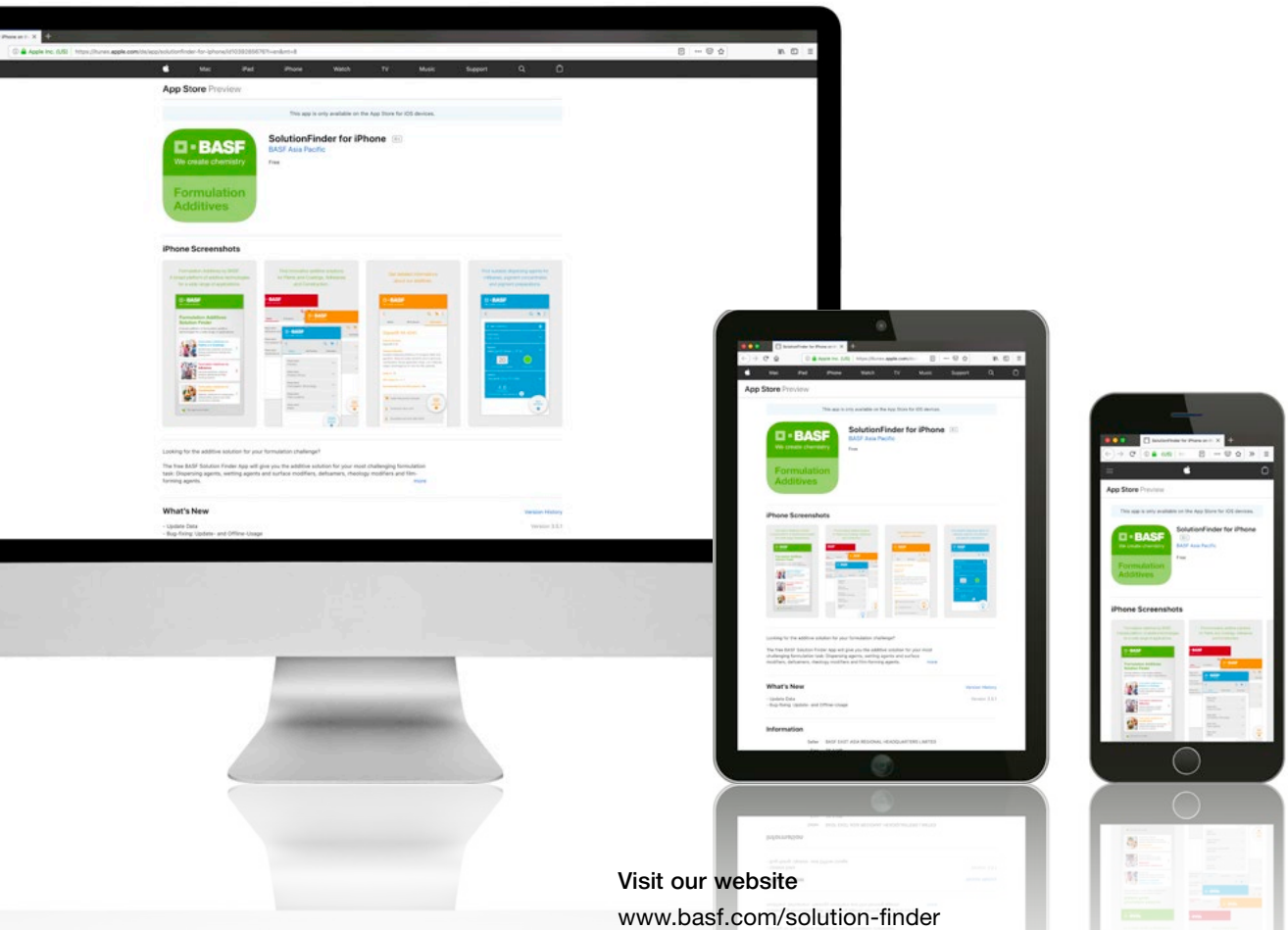
In touch, in depth, invaluable.

BASF Performance and Formulation Additives

BASF
We create chemistry

North America, May 2019

Solution Finder



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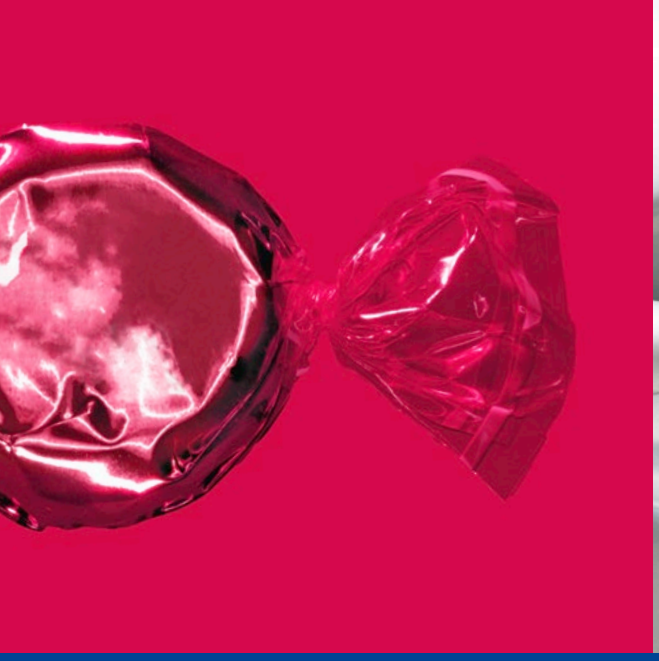
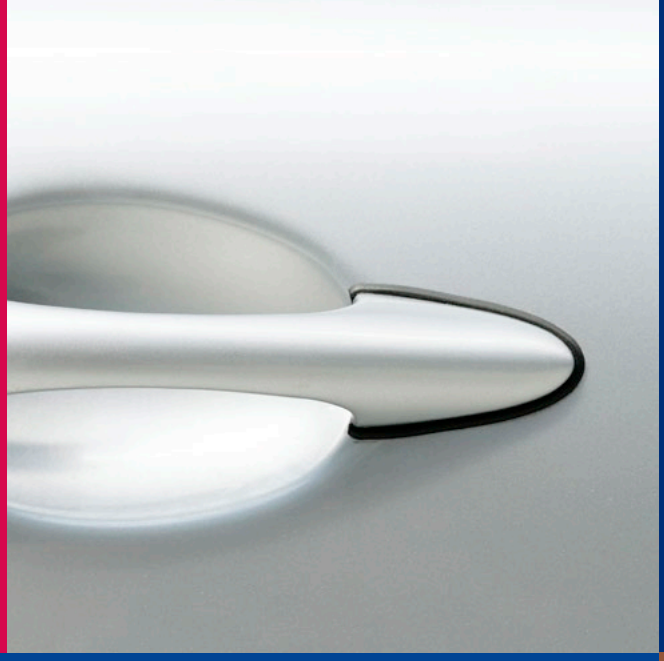




Your business is our business

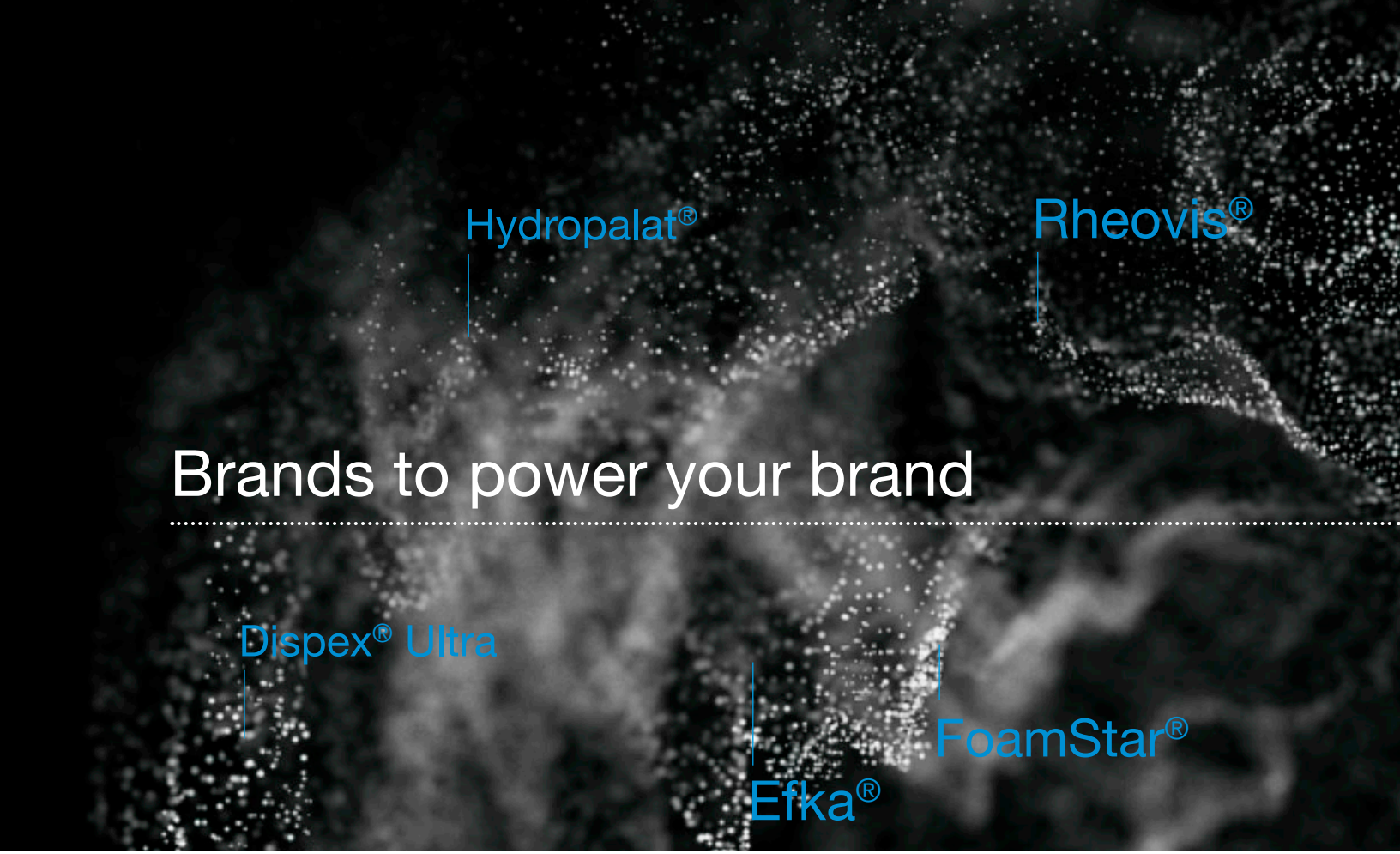
BASF Performance and Formulation Additives specializes in just one thing: supporting you in achieving your strategic goals. Across all of the industries we serve – from architectural, automotive and industrial coatings, furniture and flooring solutions and construction materials to printing and packaging, adhesives and composites – our focus is always on the specific challenges each customer faces and how to deliver solutions that turn those challenges into opportunities. Drawing on BASF's vast scientific capabilities coupled with our highly specialized expertise in additive technologies, we work with our customers to continuously improve formulations.

In the competitive paints and coatings market, the right additives can make all the difference. Our additives can not only help reduce your overall formulation cost, they can also enhance the performance of your formulations and place them in a class of their own.

At BASF, we are convinced that the future belongs to those paints and coatings manufacturers that create products with superior performance features that also meet the growing regulatory and consumer demand for more sustainability. And we want to work more closely than ever with you to achieve that goal. Regardless of which industry you operate in, we are at your side with best-in-class additives.

In the following pages, you will find the products we offer in your market, including detailed descriptions and specifications. But our comprehensive portfolio of additives is only the beginning. By keeping in touch with your needs and wishes, we are in a unique position to support you in your strategic goals. As a solution provider equipped with the unsurpassed scientific capabilities and formulation know-how of BASF, we offer in-depth expertise in developing breakthrough concepts that put you ahead of your competitors. The result: invaluable benefits for you, your customers and the consumers who use the final products.

This approach can be summed up in just a few words:
In touch, in depth, invaluable.



Brands to power your brand

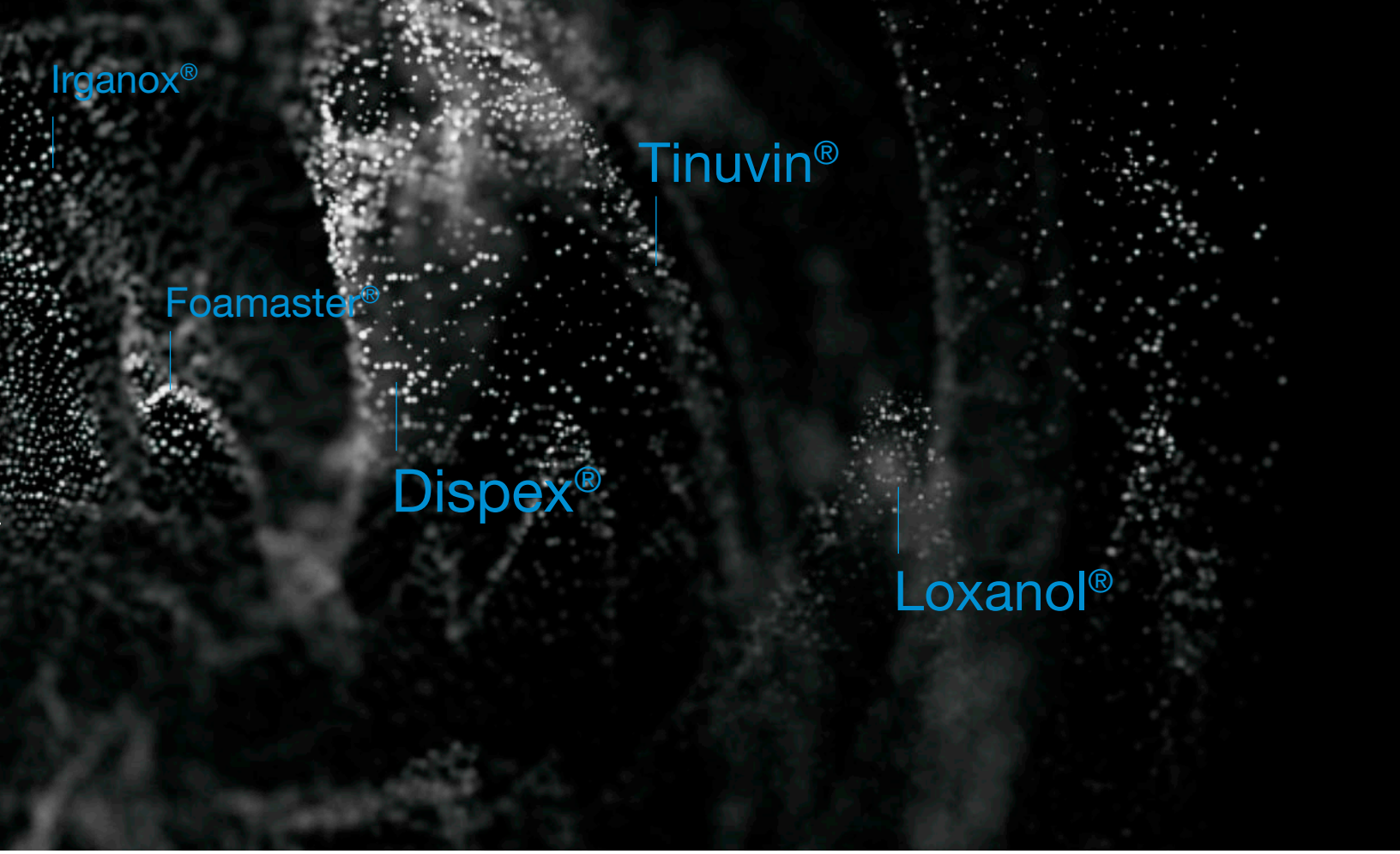
Over decades of serving demanding industries and brand-name manufacturers, we have developed a comprehensive portfolio of additives that have set the standards. Based on proven performance in various systems, our additives have become market benchmarks and ingredient brands in their own right.

