFFT-approx. (°C)	Tg - approx. (°C)	pH	Particle size - approx. (µm)	Brookfield viscosity (mPas)		Masonry paints; low emission	Masonry paints; containing coalescent agents	Elasto-meric wall coatings	Dispersion silicate paints & plasters	Deep shade paints	Plas-ters & textured coatings	ETICS	Pri-mers	Marble chip plasters	Mowilith®
VAE	LDM 1871	E/PVOH	53	0	13	4.5	0.10 - 0.45	1000 – 4000	Versatile; basic dispersion for exterior coating	•	•			••	•	•	•	•	LDM 1871
VAE inclusion	LDM 1865	E/PVOH	53	3	13	5.0	0.1 - 0.5	500 – 2500	Excellent binder for exterior coatings like masonry paints and plasters	••	••			••	••	••	•		LDM 1865
VAE/VC	LDM 1265	E/C	52	5	10	5.5	0.2 - 1.3	1500 – 3000	Saponification resistance; compatible with water-glass		••		••	••	••	••	•		LDM 1265
Vinyl ester	LDM 2454	E	50	11	19	6.0	0.15	50 – 350	Improved dirt pick-up; optimized colour retention; very versatile; acrylic containing		••			••	••	••	•		LDM 2454
	LDM 2383	E/PVOH	53	14	29	4.5	0.10 – 0.30	500 – 2500	Standard Vina-Copolymer binder for exterior coatings		•			••	•		•		LDM 2383
	LDM 2416	E/C	55	11	25	5.0	0.20 – 0.40	4000 – 7000	Improved colour retention		•			••	••		•		LDM 2416
Styrene acrylic	LDM 6119	E	50	1	3	8.0	0.13	1000 – 4000	Improved dirt pick-up; water-glass compatible; good water resistance	••	••	•	••		••		•		LDM 6119
	LDM 6911	E	50	18	25	8.0	0.15	100 – 500	Standard styrene acrylic dispersion for coalescent agent containing coatings		•				•				LDM 6911
	NEW LDM 7601	E	34	0	-4	8.0	0.06	10 – 60	Good penetration properties								••		LDM 7601
	LDM 7667	E	34	2	7	8.5	0.06	10 – 90	Good penetration properties; compatible with water-glass								••		LDM 7667
	LDM 7671	E	50	0	-6	8.0	0.17	4000 – 9000	Suitable for elastomeric wall coatings; good dirt pick-up	•		••	•						LDM 7671
Acrylic	LDM 7709	E	46	1	6	8.5	0.12	20 – 200	Acrylic dispersion for low emission coat-ings; water-glass compatible; optimized dirt pick-up	••	•		••	••	••	••	•	•	LDM 7709
	LDM 7714	E	50	15	21	8.5	0.12	500 – 3500	Optimized dirt pick-up; low water up-take; improved wet adhesion		••		•	••	••	•	•		LDM 7714
	LDM 7717	E	46	18	23	8.5	0.12	200 – 600	Optimized dirt pick-up; low water up-take		••			••	••	••	•		LDM 7717
	NEW LDM 7718	E	48	8	19	8.5	0.12	3000 – 7000	Fulfills high demands regarding bleaching, good water resistance		••			••	•			••	LDM 7718
	LDM 7719	E	50	0	10	8.5	0.12	2000 – 6000	Acrylic dispersion with improved wet adhesion and optimized elasticity; particularly on wood	•	••			••			•		LDM 7719
	LDM 7729	E	48	0	-2	8.7	0.12	100 – 700	Acrylic dispersion with improved wet adhesion and optimized elasticity for coalescent agent-free house paints	••		•		•					LDM 7729
	LDM 7978	E	60	0	-30	6.0	0.40	500 – 2500	High elasticity and good crack bridging			••							LDM 7978
Nano hybrid	Nano 9420	E	45	6	18	8.5	0.12	10 – 100	For special exterior paints; extreme low dirt pick-up	For technical advice, please contact our Application Technology Service.									Nano 9420

*E = emulsifier C = cellulose derivatives PVOH = polyvinyl alcohol

• Recommended •• Highly Recommended

HIGH-PERFORMANCE ACRYLICS TECHNOLOGIES

Acrylic Dispersions have an excellent versatility, resistance and durability on various substrates including minerals, woods and metals. Due to the increasing requirements of VOC regulations and Eco-labels, water-based Mowilith® acrylic dispersions are perfect alternatives for solvent based binders.

Homogeneous technology

Mowilith® acrylic dispersions with homogeneous particle morphology enable the formulation of high-performance coatings with long-term durability. Through monomer composition and functionality (wet adhesion and crosslinking), polymer dispersions can be optimized for gloss paints, lacquers and varnishes. **Mowilith® LDM 7774** and **Mowilith® LDM 7714** enable the formulation of universal and high-performance coatings for use on various substrates.