Efka®
Highly efficient and effective dispersing agents, wetting agents and surface modifiers, defoamers and rheology modifiers for non-aqueous formulations, including eco-friendly solutions.

Dispex® and Dispex® Ultra
Dispersing agents with different performance properties in aqueous systems and universal pigment concentrates with outstanding viscosity reduction, increased color intensity and hiding power.

Hydropalat®
Outstanding substrate-wetting, colorant-compatibilizing, flow-control, slip-control and anti-mar agents for water-based formulations.

Foamaster® and FoamStar®
Defoamers and deaerators for aqueous systems, delivering a perfect balance between excellent foam suppression, micro-foam removal, high compatibility, long-term efficiency, easy handling and environmental compliance.

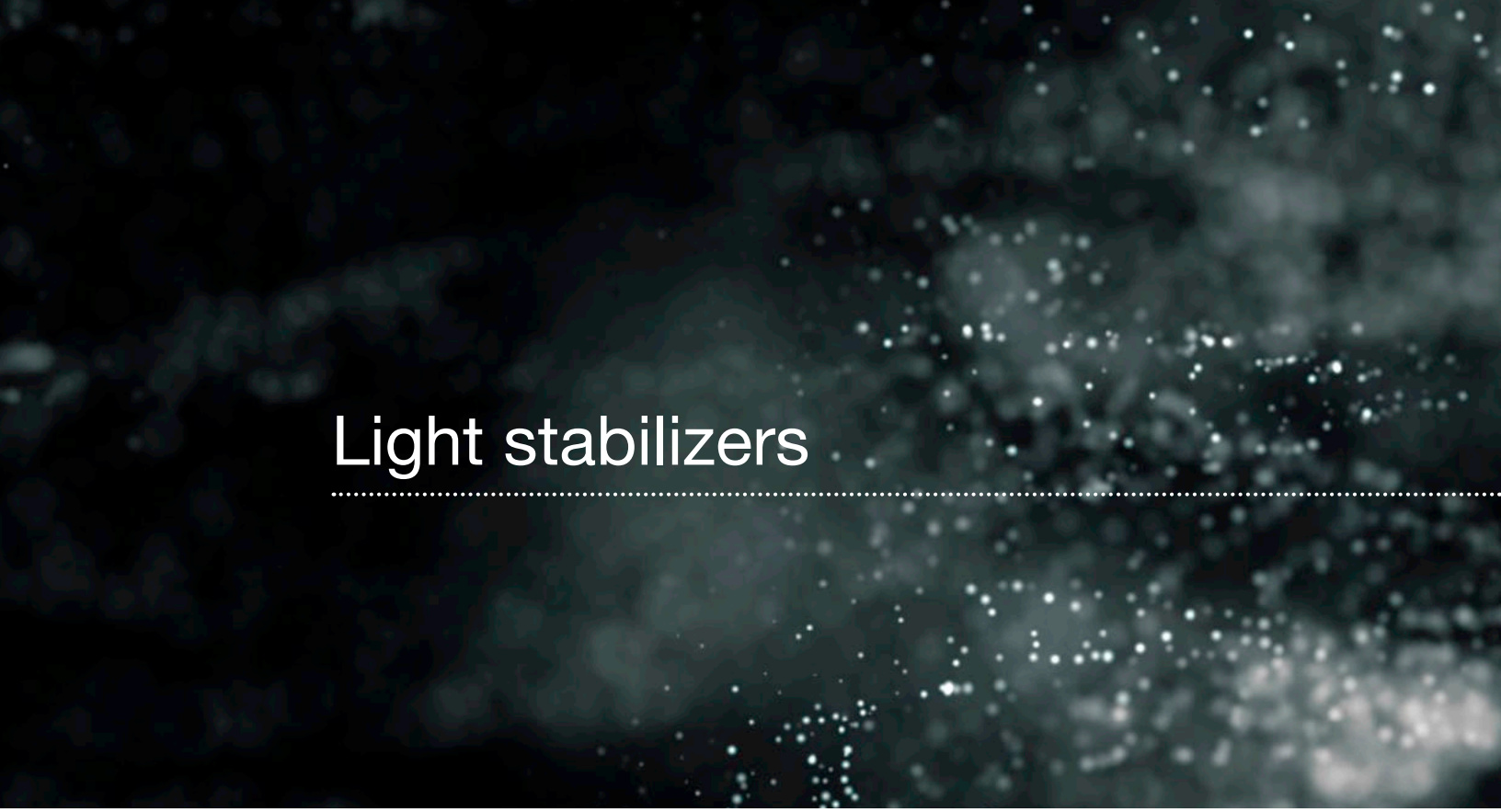


Rheovis®
Trusted synthetic rheology modifiers for aqueous systems, including non-ionic associative (HEUR/HMPE), anionic associative (HASE) and non-associative thickener (ASE) technologies.

Loxanol®
Excellent film-forming and coalescing agents, open-time prolongers and plasticizers that focus on low-VOC and sustainable raw materials.

Tinuvin®
Light stabilizers that deliver excellent protection from degradation through ultraviolet radiation coupled with compatibility in both aqueous and solvent-based systems.

Irganox®
Reliable antioxidants to prevent oxidation of polymers from heat exposure that extends from production and application – e.g. processing and curing or baking at high temperatures – to service life.



Light stabilizers

The demand for paints and coatings that cover ever-greater surfaces per liter without compromising long-term protection continues to rise. Avoiding light- or heat-induced degradation of coatings for extended periods involves mastering a complex array of challenges. As a pioneer in this special area of coatings technology, BASF draws on decades of experience and the broadest, most diverse portfolio of light stabilizers in our industry. The range can be roughly divided into two main technologies: filters that block ultraviolet radiation and scavengers that “hunt down” and eliminate free radicals within the coating. As diverse as our solutions are, they all serve to enable coatings that protect, beautify and extend the service life of UV-sensitive substrates.

One of the highlights is our innovative Tinuvin® DW (N) line for aqueous applications. The light stabilizers are based on a proprietary technology that encapsulates the active agents in an acrylic copolymer matrix, termed Novel Encapsulated Additive Technology (NEAT). The solvent-free additives feature low viscosity, freedom from EUH 208 labeling and long-term storage stability without sedimentation or phase separation.

Key benefits for your formulations

- Long-term durability
- Lower coat weights without compromising stability
- Excellent long-term color retention
- Long service/renovation intervals e.g. in architectural applications
- Dedicated innovation labs
- Innovation dedicated to product development and advancement of environmental, health and safety standards
- Easy stir-in processing
- Solutions for aqueous and solvent-based formulations
- Sustainable products
- Qualification for low-VOC or VOC-free labeling

NEAT-based UV absorbers are not only ideal for low- and zero-VOC formulations, but also easy to incorporate. They disperse homogeneously into water and/or water-based paint, and can be added in the final stage of the production process under normal stirring conditions without special equipment or dispersing aids like emulsifiers or co-solvents. Coating properties such as color, gloss, transparency or resistance to wear are left unaffected.

For UV protection coupled with enhanced gloss and color retention in solvent-based formulations, we offer the Tinuvin® 5000 series. These easy-to-handle additives are compatible and soluble in most solvent-based systems, and meet all performance demands of automotive, industrial and architectural applications. The series also contains subgroups with specific properties such as suitability for wood, plastic and metal substrates or exceptionally high thermal stability.

The Lignostab® solutions provide highly effective long-term UV protection in wood-impregnation systems.

Regardless of what type of system you wish to formulate and issue you face, we can support you with solutions that significantly enhance the performance efficiency and service life of your final product. Our facilities dedicated to innovation in light stabilizers and antioxidants at our main headquarters in Germany as well as in Switzerland, we are in a unique position to set industry standards. And thanks to our deep understanding and close monitoring of regulatory developments, we can also provide invaluable compliance support.

Speak with your partners at BASF Performance and Formulation Additives to find the ideal light stabilizers for your formulations. We are equipped with broad application knowledge – from automotive and industrial coatings to wood, plastic and glass applications – and will work with you to co-innovate solutions that place your products in a class of their own. For more information, you can also look here: www.basf.com/additives

Product name	Chemistry	Physical form	Melting point (°C)	Molecular weight (g / mol)
Water-based UV absorber				
Tinuvin® 400-DW (N)	Hydroxyphenyltriazine (HPT)	Liquid 20% active	-	Mixture
Tinuvin® 477-DW (N)	Hydroxyphenyltriazine (HPT)	Liquid 20% active	-	Mixture
Tinuvin® 479-DW (N)	Hydroxyphenyltriazine (HPT)	Liquid 20% active	-	Mixture
Tinuvin® 1130	Benzotriazole (BP)	Liquid	-	Mixture
Tinuvin® 9945-DW (N)	Benzotriazole (BP)	Liquid 45% active	-	Mixture
Solvent-based UV absorber				
Chimassorb® 81 (ED)	Benzophenone (BP)	Solid	47–51	326
Tinuvin® 99-2	Benzotriazole (BTZ)	Liquid 95% in MPA**	-	452
Tinuvin® 326	Benzotriazole (BTZ)	Solid	138–142	316
Tinuvin® 384-2	Benzotriazole (BTZ)	Liquid 95% in MPA**	-	452
Tinuvin® 900	Benzotriazole (BTZ)	Solid	138–142	448
Tinuvin® 928	Benzotriazole (BTZ)	Solid	109–113	442
Tinuvin® 1130	Benzotriazole (BTZ)	Liquid	-	Mixture
Tinuvin® Carboprotect®	Benzotriazole (BTZ)	Solid	132–136	560
Tinuvin® 460	Trisresorcinyltriazine (TRT), high photo- and thermal-permanence	Solid	97–101	630
Tinuvin® 477	Trisresorcinyltriazine (TRT), high photo- and thermal-permanence	Liquid 80% in MPA**	-	Mixture
Tinuvin® 400	Hydroxyphenyltriazine (HPT), best photo- and thermal-permanence, no interaction with amines, strong alkali, or any metal catalysts	Liquid 85% in 1-methoxypropan-2-ol	-	647
Tinuvin® 405	Hydroxyphenyltriazine (HPT), best photo- and thermal-permanence, no interaction with amines, strong alkali, or any metal catalysts	Solid	73–77	584
Tinuvin® 479	Hydroxyphenyltriazine (HPT), best photo- and thermal-permanence, no interaction with amines, strong alkali, or any metal catalysts	Solid	39–43*	678

* Tg (°C)
** 2-methoxy-1-propyl acetate

Light stabilizers

Technical information, features and benefits

Automotive and transportation	Industrial	Furniture and flooring	Architectural	Key properties and applications
●	●	●	●	Blue shifted UVA for water-based high performance applications; excellent spectral coverage in combination with Tinuvin® 479-DW
	●	●	●	Red shifted UVA for high performance water-based wood coatings
●	●		●	UVA with extremely high extinction coefficient for highest durability requirements in water-based clear coats; specifically suited for thin film applications
●	●	●	●	UVA for medium performance solvent-based and water-based coatings (may require addition of cosolvent)
	●	●	●	Multi-purpose UVA for medium to high durability requirements for water-based formulations
	●	●	●	UVA for moderate durability requirements; mass stabilization of gel coats
	●	●	●	UVA for medium performance solvent-based coatings
	●	●	●	Chlorinated red shifted UVA; allows <1% transmittance up to 370nm; limited solubility in organic solvents
●	●			Multi-purpose UVA for medium to high durability requirements; minimum color impact in refinish clear coat applications
●	●			UVA for medium to high durability requirements in powder and coil coating applications; limited solubility in organic solvents
●	●			UVA for medium to high durability requirements in powder and coil coating applications; excellent solubility in organic solvents
●	●	●	●	UVA for medium performance solvent-based and water-based coatings (may require addition of cosolvent)
●	●			Very red shifted UVA for protection of aromatic epoxy systems; especially recommended for carbon or glass fiber reinforced composites; allows <1% transmittance up to 420nm
	●			Red shifted UVA with extremely high extinction coefficient; allows ~1% transmittance up to 370nm; limited solubility in organic solvents
	●	●	●	Red shifted UVA with high extinction coefficient; for high durability wood coating requirements; allows <1% transmittance up to 370nm
●	●	●	●	Blue shifted UVA for high durability requirements in clear coat applications including UV curing systems; excellent spectral coverage in combination with Tinuvin® 479
●	●			Blue shifted UVA for high durability requirements in powder clear coats; excellent spectral coverage in combination with Tinuvin® 479
●	●	●	●	UVA with extremely high extinction coefficient; for highest durability requirements in clear coats, powder coatings or UV curing systems; specifically suited for thin film applications

Product name	Chemistry	Physical form	Melting point (°C)	Molecular weight (g / mol)
Basic HALS for water-based coatings				
Tinuvin® 292	N-alkyl HALS	Liquid	-	509 / 370
Tinuvin® 292 HP	N-alkyl HALS	Liquid	-	509 / 370
Non-basic HALS for water-based coatings				
Tinuvin® 123-DW (N)	N-OR HALS	Liquid 30% active	-	-
Basic HALS for solvent-based coatings				
Tinuvin® 111 FDL	N-alkyl / N-R HALS	Solid	-	-
Tinuvin® 292	N-alkyl HALS	Liquid	-	509 / 370
Tinuvin® 292 HP	N-alkyl HALS	Liquid	-	509 / 370
Tinuvin® 770 DF (ED)	N-H HALS	Solid	81–85	480
Non-basic HALS for solvent-based coatings				
Tinuvin® 123	N-OR HALS	Liquid	-	737
Tinuvin® 152	N-OR HALS	Solid	72–76	757
Tinuvin® 249	Non-basic HALS	Liquid	-	482
Tinuvin® 622 SF	Oligomeric N-R HALS	Solid	-	3,100–4,000
Tinuvin® 5100	N-OR HALS	Liquid	-	737
HALS for wood color protection				
Lignostab® 1198	Lignin stabilizer	Solid	66–70	172

* Tg (°C)
** 2-methoxy-1-propyl acetate

Light stabilizers

Technical information, features and benefits

Automotive and transportation	Industrial	Furniture and flooring	Architectural	Key properties and applications
●	●	●	●	Multi-purpose basic HALS for various applications; use in water-based coatings may require addition of cosolvents; may interact with sensitive dispersion binders
●				Multi-purpose basic HALS for color sensitive applications such as refinish coatings; use in water-based coatings may require addition of cosolvents; may interact with sensitive dispersion binders
●	●	●	●	Non-basic HALS for water-based formulations; no interaction with sensitive dispersions
	●			HALS blend for powder coating applications with triboelectric charging activity
●	●	●	●	Multi-purpose basic HALS for various applications; use in water-based coatings may require addition of cosolvents; may interact with sensitive dispersion binders
●				Multi-purpose basic HALS for color sensitive applications such as refinish coatings; use in water-based coatings may require addition of cosolvents; may interact with sensitive dispersion binders
	●			HALS suitable for powder coating applications
●	●	●		Non-basic HALS for acid catalyzed and oxidative curing coatings; improves yellowing resistance in direct-fired gas ovens
●	●			Non-migrating and reactable low-basic HALS for polar solvent-based coatings over plastic substrates (e.g. polycarbonate, ABS substrate)
●	●	●		Non-basic HALS; no exudation from solvent-based polar coatings; low viscosity and very low inherent color; use in water-based coatings may require addition of cosolvents
	●			Low-basic HALS for powder coating applications with very good antioxidant properties; limited solubility in organic solvents
	●	●	●	Non-basic HALS for oxidative curing coatings
		●	●	Lignin stabilizer for wood impregnation

Product name	Chemistry	Physical form	Melting point (°C)	Molecular weight (g / mol)
Light stabilizer blends				
Tinuvin® 111 FDL	N-alkyl / N-R HALS	Solid	-	-
Tinuvin® 5050	BTZ / N-alkyl HALS	Liquid	-	Mixture
Tinuvin® 5060	BTZ / N-OR HALS	Liquid	-	Mixture
Tinuvin® 5151	BTZ / N-alkyl HALS	Liquid	-	Mixture
Tinuvin® 5248	HPT / N-alkyl HALS	Liquid	-	Mixture
Tinuvin® 5251	HPT / N-alkyl HALS	Liquid	-	Mixture
Tinuvin® 5333-DW (N)	UVA / HALS	Liquid 40% active	-	-
Tinuvin® B 75 (ED)	AO / N-alkyl HALS / UVA	Liquid	-	Mixture

* Tg (°C)
** 2-methoxy-1-propyl acetate

Light stabilizers

Technical information, features and benefits

Automotive and transportation	Industrial	Furniture and flooring	Architectural	Key properties and applications
	●			HALS blend for powder coating applications with triboelectric charging activity
	●	●	●	UVA / HALS blend for solvent-based applications
	●	●	●	UVA / non-basic HALS blend for solvent-based oxidative curing coatings
●	●	●	●	UVA / HALS blend for solvent-based coatings; use in water-based coatings may require addition of cosolvent
●	●		●	UVA / HALS blend for high performance solvent-based applications
●	●		●	UVA / HALS blend for high performance solvent-based applications
	●	●	●	High performance UVA / non-basic HALS blend for water-based applications with broad spectral coverage
		●		Stabilizer blend for furniture and flooring applications

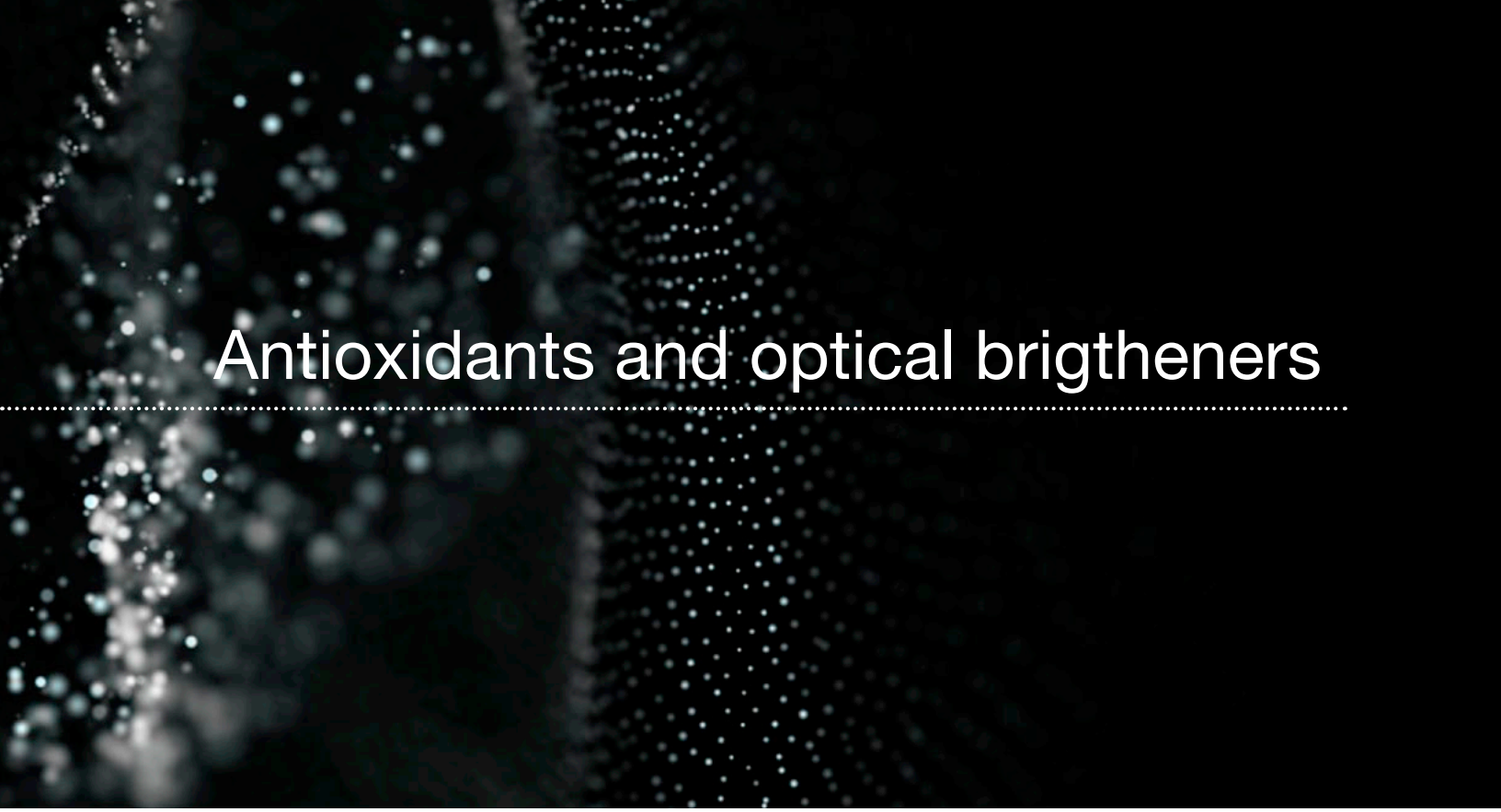
Key benefits for your formulations

- Effective protection from thermally induced oxidation during curing and baking
- Lower coat weights without compromising stability
- Easy stir-in processing
- Dedicated innovation labs
- Solutions for aqueous and solvent-based formulations
- Sustainable products
- Qualification for eco-labeling

Oxidation can be a major issue, especially in coatings subject to heat exposure during processing, curing and baking at high temperatures. As in the area of light stabilizers, BASF has played a pioneering role in developing effective primary and secondary antioxidant (AO) technologies, and continues to offer an industry-leading portfolio of effective solutions. This diverse range of easy-to-process thermal and oxidative stabilizers for water-based, solvent-based and powder coating systems enables us to address virtually any issue you may encounter in your formulations.

With our Irganox® and Irgafos® antioxidants, coatings are effectively protected against thermally induced polymer oxidation during production and application as well as in their service life. Special highlights include low-viscosity, easy stir-in solutions like Irganox® 245-DW for aqueous systems.

The Irganox® lineup is made up of sterically hindered phenols and thioethers as well as blends of different AO technologies. Our Irgafos® solutions are secondary AO process stabilizers using phosphite chemistry.



Antioxidants and optical brigtheners

Complementing our antioxidant range, we offer the Tinopal® optical brightener solutions for water- and solvent-based systems. These fluorescent whitening agents brighten or mask yellowing and can also be used as a marker where fluorescence is used to detect film voids or for registration and identification purposes.

With labs dedicated to innovation in antioxidants and light stabilizers located at our main headquarters in Germany as well as in Switzerland, we are well equipped to support you in addressing any oxidation issues you face. Whatever type of system you are developing, you can count on us for solutions that safeguard the integrity of your coating during processing and beyond. We can also provide invaluable compliance support, thanks to our deep understanding and close monitoring of regulatory developments.

At BASF Performance and Formulation Additives, you will find experts with in-depth knowledge of your industry. We will work with you to find the ideal antioxidants and optical brighteners for your formulations and even co-innovate to develop novel solutions. For more information, you can also look here: www.basf.com/additives

Antioxidants and optical brighteners

Technical information, features and benefits

Product name	Chemistry	Physical form	Melting point (°C)	Molecular weight (g/mol)
Hindered phenolic (primary antioxidant)				
Irganox® 245 (ED)	Phenol	Solid	76–79	587
Irganox® 245-DW	Phenol	Liquid 40% active	-	587
Irganox® 1010	Phenol	Solid	110–125	1,178
Irganox® 1035	Phenol	Solid	63–78	643
Irganox® 1076	Phenol	Solid	50–55	531
Irganox® 1135	Phenol	Liquid	-	390
Irganox® 1425	Calcium phosphonate	Solid	>260	695
Phosphite (secondary antioxidant)				
Irgafos® 126 (ED)	Phosphite	Solid	160–175	604
Irgafos® 168	Phosphite	Solid	183–186	647
Thioether (secondary antioxidant)				
Irganox® PS 802	Thioether	Solid	50–55	683
Antioxidant blend				
Irganox® B 225 (ED)	Phenol/phosphite	Solid	>100	-
Irganox® B 900	Phenol/phosphite	Solid	59–61	-
Optical brightener				
Tinopal® NFW LIQ	Biphenyl-stilbene	Liquid 20% active	-	563
Tinopal® OB CO	Benzoxazole	Solid	196–203	431
Tinopal® SFP	Triazine-stilbene	Solid	-	1,305

Automotive and transportation	Industrial	Furniture and flooring	Architectural	Key properties and applications
●	●			AO for solvent-based and powder-coating applications
	●			AO for water-based coating applications
●	●			AO for solvent-based and powder-coating applications; not to be used in direct fired gas ovens
	●			AO for solvent-based coating applications
●	●			AO for solvent-based and powder-coating applications
●	●			AO for all solvent-based applications
	●			Stabilizer for synthesis of polyester resins
●	●			AO for solvent-based and powder-coating applications; prevents yellowing in direct gas fired ovens
●	●			AO for solvent-based and powder-coating applications; prevents yellowing in direct gas fired ovens
	●			Thiosynergist suitable when high-temperature aging is required; needs combination with primary AO
	●			AO blend for powder-coating applications
●	●			AO blend for powder-coating applications
	●		●	Liquid optical brightener for water-based white and pastel-tone paints, clear coats, overprint varnishes
	●		●	Solid optical brightener for solventborne white and pastel-tone paints, clear coats, overprint varnishes
	●		●	Water-soluble optical brightener for photographic color developer baths or as fluorescent tracers

Dispersing agents

Our portfolio of dispersing agents for paints, coatings and ink formulations contains solutions for aqueous, solvent-based, high solids, 100% solids systems and universal pigment concentrates. These polymeric, oligomeric and surfactant-based technologies are known for outstanding color development, viscosity reduction, enhanced gloss and stability as well as suitability for low-VOC and APEO-free systems.

Drawing on in-depth knowledge of pigment chemistry, surface treatments and formulations, our experts will work with you to find precisely the right dispersants to overcome challenges and achieve the properties you want in your coatings.

A prime example of the advanced chemistry behind our dispersants is the award-winning controlled free-radical polymerization (CFRP) technology. It allows the creation of highly efficient and widely compatible block-copolymer dispersants that offer optimal rheology and improved coloristics.

Efka® PX is highly effective in solvent-based systems, while Dispex® Ultra PX is ideal for aqueous applications. Both polymers are characterized by a highly defined architecture, improved colorant stability and broad versatility.

Your universal dispersing agents toolbox

For coatings that have to comply with major ecolabel standards, we have developed a unique dispersant formulation toolbox. This set of dispersants enables you to formulate hazard label-free universal colorants, which are used to tint both aqueous and solvent-based architectural paints.

Talk to your partners at BASF Performance and Formulation Additives for support in formulating and developing coatings – they can give you guide formulas for all dispersing additives in conjunction with a variety of pigments. You can also find out more about our dispersing agents here: www.basf.com/additives

Key benefits for your formulations

- Shorter dispersion time
- Enhanced gloss
- Increased color-strength and hiding power
- Reduced viscosities
- Improved tone development
- Prevention of flooding and floating
- Avoidance of flocculation
- Prevention of settling of pigments and fillers

Product range for water-based systems	Chemistry	Characteristics
Dispex® Ultra FA	Low molecular weight	Broad range of surfactant-type dispersants for water-based systems, broad applicability, excellent compatibility, improvement of color acceptance
Dispex® Ultra FA	Oligomeric (FAME)	Versatile, oligomeric dispersants allow for universal colorants and improvement of color acceptance
Dispex® AA Dispex® CX	High molecular weight	Established anionic dispersants for decorative paints and coatings, excellent in stabilizing inorganic pigments and fillers, high pigment and filler loading possible, improved wet-scrub resistance with hydrophobic types
Dispex® Ultra PA Dispex® Ultra PX	Advanced high molecular weight	Broad range of high-performance dispersing agents for water-based systems, excellent stabilization and color development, low pigment concentrate viscosities

Product range for solvent-based systems (incl. 100% systems)	Chemistry	Characteristics
Efka® FA	Low molecular weight	Range of surfactant-type dispersants for solvent-based systems, broad applicability, excellent anti-settling properties
Dispex® Ultra FA Efka® FA	Oligomeric (FAME)	Versatile, oligomeric dispersants allow for universal colorants and improvement of color acceptance
Efka® PA Efka® PU	High molecular weight	Established range of high molecular-weight dispersants for solvent-based systems, excellent viscosity reduction and stabilization
Efka® PX	Advanced high molecular weight	Versatile range of high-performance dispersing agents for solvent-based systems, excellent pigment stabilization and color development, low pigment concentrate viscosities

Dispersing agents

Technical information, features and benefits

Product name	Description	Solids (%)	Amine number (mg KOH/g)	Acid value (mg KOH/g)	VOC content (%)	Recommended for low-VOC systems*
Anionic dispersing agents based on polyacrylic acid						
Dispex® AA 4030	Ammonium polyacrylate polymer	30	-	-	<0.1	●
Dispex® AA 4040	Ammonium polyacrylate (co-)polymer	45	-	-	<0.1	●
Dispex® AA 4135 NA	Sodium polyacrylate	35			<0.1	●
Dispex® AA 4140	Sodium polyacrylate	43	-	-	<0.1	●
Dispex® AA 4144 EB	Sodium polyacrylate	35	-	-	<0.3	●
Dispex® AA 4935	Powdered sodium polyacrylate polymer	>91	-	-	<0.1	●
Dispex® CX 4230	Ammonium polyacrylate copolymer	28	-	-	<2.5	
Dispex® CX 4240	Ammonium polyacrylate (co-)polymer	40	-	-	<0.1	●
Dispex® CX 4320	Sodium salt of carboxylic acid copolymer	25	-	-	<0.1	●
Dispex® CX 4340	Sodium polyacrylate (co-)polymer	40	-	-	<0.1	●
Dispex® CX 4910	Powdered sodium polyacrylate (co-)polymer	>99	-	-	<0.1	●
Low molecular weight dispersing agents mainly designed for water-based systems, surfactant-like types						
Dispex® Ultra FA 4404	Chelating agent	50	-	-	<0.1	●
Dispex® Ultra FA 4416	Mixture of surfactants	75	-	-	<2	
Dispex® Ultra FA 4420	Fatty acid modified emulsifier (FAME)	100	35	22	<1	●
Dispex® Ultra FA 4425	Fatty acid modified emulsifier (FAME)	100	47	46	<1	●
Dispex® Ultra FA 4431	Aliphatic polyether with acidic groups	100	-	100	<0.1	●
Dispex® Ultra FA 4437	Modified natural oil	>99	-	-	<0.1	●
Dispex® Ultra FA 4480	Modified fatty alcohol ethoxylate	80	-	-	<0.1	●
Dispex® Ultra FA 4483	Phosphoric acid ester	30	-	25	<0.1	●

Recommended for			Features and benefits
Water-based systems	Solvent-based systems	Solvent-free systems	
●			Standard dispersing agent for inorganic fillers and pigments
●			Standard dispersing agent for inorganic fillers and pigments; low polydispersity leading to efficient dispersing properties and liquefying effect
●			Standard dispersing agent for inorganic fillers and pigments
●			Standard dispersing agent for inorganic fillers and pigments; low polydispersity leading to efficient dispersing properties and liquefying effect
●			Standard dispersing agent for inorganic fillers and pigments; low polydispersity leading to most efficient dispersing properties and liquefying effect
●			Polymeric dispersing agent based on acrylic acid sodium salt in powder form
●			Medium-hydrophobic dispersing agent for interior and exterior architectural coatings; good liquefying effect
●			For inorganic pigments and extenders; more hydrophobic than Dispex® AA 4040
●			Excellent dispersing performance; improves gloss; improves wet-scrub resistance; improves blocking resistance; excellent ZnO-compatibility
●			For inorganic pigments and extenders; more hydrophobic than Dispex® AA 4140
●			Powder product with excellent properties; can be used in dry preparations
●			Anionic dispersing agent; excellent liquefying effect in inorganic pigment slurry formulations
●			Wetting and dispersing agent for aqueous formulations; suitable for organic and inorganic pigments and pigment concentrates
●	●	●	Universal dispersing agent for inorganic fillers and pigments; also suitable as codispersing agent with high-molecular-weight dispersing agents; will improve compatibility and color acceptance of universal colorants in base paints
●	●	●	Dispersing agent for universal colorants for decorative tinting systems; makes colorants with excellent compatibility and stability
●	●	●	Dispersing agent for inorganic pigments and fillers for decorative and industrial coatings
●			Non-ionic wetting and dispersing agent for aqueous formulations; especially designed for organic pigment concentrates
●			Universal, non-ionic wetting and dispersing agent; powerful alternative to APEOs; improves gloss development, color intensity and color acceptance
●			Universal, anionic wetting and dispersing agent; especially suitable for inorganic pigment concentrates

* Recommended for low-VOC paints and coatings if VOC content <1%.
Measurements done according to the EU Ecolabel 2014/312/EU for indoor and outdoor paints and varnishes.
For products with a VOC level above 15% the value is based on calculation according to recipe.