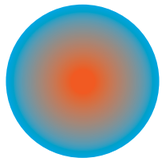
Advanced polymerisation technologies

For special applications, a compromise must be found between low VOC formulation (flexibility) and low blocking (hardness). Therefore advanced polymerization technologies enable the combination of opposed mechanical properties into one binder, optimizing the balance between soft polymer phase (formulation without coalescent agent, low Tg) and hard polymer phase (low blocking, high Tg).

Core-shell technology

Mowilith® acrylic dispersions based on core-shell technology contain two different copolymers with two different Tg values. The soft phase (low Tg) enables the film formation at lower temperatures with reduced demand of coalescing agents, and the hard phase (high Tg) improves film hardness and block resistance.
Mowilith® LDM 7451 offers excellent block and chemical resistance, and is particularly suited for low VOC gloss and trim paints. **Mowilith® LDM 7416** is the perfect binder for wood stain, while providing early block resistance and good hailstone resistance.

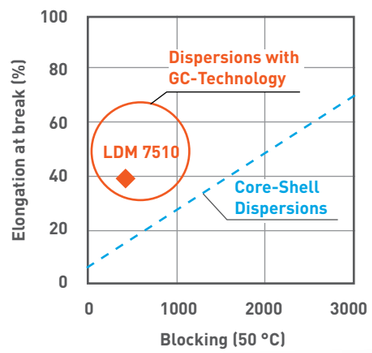
Gradual Composition (GC) technology



Mowilith® LDM 7510 is designed with the new Gradual Composition (GC)-Technology where the polymer particles contain a broad range of copolymers with different glass transition temperatures (Tg), unlike with classical core/shell dispersions, where the particles contain copolymers with two different Tg values.

Mowilith® LDM 7510 represents the next generation of acrylic dispersions designed as binders for gloss paints, varnishes and trim paints. This new low MFFT acrylic dispersion offers an excellent balance between high block resistance and elasticity. The combination makes the product suitable for low-emission gloss paints and coatings for decorative applications in the professional and DIY segment.

Optimized balance between blocking resistance and elasticity



Key advantages

- High gloss
- MFFT = 0 °C
- Styrene-free
- Excellent elasticity and highly block resistant
- Excellent chemical and solvent resistance with great wet adhesion (self-cross-linking)
- Good outdoor durability – results are in line with expectations thus far

PERFECT FOR APPLICATION AND ENVIRONMENTAL PERFORMANCE

The demand for waterborne, ecologically friendly gloss paints, lacquers and wood coatings has significantly increased in recent years. Due to the increasingly stringent VOC regulations and standards for eco-labels, there has been a concentrated effort to reformulate these coatings without the solvent-based binders, which had been used for decades. Water-based Mowilith® acrylic dispersions are good alternatives for solvent-based binders to reduce the VOC content while retaining the performance properties required in these products.

Product	Specifications								Features/Benefits	Suggested applications						Product
	Mowilith®	Stabilisation*	Solids content (%)	MFFT- approx. (°C)	Tg - approx. (°C)	pH	Particle size – approx. (µm)	Brookfield viscosity (mPas)		Gloss/Trim paints	Weather protection wood paints	Weather protection wood stains	Corrosion protection	Thickener	Stain-blocking coating	Mowilith®
Vinyl ester maleinate	DM 2 H	PVOH	51	0	-	4.0	0.3 – 2.0	1300 – 2700	Good weathering resistance; good low temperature elasticity		••					DM 2 H
VAE inclusion	LDM 1865	E/PVOH	53	3	13	5.0	0.18	500 – 2500	Good weathering resistance; improved dirt pick-up		••					LDM 1865
Styrene acrylic	LDM 6159	E	48	0	1	8.5	0.15	2000 – 7000	Good barrier protection against, e.g. nicotine and wood ingredients						••	LDM 6159
Acrylic	LDM 7411	E	50	1	-10/50	8.5	0.10	1000 – 4000	Improved block resistance	••		••	••			LDM 7411
	LDM 7412	E	46	1	-7/45	8.5	0.12	50 – 150	Good blocking; low emission	•		••				LDM 7412
	LDM 7416	E	50	0	-3/85	8.5	0.12	1000 – 4000	Good block resistance; good hailstone resistance	•		••	•			LDM 7416
	LDM 7451	E	47	8	13/65	8.5	0.10	2500 – 6500	Good block and chemical resistance; particularly suited for gloss paints	••		•	•			LDM 7451
	LDM 7510	E	48	0	-	8.5	0.11	500 – 6000	Optimized balance of block resistance and elasticity for low emission paints	••		•				LDM 7510
	LDM 7713	E	50	14	21	8.5	0.12	500 – 3500	Excellent adhesion on alkyd	•	••	••				LDM 7713
	LDM 7714	E	50	15	21	8.5	0.12	500 – 3500	Improved wet adhesion	•	•	••				LDM 7714
	LDM 7717	E	46	18	23	8.5	0.12	200 – 600	Standard dispersion for universal use	•	•	•				LDM 7717
	LDM 7719	E	50	0	10	8.5	0.12	2000 – 6000	Acrylic dispersion with improved wet adhesion and optimized elasticity, particularly on wood		••					LDM 7719
	LDM 7724	E	46	10	23	8.9	0.10	5000 – 9000	Good wetting; good levelling	•	•	••				LDM 7724
	NEW LDM 7774	E	46	13	25	8.5	0.11	100 – 700	Good wet adhesion, very versatile binders	••	•	•				LDM 7774
Thickener	LDM 7005	E	30	-	-	3.0	-	< 30	Thickener, HASE type for gloss paints and lacquers, Newtonian behaviour					••		LDM 7005