Dispersing agents

Technical information, features and benefits

Product name	Description	Solids (%)	Amine number (mg KOH/g)	Acid value (mg KOH/g)	VOC content (%)	Recommended for low-VOC systems*
Low-molecular-weight dispersing agents mainly designed for solvent-based systems, conventional types						
Efka® FA 4600	Surface active anionic compounds	35.5	-	-	27.5	
Efka® FA 4601	Blend of fatty alcohol sulfates	47	-	-	16	
Efka® FA 4608	Hydroxyl functional unsaturated modified carboxylic acid	100	85	-	<1	●
Efka® FA 4609	Solution of a copolymer with acidic groups	52	-	50	48	
Efka® FA 4611	Copolymer with acidic groups	100	-	129	<2.5	●
Efka® FA 4620	Acidic polyether	100	-	290	<2.5	●
Efka® FA 4642	Unsaturated polyamide and acid ester salts	>97	20	65	<2.5	
Efka® FA 4644	Unsaturated polyamide and acid ester salts	52	16	25	48	
Efka® FA 4654	Carboxylic acid salts	52	51	53	48	
Efka® FA 4663	Salts of a polycarboxylic acid	50	56	56	50	
Efka® FA 4665	Unsaturated carboxylic acid, combined with a compatible organically modified polysiloxane	52	-	120	48	
Efka® FA 4666	Unsaturated carboxylic acid	52	-	140	48	
Efka® FA 4671	Alkylol ammonium salt of carboxylic acid	53	100	90	<1	●
High molecular weight dispersing agents						
Dispex® Ultra PA 4510	Modified polyacrylate polymer	50	45	20	50	
Dispex® Ultra PA 4530	Modified polyacrylate polymer	50	26	35	50	
Dispex® Ultra PA 4550	Modified polyacrylate polymer	50	27	-	<1	●
Dispex® Ultra PA 4560	Modified polyacrylate polymer	40	25	-	<1	●
Dispex® Ultra PA 4590	Modified polyacrylate polymer	40	40	6	<20	
Dispex® Ultra PX 4275	Copolymer	37.5	-	-	<0.5	●
Dispex® Ultra PX 4290	Copolymer	40	-	~9	<0.1	●

Recommended for			Features and benefits
Water-based systems	Solvent-based systems	Solvent-free systems	
	●		Anti-settling agent for non-aqueous systems; good anti-settling properties in polar systems
	●		Anti-settling agent for non-aqueous systems; good anti-settling properties for medium-polar systems
	●		Solvent-based decorative systems including low to polar solvent containing systems
	●	●	Copolymeric wetting and dispersing agent; strong reduction of mill base viscosity; high pigment and filler loading; increased hiding power
	●	●	Solvent-free wetting and dispersing agent; strong reduction of mill base viscosity; high pigment and filler loading; increased hiding power
●	●	●	Dispersing agent for inorganic pigments; suitable for all types of industrial and decorative coatings, especially TiO_2; dispersion of extenders and fillers in composite formulations (SMC+BMC)
	●	●	Solvent-based and solvent-free systems; also effective for gelling bentonite concentrates
	●	●	Solvent-based and solvent-free systems; also effective for gelling bentonite concentrates
	●		Low-polar to medium-polar systems; also for bentonite gels
	●	●	Oligomeric wetting and dispersing agent for solvent-based formulations; provides excellent anti-settling and anti-floating properties
	●	●	Polyurethane systems and stoving enamels; also for orientation of aluminum pigments in CAB automotive base coats
	●	●	Polyurethane systems and stoving enamels; strong anti-settling effect
●	●		Water- and solvent-based systems; strong anti-settling effects in wash primers
●	●		Water-based industrial coatings; solvent-based colorants
●	●		Water-based industrial coatings; solvent-based colorants including NC lacquers
●			Water-based industrial and automotive coatings; pH-independent; broad compatibility; suitable for making resin-containing and resin-free pigment concentrates
●			Water-based decorative and industrial coatings; pH-independent; broad compatibility; suitable for making resin-containing and resin-free pigment concentrates
●	●		Water-based industrial and decorative coatings where cost-effective performance is vital; suited for making universal colorants with good compatibility
●			Water-based wetting and dispersing agent; specifically designed for semi-gloss and high-gloss paint formulations and pigment concentrates
●			High-performance wetting and dispersing agent; suitable for inorganic and organic pigments and fillers in aqueous coating systems, printing inks and adhesives; excellent stabilizing characteristics allow high levels of gloss and outstanding color strength; excellent viscosity reduction also allows higher pigment loadings while maintaining excellent flow characteristics

* Recommended for low-VOC paints and coatings if VOC content <1%.
Measurements done according to the EU Ecolabel 2014/312/EU for indoor and outdoor paints and varnishes.
For products with a VOC level above 15% the value is based on calculation according to recipe.

Dispersing agents

Technical information, features and benefits

Product name	Description	Solids (%)	Amine number (mg KOH/g)	Acid value (mg KOH/g)	VOC content (%)	Recommended for low-VOC systems*
High molecular weight dispersing agents						
Dispex® Ultra PX 4525	Blend of amine- and acid-functional polymers	92	16	33	<1	●
Dispex® Ultra PX 4575	Acrylic block copolymer made by controlled free radical polymerization (CFRP)	40	32	-	<0.1	●
Dispex® Ultra PX 4585	Acrylic block copolymer made by controlled free radical polymerization (CFRP)	50	20	-	<0.1	●
Efka® PA 4400	Modified polyacrylate polymer	40	42	-	60	
Efka® PA 4401	Modified polyacrylate polymer	50	50	-	50	
Efka® PA 4403	Modified polyacrylate polymer	55	35	-	45	
Efka® PA 4404	Modified polyacrylate polymer	40	42	-	60	
Efka® PA 4450	Carboxy-functional polymer	50	-	110	50	
Efka® PU 4009	Modified polyurethane polymer	60	9	13	40	
Efka® PU 4010	Modified polyurethane polymer	51	6	12	49	
Efka® PU 4015	Modified polyurethane polymer	50	10	-	50	
Efka® PU 4020	Modified polyurethane polymer	65	9	-	35	
Efka® PU 4046	Modified polyurethane polymer	40	19	-	60	
Efka® PU 4047	Modified polyurethane polymer	35	17	-	65	
Efka® PU 4050	Modified polyurethane polymer	45	14	-	55	
Efka® PU 4061	Modified polyurethane polymer	30	8	-	70	
Efka® PU 4063	Modified polyurethane polymer	45	10	-	55	
Efka® PU 4080	Modified polyurethane polymer	30	4	-	70	
Efka® PX 4300	Acrylic block copolymer made by controlled free radical polymerization (CFRP)	80	56	-	20	
Efka® PX 4310	Acrylic block copolymer made by controlled free radical polymerization (CFRP)	50	19	-	50	
Efka® PX 4320	Acrylic block copolymer made by controlled free radical polymerization (CFRP)	50	28	-	50	
Efka® PX 4330	Acrylic block copolymer made by controlled free radical polymerization (CFRP)	70	28	-	30	
Efka® PX 4340	Acrylic block copolymer made by controlled free radical polymerization (CFRP)	55	4	-	45	

Recommended for			Features and benefits
Water-based systems	Solvent-based systems	Solvent-free systems	
●			Universal wetting and dispersing agent; improves gloss development, color intensity and color acceptance
●			VOC-free dispersing agent for water-based systems with benchmark performance in inorganic pigments; excellent overall performance for organic pigments; broad compatibility towards different resin systems; designed for colorants but well suited for grinds into primers, gloss and semi gloss-paints
●			High-end water-based coatings, industrial and automotive; broad compatibility with different binder systems; pH-independent; suitable for making resin-free pigment concentrates
	●		Specifically used in coil coating applications and polyester / melamine stoving enamels
	●		Industrial coatings, transportation topcoats; excellent (viscosity depression) for industrial colorants (pigment pastes) in combination with grinding resins such as Laropal® A81
	●		For industrial colorants (pigment pastes) in combination with grinding resins such as Laropal® A 81
	●		Specially used in coil coating applications and polyester / melamine stoving enamels; reduced residual monomer content
	●	●	Polymeric dispersing agent for organic and inorganic pigments in non-aqueous systems; especially designed for high-quality coatings and pigment concentrates
	●		General industrial coatings where cost-efficiency is vital
	●	●	General industrial coatings, wood coatings for stabilization of TiO_2 and matting agents
	●		Solvent-based industrial coatings, low viscosity in high-pigmented systems
	●		Aromatic-free dispersing agent for solvent-based industrial coatings and decorative coatings and colorants
	●	●	For general industrial coatings
	●	●	High-quality industrial finishes including automotive OEM and refinish
	●	●	High-quality industrial finishes including automotive OEM and refinish, as well as resin-containing pigment concentrates
	●		High-quality industrial, automotive and refinish applications; strong viscosity-depressing properties
	●	●	Polymeric dispersing agent for the deflocculation of inorganic and organic pigments in high-quality solvent-based pigment pastes
	●		Strong viscosity-depressing properties in high-end applications such as automotive, OEM and coil coatings
	●		Solvent-based industrial coatings including medium- and long-oil alkyds
	●		High-quality solvent-based industrial and automotive coatings; setting new standards as a dispersing agent for resin-free pigment pastes for coil coatings and dispersing agent for carbon blacks giving extremely high jetness
	●		High-quality solvent-based industrial coatings, being less polar compared to Efka® PX 4310; demonstrates better suitability for thermoplastic acrylates
	●		Solvent-based industrial and decorative coatings; excellent (broad compatibility) for industrial colorants (pigment pastes) in combination with grinding resins such as Laropal® A81
	●		Solvent-based high-end applications, industrial, automotive systems; good performance in CAB-modified systems but also with 2-pack PUR and 2-pack epoxies

* Recommended for low-VOC paints and coatings if VOC content <1%.
Measurements done according to the EU Ecolabel 2014/312/EU for indoor and outdoor paints and varnishes.
For products with a VOC level above 15% the value is based on calculation according to recipe.

Dispersing agents

Technical information, features and benefits

Product name	Description	Solids (%)	Amine number (mg KOH/g)	Acid value (mg KOH/g)	VOC content (%)	Recommended for low-VOC systems*
High molecular weight dispersing agents						
Efka® PX 4350	Acrylic block copolymer made by controlled free radical polymerization (CFRP)	51	12	-	49	
Efka® PX 4701	Acrylic block copolymer made by controlled free radical polymerization (CFRP)	100	40	-	<2.5	●
Efka® PX 4703	Acrylic block copolymer made by controlled free radical polymerization (CFRP)	100	56	-	<2.5	●
Efka® PX 4732	Advanced polymer	>97	25	-	<2.5	
Efka® PX 4733	Advanced polymer	100	25	-	<2.5	●
Efka® PX 4753	Advanced polymer	51	12	-	49	
Efka® PX 4780	Advanced polymer	100	20	-	<2.5	●
Efka® PX 4785	Advanced polymer	50	10	-	50	
Efka® PX 4787	Advanced polymer	70	15	-	30	
Universal dispersing resins for resin-containing pigment concentrates						
Dispex® Ultra PA 4503	Fatty-acid-modified polymer	75	-	-	<1	●

Recommended for			Features and benefits
Water-based systems	Solvent-based systems	Solvent-free systems	
	●	●	Dispersing agent for ß- and ε-blue Cu-phthalocyanine pigments and pigment green; high gloss due to excellent compatibility; for high-quality solvent-based industrial and automotive coatings
	●	●	Dispersing agent for high-performance pigments, especially for energy-curable systems and UV inkjets; also for solvent-based applications, both mild-solvent and strong-solvent
	●	●	Solvent-free dispersing agent for UV-curable and mild-solvent ink-jet systems; excellently suited for UV-curable ink systems including UV-curable flexographic-, litho- and screen inks; well suited for solvent-based resin free (RFPC) and resin containing pigment concentrates (RCPC) in a wide range of applications
	●	●	Dispersing agent for high-performance pigments especially for energy-curable systems; also for solvent-based applications both mild-solvent and strong-solvent; peak performance in mild-solvent systems
	●	●	Tin-free dispersing agent for high-performance pigments especially for energy-curable systems such as UV-flexo or UV inkjets; also for solvent-based applications both mild-solvent and strong-solvent; peak performance in mild-solvent systems
	●		Dispersing agent for high-quality solvent-based industrial and automotive coatings; suitable for high-performance organic pigments including α-blue Cu-phthalocyanine pigments; high-gloss due to excellent compatibility; tin-free
	●	●	Highly efficient dispersing agent for organic pigments and carbon-blacks; creates lower pigment paste viscosities at very low levels of addition; suitable for industrial and automotive coatings especially where a resin-matrix reactive dispersant is desired
	●		Highly efficient dispersing agent for organic pigments and carbon-blacks; creates lower pigment paste viscosities at very low levels of addition; suitable for industrial and automotive coatings especially where a resin-matrix reactive dispersant is desired
	●		Highly efficient dispersing agent for organic pigments and carbon-blacks; creates lower pigment paste viscosities at very low levels of addition; suitable for industrial and automotive coatings especially where a resin-matrix reactive dispersant is desired
●			Self-emulsifying polyester for water-based decorative pigment concentrates; also improves colorant acceptance in solvent-based alkyd systems

* Recommended for low-VOC paints and coatings if VOC content <1%.
Measurements done according to the EU Ecolabel 2014/312/EU for indoor and outdoor paints and varnishes.
For products with a VOC level above 15% the value is based on calculation according to recipe.

Dispersing agents

Product selector

Product name	Description	Water-based coatings							
		Architectural							
		High PVC paints	Matt / interior	Silk / semi-gloss	Gloss	Wood paints and stains	Exterior and elastic paints plasters	Colorants	Low-VOC
Anionic dispersing agents based on polyacrylic acid									
Dispex® AA 4030	Ammonium polyacrylate polymer		□	■	□	□	■		■
Dispex® AA 4040	Ammonium polyacrylate (co-)polymer	□	□	■	□	□	■		■
Dispex® AA 4135 NA	Sodium polyacrylate	■	■	■	□	■	■		■
Dispex® AA 4140	Sodium polyacrylate	■	■	■	■	■	■		■
Dispex® AA 4144 EB	Sodium polyacrylate	■	■	■	■	■			■
Dispex® AA 4935	Powdered sodium polyacrylate polymer	■	■	■	■	■			■
Dispex® CX 4230	Ammonium polyacrylate copolymer	■	■	■	■		■		■
Dispex® CX 4240	Ammonium polyacrylate (co-)polymer		□	■		□	■		■
Dispex® CX 4320	Sodium salt of carboxylic acid copolymer	■	■	■	■	■	■		■
Dispex® CX 4340	Sodium polyacrylate (co-)polymer		■	■		□	■		■
Dispex® CX 4910	Powdered sodium polyacrylate (co-)polymer								
Low molecular weight dispersing agents mainly designed for water-based systems, surfactant-like types									
Dispex® Ultra FA 4404	Chelating agent	□	■	■	■	■	■	□	■
Dispex® Ultra FA 4416	Mixture of surfactants			■	■	■			
Dispex® Ultra FA 4420	Fatty acid modified emulsifier (FAME)							■	■
Dispex® Ultra FA 4425	Fatty acid modified emulsifier (FAME)							■	■
Dispex® Ultra FA 4431	Aliphatic polyether with acidic groups							■	■
Dispex® Ultra FA 4437	Modified natural oil							■	■
Dispex® Ultra FA 4480	Modified fatty alcohol ethoxylate	□	■	■	■			■	■
Dispex® Ultra FA 4483	Phosphoric acid ester	□	■	■	■	□	■	■	■

The data in the product selector table is a first recommendation. Suitability of a product should always be checked in the actual paint, coating or ink.

Industrial and automotive							100% systems				Solvent-based coatings										
Air-drying coatings																					
Alkyd emulsions	Polyurethane emulsions	Styrene acrylic/ acrylic emulsions	Baking coatings/enamels	2-pack PUR coatings	2-pack epoxy coatings	Emulsions polymerization/ latex handling	Powder coatings	UV-curable coatings	2-pack epoxy coatings/ 2-pack PUR coatings	Unsaturated polyester (UPE)	NC coatings	Alkyds, long oil	Alkyds, medium oil	High-solids industrial systems	Polyacrylates, polyurethane	PVC/Vinyl	2-pack PUR coatings	2-pack epoxy coatings	Baking/stoving enamels	Coil coating
■	■	■	■																		
■	■	■	■	■	■																
■	■	■	■	■	■			■	■	■	■	■	■								
■	■	■	■	■	■			■	■	■	■	■	■								
■	■	■	■	■	■			■	■	■	■	■	■		■		■	■			
■	■	■	■	■	■				□												
■	■	■	■	■	■																
■	■	■	■	■	■																

■ Excellent
□ Good

Dispersing agents

Product selector

Product name	Description	Water-based coatings							
		Architectural							
		High PVC paints	Matt/interior	Silk/semi-gloss	Gloss	Wood paints and stains	Exterior and elastic paints plasters	Colorants	Low-VOC
Low-molecular-weight dispersing agents mainly designed for solvent-based systems, conventional types									
Efka® FA 4600	Surface active anionic compounds								
Efka® FA 4601	Blend of fatty alcohol sulfates								
Efka® FA 4608	Hydroxyl functional unsaturated modified carboxylic acid								
Efka® FA 4609	Solution of a copolymer with acidic groups								
Efka® FA 4611	Copolymer with acidic groups								
Efka® FA 4620	Acidic polyether			■	■		■		
Efka® FA 4642	Unsaturated polyamide and acid ester salts								
Efka® FA 4644	Unsaturated polyamide and acid ester salts								
Efka® FA 4654	Carboxylic acid salts								
Efka® FA 4663	Salts of a polycarboxylic acid								
Efka® FA 4665	Unsaturated carboxylic acid, combined with a compatible organically modified polysiloxane								
Efka® FA 4666	Unsaturated carboxylic acid								
Efka® FA 4671	Alkylol ammonium salt of carboxylic acid			■	■		■		
High molecular weight dispersing agents									
Dispex® Ultra PA 4510	Modified polyacrylate polymer								
Dispex® Ultra PA 4530	Modified polyacrylate polymer								
Dispex® Ultra PA 4550	Modified polyacrylate polymer			■	■	■		■	■
Dispex® Ultra PA 4560	Modified polyacrylate polymer			■	■	■		■	■
Dispex® Ultra PA 4590	Modified polyacrylate polymer			■	■	■		■	
Dispex® Ultra PX 4275	Copolymer			■	■	■		■	■

The data in the product selector table is a first recommendation. Suitability of a product should always be checked in the actual paint, coating or ink.

Industrial and automotive							100% systems				Solvent-based coatings									
Air-drying coatings																				
Alkyd emulsions	Polyurethane emulsions	Styrene acrylic/ acrylic emulsions	Baking coatings/enamels	2-pack PUR coatings	2-pack epoxy coatings	Emulsions polymerization/ latex handling	Powder coatings	UV-curable coatings	2-pack epoxy coatings/ 2-pack PUR coatings	Unsaturated polyester (UPE)	NC coatings	Alkyds, long oil	Alkyds, medium oil	High-solids industrial systems	Polyacrylates, polyurethane	PVC/Vinyl	2-pack PUR coatings	2-pack epoxy coatings	Baking/stoving enamels	Coil coating
											■	□	■	□					□	
												■	■	■	■			■	■	
												■	■	■						
								□		■	■		■		■			■	■	■
								■	■	■	■		■	■	■			■	■	■
■	■	■	■	■	■			■	■	■	■	■	■	■	■	■	■	■	■	■
									■	■	■	■	■	■	■	■	■	■	■	
										■		■	■	■	■		■	■	■	
												■	■				■	■	■	
									■	■	□	■	■	□	□		□	■	■	
										■	■		■		■	■	■	■	■	
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■	■	■	■	■	■						■	■	■						■	
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■	■	■	■	■	■															
■	■	■	■	■	■															
■	■	■	■	■	■															

■ Excellent
□ Good

Dispersing agents

Product selector

Product name	Description	Water-based coatings							
		Architectural							
		High PVC paints	Matt/interior	Silk/semi-gloss	Gloss	Wood paints and stains	Exterior and elastic paints plasters	Colorants	Low-VOC
High molecular weight dispersing agents									
Dispex® Ultra PX 4290	Copolymer			■	■	■	■	■	■
Dispex® Ultra PX 4525	Blend of amine- and acid-functional polymers							■	■
Dispex® Ultra PX 4575	Acrylic block copolymer made by controlled free radical polymerization (CFRP)			■	■	■	■	■	■
Dispex® Ultra PX 4585	Acrylic block copolymer made by controlled free radical polymerization (CFRP)				■		■	■	■
Efka® PA 4400	Modified polyacrylate polymer								
Efka® PA 4401	Modified polyacrylate polymer								
Efka® PA 4403	Modified polyacrylate polymer								
Efka® PA 4404	Modified polyacrylate polymer								
Efka® PA 4450	Carboxy-functional polymer								
Efka® PU 4009	Modified polyacrylate polymer								
Efka® PU 4010	Modified polyacrylate polymer								
Efka® PU 4015	Modified polyacrylate polymer								
Efka® PU 4020	Modified polyacrylate polymer								
Efka® PU 4046	Modified polyacrylate polymer								
Efka® PU 4047	Modified polyacrylate polymer								
Efka® PU 4050	Modified polyacrylate polymer								
Efka® PU 4061	Modified polyacrylate polymer								
Efka® PU 4063	Modified polyacrylate polymer								
Efka® PU 4080	Modified polyacrylate polymer								
Efka® PX 4300	Acrylic block copolymer made by controlled free radical polymerization (CFRP)								
Efka® PX 4310	Acrylic block copolymer made by controlled free radical polymerization (CFRP)								

The data in the product selector table is a first recommendation. Suitability of a product should always be checked in the actual paint, coating or ink.

Industrial and automotive							100% systems				Solvent-based coatings									
Air-drying coatings																				
Alkyd emulsions	Polyurethane emulsions	Styrene acrylic/ acrylic emulsions	Baking coatings/enamels	2-pack PUR coatings	2-pack epoxy coatings	Emulsions polymerization/ latex handling	Powder coatings	UV-curable coatings	2-pack epoxy coatings/ 2-pack PUR coatings	Unsaturated polyester (UPE)	NC coatings	Alkyds, long oil	Alkyds, medium oil	High-solids industrial systems	Polyacrylates, polyurethane	PVC/Vinyl	2-pack PUR coatings	2-pack epoxy coatings	Baking/stoving enamels	Coil coating
■	■	■	■	■	■															
■	■	■	■	■	■															
■	■	■	■	■																
■	■	■	■	■																
													■	■			■	■	■	■
											■		■	■		■	■	■	■	■
											■		■	■	■	■	■	■	■	■
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													■	■	■		■	■	■	
										■			■	■	■	■	■	■	■	■
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													■	■	■		■	■	■	
											■				■	■	■	■	■	■
												■	■	■			■	■	■	
													■				■		■	■

■ Excellent
□ Good

Dispersing agents

Product selector

Product name	Description	Water-based coatings							
		Architectural							
		High PVC paints	Matt/interior	Silk/semi-gloss	Gloss	Wood paints and stains	Exterior and elastic paints plasters	Colorants	Low-VOC
High molecular weight dispersing agents									
Efka® PX 4320	Acrylic block copolymer made by controlled free radical polymerization (CFRP)								
Efka® PX 4330	Acrylic block copolymer made by controlled free radical polymerization (CFRP)								
Efka® PX 4340	Acrylic block copolymer made by controlled free radical polymerization (CFRP)								
Efka® PX 4350	Acrylic block copolymer made by controlled free radical polymerization (CFRP)								
Efka® PX 4701	Acrylic block copolymer made by controlled free radical polymerization (CFRP)								
Efka® PX 4703	Acrylic block copolymer made by controlled free radical polymerization (CFRP)								
Efka® PX 4732	Advanced polymer								
Efka® PX 4733	Advanced polymer								
Efka® PX 4753	Advanced polymer								
Efka® PX 4780	Advanced polymer								
Efka® PX 4785	Advanced polymer								
Efka® PX 4787	Advanced polymer								
Universal dispersing resins for resin-containing pigment concentrates									
Dispex® Ultra PA 4503	Fatty-acid-modified polymer							■	■

The data in the product selector table is a first recommendation. Suitability of a product should always be checked in the actual paint, coating or ink.

Industrial and automotive							100% systems				Solvent-based coatings									
Air-drying coatings																				
Alkyd emulsions	Polyurethane emulsions	Styrene acrylic/ acrylic emulsions	Baking coatings/enamels	2-pack PUR coatings	2-pack epoxy coatings	Emulsions polymerization/ latex handling	Powder coatings	UV-curable coatings	2-pack epoxy coatings/ 2-pack PUR coatings	Unsaturated polyester (UPE)	NC coatings	Alkyds, long oil	Alkyds, medium oil	High-solids industrial systems	Polyacrylates, polyurethane	PVC/Vinyl	2-pack PUR coatings	2-pack epoxy coatings	Baking/stoving enamels	Coil coating
											■		■		■		■		■	■
													■	■	■	■	■	■	■	■
											■		■	■			■	■	■	
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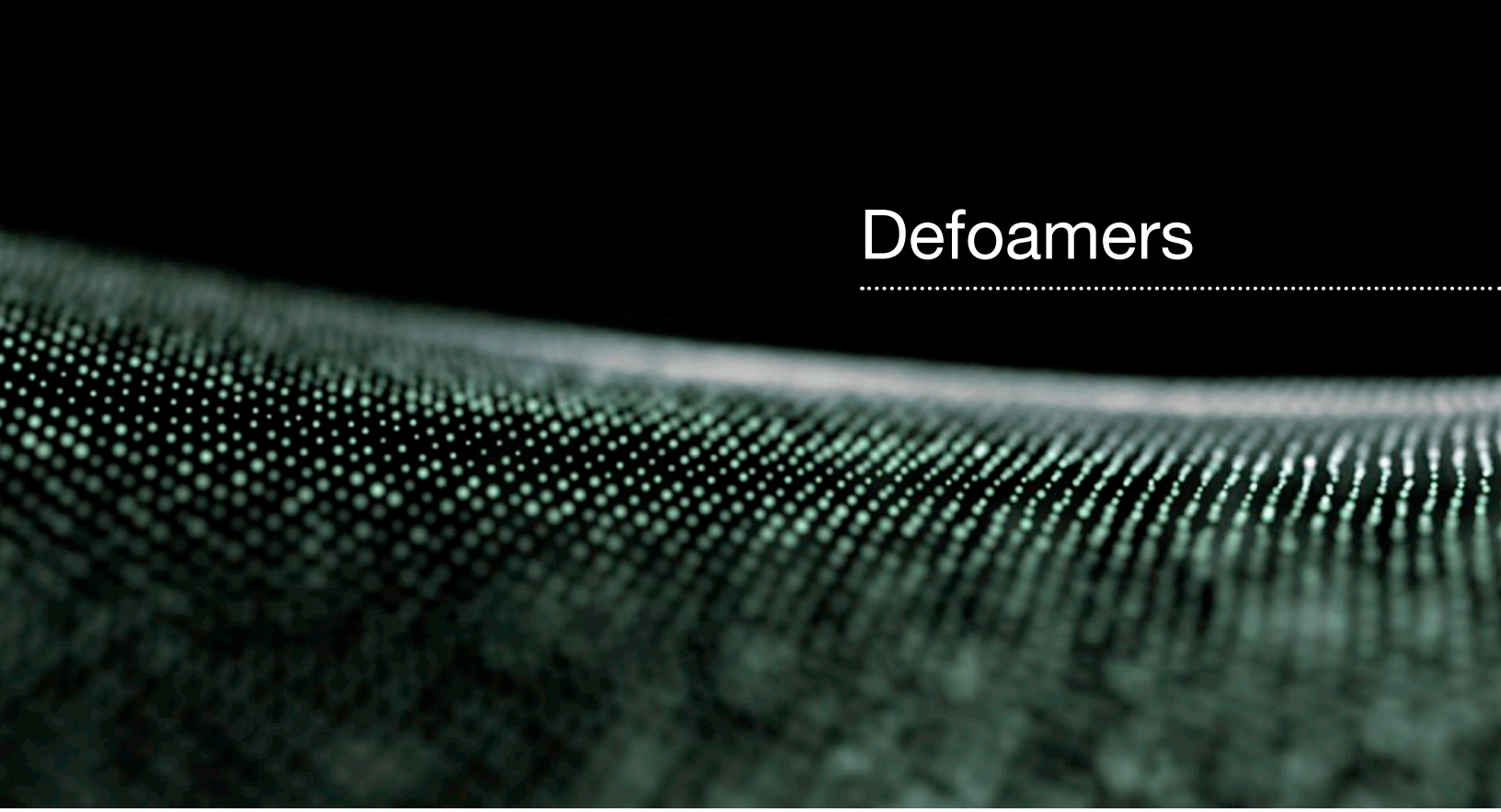
■ Excellent
□ Good