*E = emulsifier PVOH = polyvinyl alcohol

• Recommended •• Highly Recommended

OFFERING SOLUTIONS

For industrial coatings, various application techniques are used. Our Celanese Experts in Application Technology are looking forward to developing tailor-made solutions for processing and properties for your individual business requirements.

Meeting the needs of your application

Industrial manufacturers expect their coatings to deliver the premium functional qualities that customers expect in their wooden windows, furniture and more. At the same time, these coatings are applied in very demanding manufacturing environments that have stringent requirements for environmental performance, processability and cost control. As industrial coatings are designed for a specific application and manufacturing environment, Celanese technical experts are ready to work with you to match our technology with your customers' performance and processing needs.

Product	Specifications									Features/Benefits	Suggested applications														Product
	Mowilith®	Stabilisation*	Solids content (%)	MFFT – approx. (°C)	Tg – approx. (°C)	pH	Particle size – approx. (µm)	Brookfield viscosity (mPas)	Compatibility with cement		Ceramic tile adhesives	Flexible sealing	Corrosion protection	Fillers/putties	Primers	Furniture varnishes	Parquet varnishes	Joinery coating	Elastomeric roof coating	Plastic coating	Metal coating	Roof tile coating	Fibre cement coating	Intumescent coating	Mowilith®
Construction																									
VAE	LDM 1840	E/C	50	0	-3	5.0	0.1 – 0.6	50 – 1500	Yes	Good flexibility									••						LDM 1840
	LDM 6119	E	50	1	3	8.0	0.13	1000 – 4000	Yes	Good flexibility; improved water resistance	•	••		••	••				••						LDM 6119
	LDM 6482	E	57	0	-7	8.0	0.20	1500 – 4500	Yes	Good compatibility with bitumen		••		•	•										LDM 6482
	LDM 6636	E	50	13	20	8.5	0.15	50 – 300	No	Particularly suited for tile adhesives	••														LDM 6636
Styrene acrylic	LDM 6651	E	50	0	-10	8.5	0.14	2000 – 8000	No	Good compatibility with light weight fillers				••	•				•						LDM 7651
	NEW LDM 7601	E	34	0	-4	8.0	0.06	10 – 60	No	Good penetration properties					••										LDM 7601
	LDM 7667	E	34	2	7	8.5	0.06	10 – 90	No	Good penetration properties, especially compatible with water-glass					••										LDM 7667
	LDM 7671	E	50	0	-6	8.0	0.17	4000 – 9000	Yes	Good flexibility; improved water resistance									••						LDM 7671
Fire retardant coating																									
Vinyl ester	LDM 2301	E/C	50	14	25	4.0	0.1 – 0.5	1000 – 3000	-	Optimized for fire protection paints														••	LDM 2301
Industrial																									
	LDM 7411	E	50	-	-10/50	8.5	0.10	1000 – 4000	-	Improved block resistance and wet adhesion			••					•			•		•		LDM 7411
	LDM 7416	E	50	0	-3/85	8.5	0.12	1000 – 4000	-	Optimized block resistance; good hailstone resistance			••					••		•	•		••		LDM 7416
	LDM 7431	E	50	0	-10/50	8.5	0.10	3000 – 7000	-	Improved salt-spray resistance			••								••				LDM 7431
Acrylic	LDM 7461	E	46	24	28/100	7.5	0.10	500 – 2500	-	Optimized chemical resistance and hardness						••	••			•	•				LDM 7461
	LDM 7722	E	47	15	24	7.8	0.16	20 – 80	-	Good efflorescence protection												••	•		LDM 7722
	LDM 7764	E	50	45	48	9.0	0.10	80 – 400	-	Good block & weathering resistance						•					•		••		LDM 7764
	LDM 7991	E	46	-	98	8.0	0.11	200 – 800	-	Very high block and scratch resistance										••					LDM 7991

*E = emulsifier C = cellulose derivatives

• Recommended •• Highly Recommended

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EMULSION POLYMERS

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