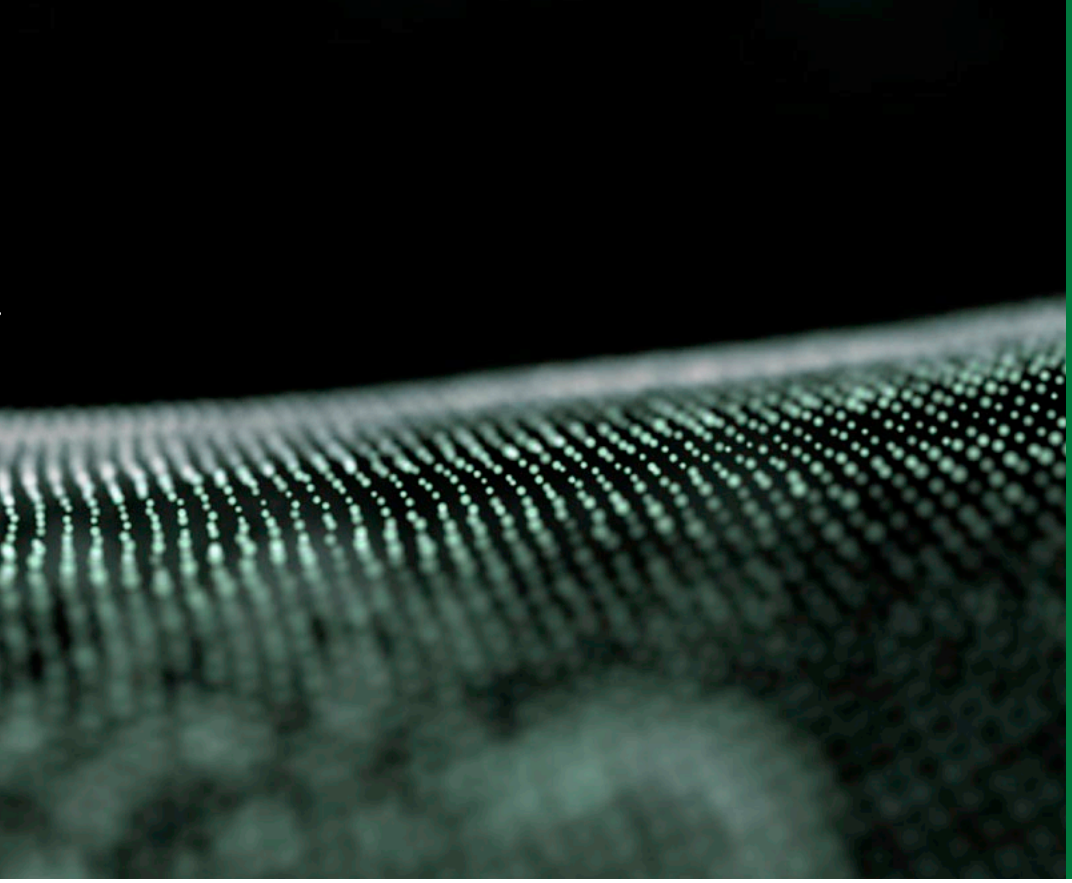


Defoamers

Formulators rely on BASF defoamer technologies to meet the most demanding standards of excellence – such as those in automotive coatings. Our lineup ranges from products based on mineral oils or native oils, specialty-emulsions and organosilicone-based solutions to silicone-free and star-polymer defoamers. The additives are characterized by excellent foam suppression and micro-foam removal, high compatibility, long-term efficiency and easy handling in perfect balance. The range also includes solutions for environmental compliance such as VOC-free, low SVOC and low odor foam suppressants.

Most defoamers are characterized by a delicate balance between compatibility and incompatibility in a given system. The active ingredient must be almost insoluble in the paint formulation, and able to form small defoamer droplets that migrate into the foam lamellae. To ensure long-term defoaming efficiency, the defoamer droplets need to remain stable in the system and not be absorbed or dissolved in storage. At the same time, a defoamer must be sufficiently compatible with the binder to ensure that no surface defects such as craters are generated in the final paint film due to incompatibility.

One of the outstanding innovations in the BASF defoamer portfolio is our award-winning FoamStar® technology. It is based on a hyper-branched polymer with a 3-dimensional star-shaped structure, containing hydrophilic as well as hydrophobic elements. Unlike conventional mineral-oil and silicone defoamers, our FoamStar® technology breaks down foam on a molecular level. It acts as a unique surfactant interacting with the foam-related surfactants and destabilizes the foam bubbles. When combined with conventional defoamer types, it accelerates bubble-break times and boosts efficiency.



Key benefits for your formulations

- Effective foam suppression and micro-foam removal during production and application
- Award-winning innovative technology
- Cost savings through shorter production processes
- Prevention of surface defects like craters, fisheyes, pinholes and weak points in the dried paint
- Regulatory compliance, low-VOC, renewable
- Low odor
- Food-contact approval

Feel free to connect with the specialists at BASF Performance and Formulation Additives for support in finding the right defoamers for your formulations. You can also find out more online: www.basf.com/additives

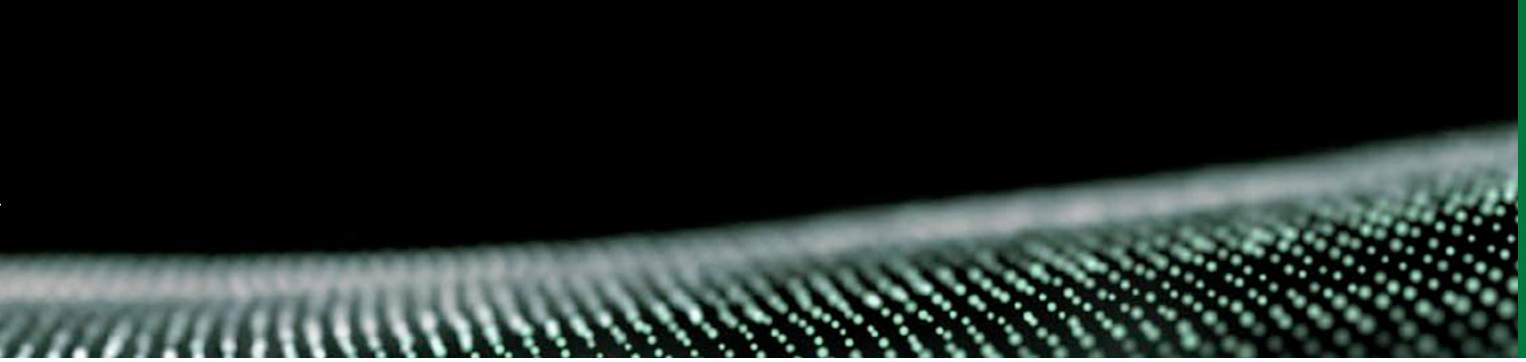
Product range	Chemistry	Characteristics
Foamaster® MO	Mineral oil	Removes macro foam, universal
Foamaster® NO	Natural oil	Renewable raw materials, low SVOC
Foamaster® WO	White oil	Allows for food-contact compliance, better odor, low fogging
FoamStar® ED	Emulsion	Universal, easy to incorporate
FoamStar® PB	Polymer-based	High efficiency, polymer-based
FoamStar® SI	Silicone-based	For high-gloss systems, e.g. industrial, printing inks
FoamStar® ST	Star polymer-based	High efficiency, fast foam knock down
Efka® PB	Polymer-based	High efficiency, polymer-based
Efka® SI	Silicone-based	High efficiency, high gloss

Defoamers

Technical information, features and benefits

Product name	Description	Solids (%)	Incorporation	VOC content (%)	Recommended for low-VOC systems*
Defoamers designed to be used in water-based systems					
Foamaster® MO 2107	Mineral-oil-based defoamers	>98	Grinding stage / let-down	2	●
Foamaster® MO 2111 NC	Mineral-oil-based defoamers	>91	Grinding stage / let-down	9	
Foamaster® MO 2119	Mineral-oil-based defoamers	>99	Grinding stage / let-down	<1	●
Foamaster® MO 2133	Mineral-oil-based defoamers	>98	Grinding stage / let-down	2	●
Foamaster® MO 2140	Mineral-oil-based defoamers	>98	Grinding stage / let-down	2	●
Foamaster® MO 2152	Mineral-oil-based defoamers	>97	Grinding stage / let-down	3	●
Foamaster® MO 2170	Mineral-oil-based defoamers	>92	At any stage of the production process	8	●
Foamaster® MO 2172	Mineral-oil-based defoamers	>95	Grinding stage / let-down	5	
Foamaster® MO 2175	Mineral-oil-based defoamers	>98	At any stage of the production process	2	●
Foamaster® MO 2184	Mineral-oil-based defoamers	>88	Grinding stage / let-down	12	
Foamaster® MO 2185	Mineral-oil-based defoamers	>94	Grinding stage / let-down	6	
Foamaster® MO 2190	Mineral-oil-based defoamers	>93	Grinding stage / let-down	7	
Foamaster® MO 2192	Mineral-oil-based defoamers	>96	Grinding stage / let-down	4	
Foamaster® MO NDW NC	Mineral-oil-based defoamers	>78	At any stage of the production process	22	
Foamaster® MO NXZ NC	Mineral-oil-based defoamers	>88	At any stage of the production process	12	
Foamaster® NO 2331	Natural-oil-based defoamers	100	Grinding stage / let-down	<0.1	●
Foamaster® WO 2310	White-oil-based defoamers	100	Grinding stage / let-down	<0.1	●
Foamaster® WO 2323	White-oil-based defoamers	100	Grinding stage / let-down	<0.1	●
FoamStar® ED 2522	Emulsion defoamers	~20	Grinding stage / let-down	<0.1	●
FoamStar® ED 2523	Emulsion defoamers	~27	Grinding stage / let-down	<0.1	●
FoamStar® ED 2526	Emulsion defoamers	~80	Before or after processing	<1	●
FoamStar® PB 2706	Polyether derivative of a fatty acid	98	Before or after processing	2	
FoamStar® SI 2210 NC	Modified polydimethylsiloxane-based defoamers	>99	At any stage of the production process	1	●

All products comply with APEO-free claims. APEO has not been intentionally added.
Product may comprise minor traces as ubiquitously occurring impurities cannot be excluded.



Recommended for			Features and benefits
Water-based systems	Solvent-based systems	Solvent-free systems	
●			Suitable for low surfactant containing systems
●			Broad-spectrum highly compatible defoamer specifically designed for water-based paints; excellent efficiency in systems with coarse ingredients
●			Silicone and mineral oil free defoamer; well-suited for ink defoaming where printing press plates are swollen or softened by mineral oil based defoamers
●			Cost-effective with broad spectrum use; effective in low-VOC paints
●			Effective in paints using associative thickeners
●			High persistency; broad compatibility; effective in low-VOC paints
			Very effective defoamer for aqueous emulsion-based paints, as well as for monomer stripping
●			Especially effective in high gloss paints
●			Good persistency; non-settling; non-separating
●			Very effective in printing inks and polyvinyl alcohol
●			High compatibility, potency, and color acceptance: good post add
●			Excellent for adhesives
●			More potent version of Foamaster® MO 2185; good performance in stains
●			General purpose; very broad spectrum
●			General purpose; very broad spectrum; improved dispersability over Foamaster® MO NDW NC
●			Native oil-based defoamer for monomer stripping in latex manufacturing and emulsion polymerization; specifically designed to have broadest food contact compliance
●			Defoamer for monomer stripping in latex manufacturing and emulsion polymerization; specifically designed to have broadest food contact compliance
●		●	Effective defoamer specifically designed for emulsion paints
●			High performance, ultra-low SVOC silicone emulsion defoamer for premium water-based paints, clear coats and inks; excellent storage stability; extremely low SVOC content
●			Ultra-low SVOC, emulsion defoamer for medium to high PVC architectural coatings
●			Water-based coatings, strong defoamer for both mill base and let-down; shows good effects in alkyd emulsions
●			Efficient defoamer for the manufacture of construction chemicals products
●			100%-active-content defoamer for non-pigmented and low-pigmented aqueous coatings, printing inks, adhesives and UV-curable systems; offers strong spontaneous defoaming effect; outstanding long-term defoaming persistency

* Recommended for low-VOC paints and coatings if VOC content <1%.
Measurements done according to the EU Ecolabel 2014/312/EU for indoor and outdoor paints and varnishes.
For products with a VOC level above 15% the value is based on calculation according to recipe.

Defoamers

Technical information, features and benefits

Product name	Description	Solids (%)	Incorporation	VOC content (%)	Recommended for low-VOC systems*
Defoamers designed to be used in water-based systems					
FoamStar® SI 2213	Modified polydimethylsiloxane-based defoamers	100	Grinding stage / let-down	<0.1	●
FoamStar® SI 2240	Modified polydimethylsiloxane-based defoamers	100	Grinding stage / let-down	<0.1	●
FoamStar® SI 2250	Modified polydimethylsiloxane-based defoamers	100	Grinding stage	<1	●
FoamStar® SI 2280	Modified polydimethylsiloxane-based defoamers	>99	At any stage of the production process	<1	●
FoamStar® SI 2292 NC	Modified polydimethylsiloxane-based defoamers	>10	At any stage of the production process	90	
FoamStar® SI 2299	Modified polydimethylsiloxane-based defoamers	100	Grinding stage / let-down	<0.1	●
FoamStar® ST 2400	Star polymer-based defoamers	100	Grinding stage / let-down	<1	●
FoamStar® ST 2410	Star polymer-based defoamers	>98	Grinding stage / let-down	2	●
FoamStar® ST 2412	Star polymer-based defoamers	>98	Grinding stage / let-down	2	●
FoamStar® ST 2420	Star polymer-based defoamers	>99	Grinding stage / let-down	<0.5	●
FoamStar® ST 2434	Star polymer-based defoamers	>98	Grinding stage / let-down	2	●
FoamStar® ST 2436	Star polymer-based defoamers	>98	Grinding stage / let-down	2	●
FoamStar® ST 2438	Star polymer-based defoamers	100	Grinding stage / let-down	<0.5	●
FoamStar® ST 2439	Star polymer-based defoamers	>98	Grinding stage / let-down	2	●
FoamStar® ST 2445	Star polymer-based defoamers	>99	Grinding stage / let-down	1	●
FoamStar® ST 2446	Star polymer-based defoamers	>98	Grinding stage / let-down	2	●
Defoamers designed to be used in non-aqueous systems					
Efka® PB 2001	Solvent-based solution of defoaming substances, silicone-free	26	Before or after processing	74	
Efka® PB 2010	Solvent-based solution of defoaming substances, silicone-free	-	Before or after processing	~80	
Efka® PB 2018 AN	Solvent-based solution of defoaming substances, silicone-free	-	Before or after processing	>95	
Efka® PB 2020	Solvent-based solution of defoaming substances, silicone-free	-	Before or after processing	~80	
Efka® PB 2021	Solvent-based solution of defoaming substances, silicone-free	-	End of processing	>90	

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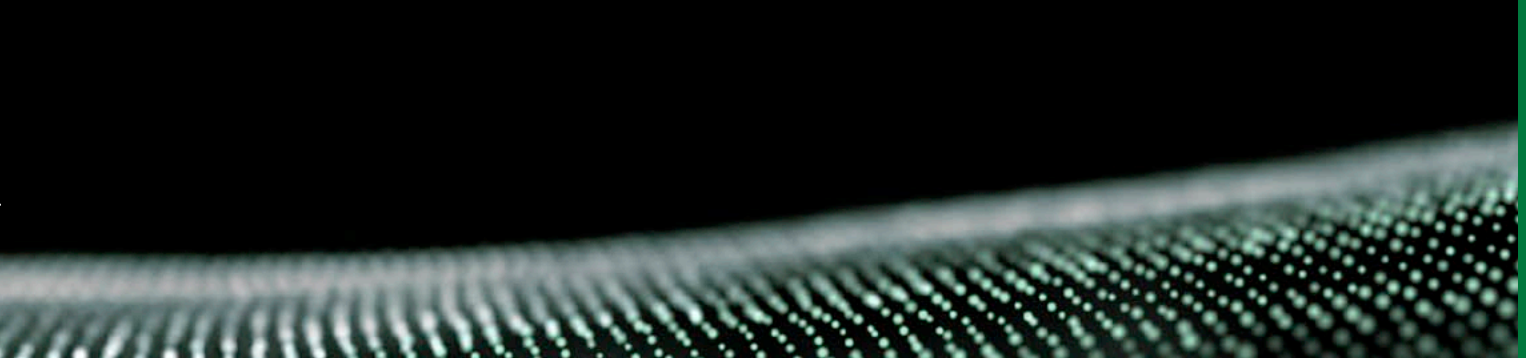

Recommended for			Features and benefits
Water-based systems	Solvent-based systems	Solvent-free systems	
●			Very compatible defoamer for clear and low-pigmented paints and coatings and for aqueous flexo inks; highly effective with excellent compatibility
●			Highly effective defoamer for aqueous pigment concentrates and systems with high surfactant content; broad food contact compliance
●			Water-based coatings and pigment concentrates where high-shear processing or application exists; most effective in the range
●			Water-based acrylic, low-PVC and baking systems; water-based pigment concentrates; defoamer with good compatibility and good defoaming
●			Highly compatible silicone-based defoamer solution for high gloss paints and varnishes based on acrylics and polyurethane dispersions; minimized risk of cratering
●			Highly effective deaerator and defoamer for aqueous spray coating applications; effectively removes micro-foam from water-based spray coatings; remains persistent over longer storage periods; offers an outstanding combination of effectiveness and compatibility
●			30–50% lower dosage than conventional mineral oil defoamer; excellent persistence; fast bubble-break time
●			Low use level; excellent persistence; good choice for low-VOC emulsion paints
●			Low use level; excellent persistence; good choice for styrene-acrylics
●			Low use level; excellent persistence; good choice for very low-VOC systems
●			Easy incorporation; post addable; semi-gloss and gloss coatings
●			Mainly for post addition; more potent than FoamStar® ST 2434
●			Silicone-based defoamer for high-quality water-based paints, delivering excellent long-term persistency and foam knock down
●			More potent version of FoamStar® ST 2438
●			Top performance in low- / zero-VOC coatings and tints; good problem-solving defoamer
●			Top performance in low- / zero-VOC coatings and tints; good problem-solving defoamer; better flow and leveling properties
	●	●	Silicone-free air-release agent for non-aqueous coatings such as epoxy, polyurethane or UPE systems
	●	●	Silicone-free defoamer for broad use in solvent-based systems; well suited for clear systems due to the improved compatibility when compared to Efka® PB 2020
	●		Polyurethane, acid-cure and NC wood finishes
	●	●	Acid-cured and NC-curtain coating systems, unsaturated polyesters and gelcoats; broad use silicone-free defoamer
	●		2-pack polyurethanes, acid-cure and stoving enamels

* Recommended for low-VOC paints and coatings if VOC content <1%.
Measurements done according to the EU Ecolabel 2014/312/EU for indoor and outdoor paints and varnishes.
For products with a VOC level above 15% the value is based on calculation according to recipe.

Defoamers

Technical information, features and benefits

Product name	Description	Solids (%)	Incorporation	VOC content (%)	Recommended for low-VOC systems*
Defoamers designed to be used in non-aqueous systems					
Efka® PB 2050	Solvent-based solution of defoaming substances, silicone-free	-	Prior to processing	~70	
Efka® PB 2720	Solvent-based solution of defoaming substances, silicone-free	-	Before or after processing	~60	
Efka® PB 2744	Blend of foam destroying substances with silicone	100	Before or after processing	<0.1	●
Efka® SI 2008	Solvent-based solution of defoaming substances with modified silicone compounds	-	Before or after processing	99	
Efka® SI 2022	Solvent-based solution of defoaming substances with modified silicone compounds	-	Before or after processing	>90	
Efka® SI 2023	Solvent-based solution of defoaming substances with modified silicone compounds	-	Before or after processing	>90	
Efka® SI 2025	Solvent-based solution of defoaming substances with modified silicone compounds	-	Before or after processing	>95	
Efka® SI 2035	Solvent-based solution of defoaming substances with modified silicone compounds	-	End of processing	>95	
Efka® SI 2038	Solvent-based solution of defoaming substances with modified silicone compounds		Final production	>95	
Efka® SI 2721	Solvent-based solution of defoaming substances with modified silicone compounds	-	Before or after processing	>95	
Efka® SI 2722	Solvent-based solution of defoaming substances with modified silicone compounds	-	Before or after processing	>70	
Efka® SI 2723	Solvent-based solution of defoaming substances with modified silicone compounds	-	Prior to processing	<25	
Efka® SI 2741	Solvent-based solution of defoaming substances with modified silicone compounds		Before addition of pigments / fillers	>90	

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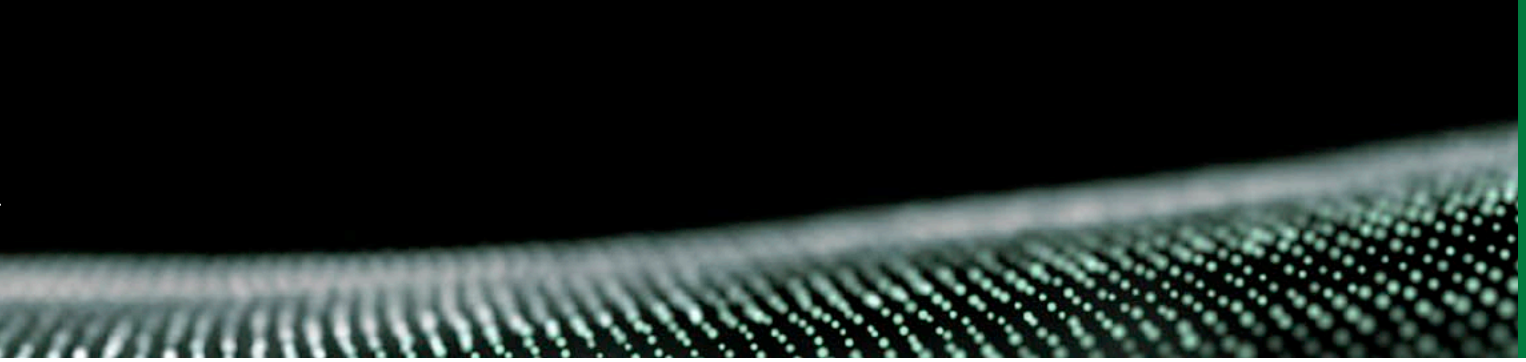


Recommended for			Features and benefits
Water-based systems	Solvent-based systems	Solvent-free systems	
	●	●	Thin layer gel coat, UPE, casting resins and epoxies (i.e. flooring)
	●	●	Unsaturated polyester, epoxy and polyurethane systems
	●	●	Ultra-low VOC defoamer and de-aerator for high solid and solvent-free formulations; excellent efficiency; improves leveling and imparts surface smoothness; excellent long term persistency
	●	●	Silicone-based highly efficient air-release agent with excellent compatibility with non-aqueous coatings such as epoxy, polyurethane or UPE systems
	●		Polyurethane curtain coatings and stoving enamels
	●		Polyurethane, acid-cure and NC wood finishes
	●		Physically drying systems and air-drying alkyds
	●	●	Physically drying systems and medium- to long-oil air-drying alkyds
			Polyurethane, acid-cure and NC wood varnishes; good compatibility
		●	UV-curing and EBC systems; highly effective defoaming in clear and matted systems; defoaming substances in 2-ethylhexyl acrylate
	●	●	Solvent-free epoxy and polyurethane systems
	●	●	Solvent-free epoxy and polyurethane systems, low odor, high-solid 2-pack systems and solvent-free radiation-curing systems
	●		Defoamer for solvent-based systems; effective in nitrocellulose and polyurethane-based formulations

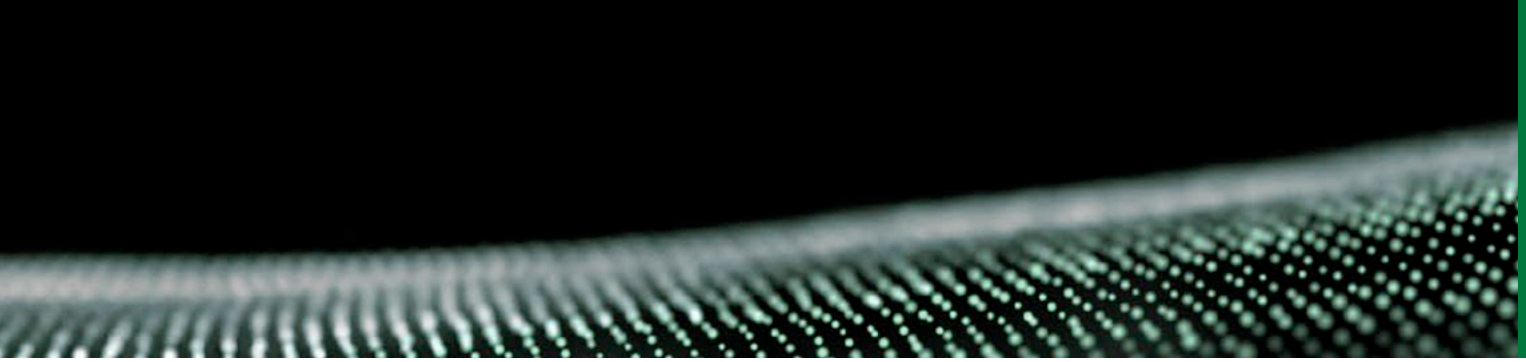
* Recommended for low-VOC paints and coatings if VOC content <1%.
Measurements done according to the EU Ecolabel 2014/312/EU for indoor and outdoor paints and varnishes.
For products with a VOC level above 15% the value is based on calculation according to recipe.

Defoamers

Product selector

Product name	Description	Water-based coatings							
		Architectural							
		High PVC paints	Matt/interior	Silk/semi-gloss	Gloss	Wood paints and stains	Exterior and elastic paints plasters	Colorants	Low-VOC
Defoamers designed to be used in water-based systems									
Foamaster® MO 2107	Mineral-oil-based defoamers	■	■				■	■	■
Foamaster® MO 2111 NC	Mineral-oil-based defoamers	■	■	■			■		□
Foamaster® MO 2119	Mineral-oil-based defoamers								■
Foamaster® MO 2133	Mineral-oil-based defoamers	■	■	■			■	■	■
Foamaster® MO 2140	Mineral-oil-based defoamers	■	■				■	■	■
Foamaster® MO 2152	Mineral-oil-based defoamers	■	■	■			■	■	■
Foamaster® MO 2170	Mineral-oil-based defoamers	■	■	□			■		■
Foamaster® MO 2172	Mineral-oil-based defoamers	■	■	■	■	■	■	■	
Foamaster® MO 2175	Mineral-oil-based defoamers	■	■				■	■	■
Foamaster® MO 2184	Mineral-oil-based defoamers						■	■	
Foamaster® MO 2185	Mineral-oil-based defoamers	■	■	■		■	■	■	
Foamaster® MO 2190	Mineral-oil-based defoamers		■			■	■	■	
Foamaster® MO 2192	Mineral-oil-based defoamers	■	■			■	■	■	
Foamaster® MO NDW NC	Mineral-oil-based defoamers	■	■	■			■		
Foamaster® MO NXZ NC	Mineral-oil-based defoamers	■	■	■			■		
Foamaster® NO 2331	Natural-oil-based defoamers		■	■	□	□	■		■
Foamaster® WO 2310	White-oil-based defoamers		■	■	□	□	■		■
Foamaster® WO 2323	White-oil-based defoamers		■	■	□	□	■		■
FoamStar® ED 2522	Emulsion defoamers		□	■	■	■	■		■
FoamStar® ED 2523	Emulsion defoamers	■	■	■	□	□	■		■
FoamStar® ED 2526	Emulsion defoamers			■	■	■	■		■
FoamStar® PB 2706	Polyether derivative of a fatty acid	□				■	□		
FoamStar® SI 2210 NC	Modified polydimethylsiloxane-based defoamers		□	□	■	■	■		■

The data in the product selector table is a first recommendation. Suitability of a product should always be checked in the actual paint, coating or ink.



Industrial and automotive							100% systems				Solvent-based coatings									
Air-drying coatings																				
Alkyd emulsions	Polyurethane emulsions	Styrene acrylic / acrylic emulsions	Baking coatings / enamels	2-pack PUR coatings	2-pack epoxy coatings	Emulsions polymerization / latex handling	Powder coatings	UV-curable coatings	2-pack epoxy coatings / 2-pack PUR coatings	Unsaturated polyester (UPE)	NC coatings	Alkyds, long oil	Alkyds, medium oil	High-solids industrial systems	Polyacrylates, polyurethane	PVC / Vinyl	2-pack PUR coatings	2-pack epoxy coatings	Baking / stoving enamels	Coil coating
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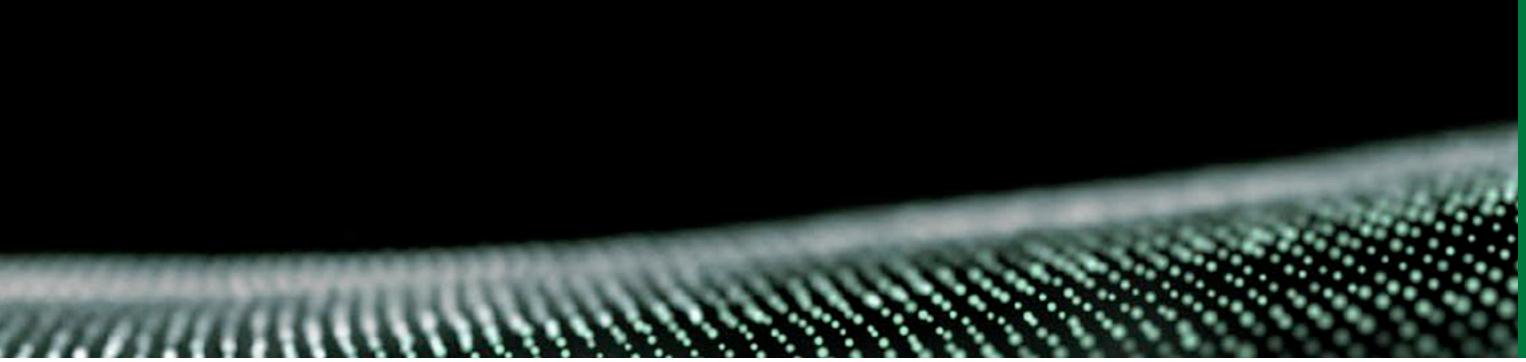
■ Excellent
□ Good

Defoamers

Product selector

Product name	Description	Water-based coatings							
		Architectural							
		High PVC paints	Matt/interior	Silk/semi-gloss	Gloss	Wood paints and stains	Exterior and elastic paints plasters	Colorants	Low-VOC
Defoamers designed to be used in water-based systems									
FoamStar® SI 2213	Modified polydimethylsiloxane-based defoamers		□	□	■	■	■		■
FoamStar® SI 2240	Modified polydimethylsiloxane-based defoamers			□	■		□	■	■
FoamStar® SI 2250	Modified polydimethylsiloxane-based defoamers			■				■	■
FoamStar® SI 2280	Modified polydimethylsiloxane-based defoamers			■	■	■	■		■
FoamStar® SI 2292 NC	Modified polydimethylsiloxane-based defoamers				■	■			
FoamStar® SI 2299	Modified polydimethylsiloxane-based defoamers			□	■	■			■
FoamStar® ST 2400	Star polymer-based defoamers						■	■	■
FoamStar® ST 2410	Star polymer-based defoamers	■	■	■			■	■	■
FoamStar® ST 2412	Star polymer-based defoamers	■	■	■		■	■	■	■
FoamStar® ST 2420	Star polymer-based defoamers	■	■	■	■	■	■	■	■
FoamStar® ST 2434	Star polymer-based defoamers	■	■	■	■	■	■	■	■
FoamStar® ST 2436	Star polymer-based defoamers	■	■	■	■	■	■	■	■
FoamStar® ST 2438	Star polymer-based defoamers		□	□	■	■	■		■
FoamStar® ST 2439	Star polymer-based defoamers	■	■	■	■		■	■	■
FoamStar® ST 2445	Star polymer-based defoamers	■	■	■	■		■	■	■
FoamStar® ST 2446	Star polymer-based defoamers	■	■	■	■	■	■	■	■
Defoamers designed to be used in non-aqueous systems									
Efka® PB 2001	Solvent-based solution of defoaming substances, silicone-free								
Efka® PB 2010	Solvent-based solution of defoaming substances, silicone-free								
Efka® PB 2018 AN	Solvent-based solution of defoaming substances, silicone-free								
Efka® PB 2020	Solvent-based solution of defoaming substances, silicone-free								

The data in the product selector table is a first recommendation. Suitability of a product should always be checked in the actual paint, coating or ink.



Industrial and automotive							100% systems				Solvent-based coatings									
Air-drying coatings																				
Alkyd emulsions	Polyurethane emulsions	Styrene acrylic / acrylic emulsions	Baking coatings / enamels	2-pack PUR coatings	2-pack epoxy coatings	Emulsions polymerization / latex handling	Powder coatings	UV-curable coatings	2-pack epoxy coatings / 2-pack PUR coatings	Unsaturated polyester (UPE)	NC coatings	Alkyds, long oil	Alkyds, medium oil	High-solids industrial systems	Polyacrylates, polyurethane	PVC / Vinyl	2-pack PUR coatings	2-pack epoxy coatings	Baking / stoving enamels	Coil coating
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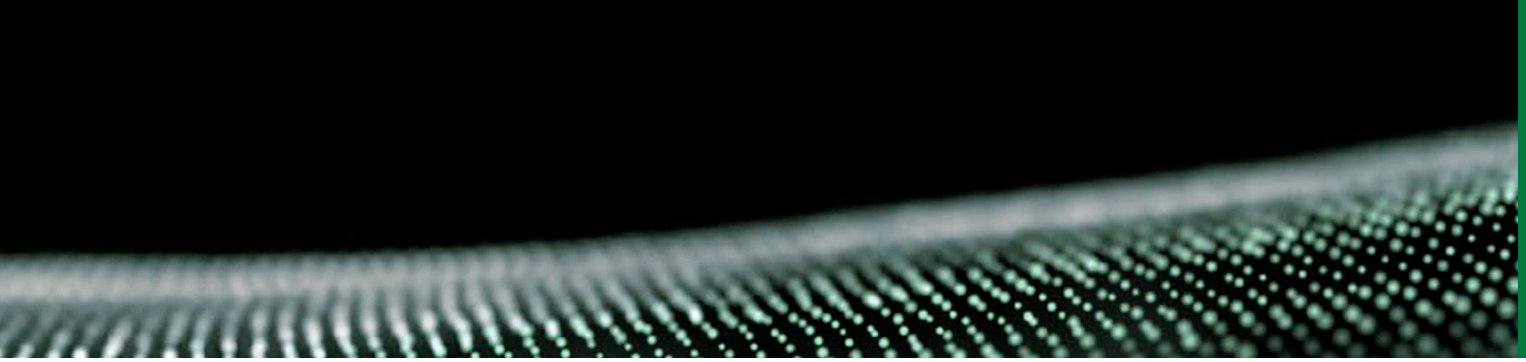
■ Excellent
□ Good

Defoamers

Product selector

Product name	Description	Water-based coatings							
		Architectural							
		High PVC paints	Matt/interior	Silk/semi-gloss	Gloss	Wood paints and stains	Exterior and elastic paints plasters	Colorants	Low-VOC
Defoamers designed to be used in non-aqueous systems									
Efka® PB 2021	Solvent-based solution of defoaming substances, silicone-free								
Efka® PB 2050	Solvent-based solution of defoaming substances, silicone-free								
Efka® PB 2720	Solvent-based solution of defoaming substances, silicone-free								
Efka® PB 2744	Blend of foam destroying substances with silicone								
Efka® SI 2008	Solvent-based solution of defoaming substances with modified silicone compounds								
Efka® SI 2022	Solvent-based solution of defoaming substances with modified silicone compounds								
Efka® SI 2023	Solvent-based solution of defoaming substances with modified silicone compounds								
Efka® SI 2025	Solvent-based solution of defoaming substances with modified silicone compounds								
Efka® SI 2035	Solvent-based solution of defoaming substances with modified silicone compounds								
Efka® SI 2038	Solvent-based solution of defoaming substances with modified silicone compounds								
Efka® SI 2721	Solvent-based solution of defoaming substances with modified silicone compounds								
Efka® SI 2722	Solvent-based solution of defoaming substances with modified silicone compounds								
Efka® SI 2723	Solvent-based solution of defoaming substances with modified silicone compounds								
Efka® SI 2741	Solvent-based solution of defoaming substances with modified silicone compounds								

The data in the product selector table is a first recommendation. Suitability of a product should always be checked in the actual paint, coating or ink.



								100% systems				Solvent-based coatings									
							Industrial and automotive														
							Air-drying coatings														
Alkyd emulsions	Polyurethane emulsions	Styrene acrylic / acrylic emulsions	Baking coatings / enamels	2-pack PUR coatings	2-pack epoxy coatings	Emulsions polymerization / latex handling	Powder coatings	UV-curable coatings	2-pack epoxy coatings / 2-pack PUR coatings	Unsaturated polyester (UPE)	NC coatings	Alkyds, long oil	Alkyds, medium oil	High-solids industrial systems	Polyacrylates, polyurethane	PVC / Vinyl	2-pack PUR coatings	2-pack epoxy coatings	Baking / stoving enamels	Coil coating
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■ Excellent
□ Good

Rheology modifiers

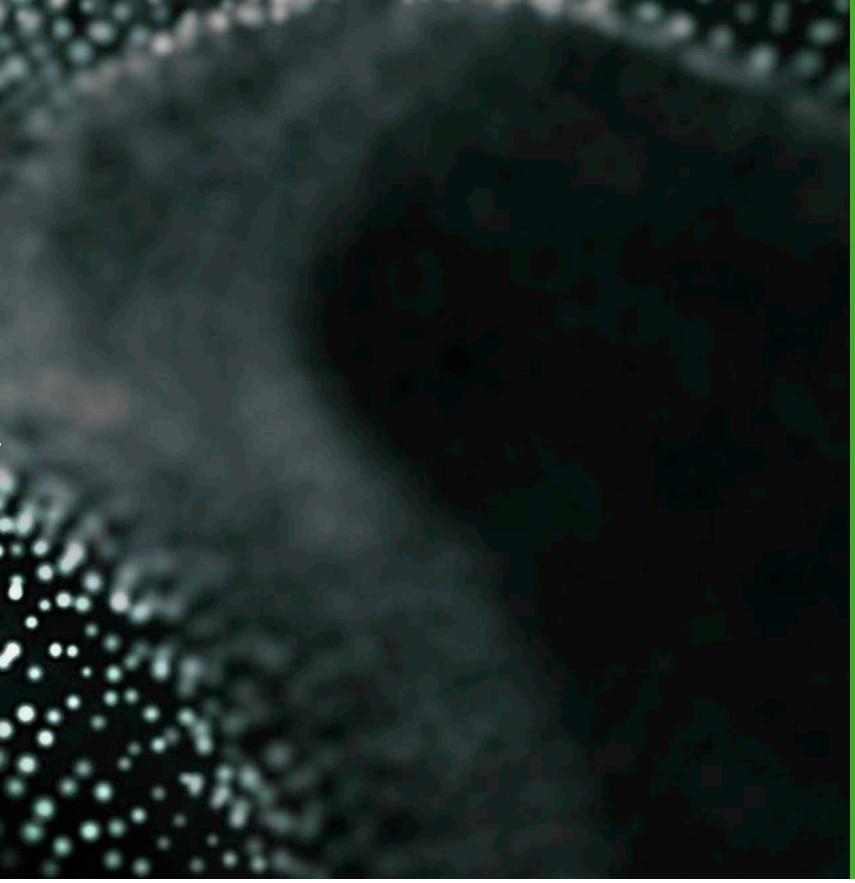
BASF's synthetic rheology modifiers include non-ionic associative (HEUR/HMPE), anionic associative (HASE) and non-associative thickener (ASE) technologies. Our focus is on highly efficient additives for water-based systems. Our rheology modifiers also provide additional functionalities like wetting properties and health or environmental benefits such as suitability for formulations free of VOCs, odors, APEOs and heavy metals.

Rheology modifiers from BASF effectively reduce dripping and spattering of paints during roller or brush application. Sag resistance is improved by a rapid but controlled viscosity increase after application. They also reliably prevent sedimentation of pigments during transport and storage of the paints.

We offer six classes of rheological additives for paints and coatings

- Alkali swellable emulsions (ASE)
- Hydrophobically modified alkali swellable emulsions (HASE)
- Hydrophobically modified polyurethanes (HEUR)
- Hydrophobically modified polyethers (HMPE)
- Attapulgites (inorganic rheology modifiers)
- Castor-oil and wax-based thixotropes

Each product class has its own properties and applications. Our Rheovis® PU and PE series of associative thickeners stand out as a class of groundbreaking additives based primarily on hydrophobically modified polyether and polyurethane derivatives.



Key benefits for your formulations

- Broad range of rheology profiles
- Highly efficient across many resin types
- pH independent (PUR/PE)
- Improved wash and scrub resistance
- Low impact on water uptake
- Low impact on water whitening
- Excellent leveling
- Reduced spattering

These rheology modifiers enable you to create a wide variety of rheological profiles to give water-based paints and coatings precisely the attributes you and your consumers are seeking. For example, you can modify the rheological behavior of aqueous paints and coatings to make them either more Newtonian (brush, roll-on, curtain coating) or more pseudoplastic (spray) to optimize application properties.

At BASF Performance and Formulation Additives, you will find experts who understand your specific needs and are glad to support you in finding the right rheology modifiers for your formulations. For more information, you can also look here: www.basf.com/additives

Product range	Chemistry	Characteristics
Rheovis® HS	Associative acrylic (HASE)	Strong thickening response, reduced syneresis, easy to handle
Rheovis® AS	Non-associative acrylic (ASE)	Pseudoplastic rheology profiles, reduced syneresis, easy to handle
Rheovis® PE	Associative polyether (HMPE)	Newtonian rheology profiles, non-ionic chemistry, avoids spattering, good wet-scrub resistance
Rheovis® PU	Associative polyurethane (HEUR)	Broad range of rheology profiles, non-ionic chemistry, excellent wet-scrub resistance, low effect on gloss development
Attagel®	Organo clay types	Inorganic rheology modifiers, excellent thixotropic rheology, strong anti-settling properties, excellent syneresis control
Efka® RM	Rheology modifiers for solvent-based systems	Excellent anti-settling and anti-sag properties

Rheology modifiers

Technical information, features and benefits

Product name	Description	Solids (%)	Viscosity (mPa·s)	VOC content (%)	Recommended for low-VOC paints*	Tin-free
Rheology modifiers designed to be used in water-based systems						
Rheovis® AS 1125 NA	Non-associative thickener: anionic polyacrylate copolymer (ASE)	25	~17	<0.1	●	●
Rheovis® AS 1127	Non-associative thickener: anionic polyacrylate copolymer (ASE)	40	~50	<1	●	●
Rheovis® AS 1130	Non-associative thickener: anionic polyacrylate copolymer (ASE)	30	~5	<0.1	●	●
Rheovis® AS 1337	Non-associative thickener: anionic polyacrylate copolymer (ASE)	30	~40	<0.1	●	●
Rheovis® AS 1920	Non-associative thickener: anionic polyacrylate copolymer (ASE)	>98	-	<1	●	●
Rheovis® HS 1152	Associative thickener: anionic polyacrylate copolymer, hydrophobically modified (HASE)	40	-	<0.1	●	●
Rheovis® HS 1162	Associative thickener: anionic polyacrylate copolymer, hydrophobically modified (HASE)	35	<50	<0.1	●	●
Rheovis® HS 1212	Associative thickener: anionic polyacrylate copolymer, hydrophobically modified (HASE)	40	~5	<0.5	●	●
Rheovis® HS 1332	Associative thickener: anionic polyacrylate copolymer, hydrophobically modified (HASE)	40	-	<0.1	●	●
Rheovis® PE 1320 NC	Associative thickener: hydrophobic modified polyether (HMPE)	40	~1,600	20		●
Rheovis® PE 1331	Associative thickener: hydrophobic modified polyether (HMPE)	21	~2,300	<0.1	●	●
Rheovis® PU 1185	Associative thickener: hydrophobic modified ethoxylated urethane (HEUR)	18	~2,800	20		●
Rheovis® PU 1191	Associative thickener: hydrophobic modified ethoxylated urethane (HEUR)	30	~2,800	<1	●	●
Rheovis® PU 1214 NC	Associative thickener: hydrophobic modified ethoxylated urethane (HEUR)	40	~3,500	20		●
Rheovis® PU 1235	Associative thickener: hydrophobic modified ethoxylated urethane (HEUR)	25	~1,200	~25		●
Rheovis® PU 1250 NC	Associative thickener: hydrophobic modified ethoxylated urethane (HEUR)	40	~3,500	20		●
Rheovis® PU 1251	Associative thickener: hydrophobic modified ethoxylated urethane (HEUR)	30	~2,800	<1	●	●
Rheovis® PU 1291	Associative thickener: hydrophobic modified ethoxylated urethane (HEUR)	40	~3000	<0.1	●	●
Rheovis® PU 1341	Associative thickener: hydrophobic modified ethoxylated urethane (HEUR)	20	~2,800	<1	●	●

All products except Rheovis® PU 1214 and Rheovis® PU 1250 comply with APEO-free claims. APEO has not been intentionally added.
Product may comprise minor traces as ubiquitiously occuring impurities cannot be excluded.

Recommended for			Features and benefits
Water-based systems	Solvent-based systems	Solvent-free systems	
●			Non-associative pure acrylic thickener; alkali-swellable emulsion (ASE); low-shear thickener; highly shear thinning; anti-sagging; high yield point; lower water uptake
●			Non-associative pure acrylic thickener; alkali-swellable emulsion (ASE); low-shear thickener; highly shear thinning; anti-sagging; reduced syneresis
●			Non-associative pure acrylic thickener; highly efficient low-shear thickener; high shear thinning, anti-sagging and anti-settling; used in pigment and filler slurries but also highly successful in industrial and automotive formulations for spray applications
●			Non-associative pure acrylic thickener; most Newtonian product in the Rheovis® AS range
●			Highly effective rheological control thickener for systems which are supplied as “dry systems”
●			Acrylic thickener with associative thickening; low-shear thickener; for paints and plasters; anti-sagging; prolongs open time
●			Acrylic thickener with associative thickening; thixotropic flow behavior; low water uptake; no impact on wet adhesion even after long water contact
●			Acrylic thickener with associative thickening; mid-shear thickener; improves flow; excellent efficiency; all-round product which can be used in most paint systems
●			Acrylic thickener with associative thickening; high-shear thickener; Newtonian flow behavior; improved leveling; increases coating build-up / layer thickness
●			Excellent high-shear thickener; imparts excellent flow
●			Excellent high-shear thickener; imparts excellent flow
●			Low- / mid-shear thickener with excellent performance and easy handling; strong pseudoplasticity
●			Next-generation strong low-shear thickener with excellent performance and easy handling; strong pseudoplasticity
●			Mid-shear thickener; nearly Newtonian; excellent balance of high- and low-shear viscosity build
●			Mid-shear thickener; low-shear viscosity with moderate contribution to high shear viscosity
●			Mid-shear thickener; medium pseudoplastic; provides excellent orientation of effect pigments
●			Mid-shear thickener; slightly pseudoplastic
●			Next-generation VOC-free mid-shear rheology modifier with excellent ICI thickening and easy handling
●			Excellent high-shear thickener; imparts excellent flow; low odor; low VOC

* Recommended for low-VOC paints and coatings if VOC content <1%.
Measurements done according to the EU Ecolabel 2014/312/EU for indoor and outdoor paints and varnishes.
For products with a VOC level above 15% the value is based on calculation according to recipe.

Rheology modifiers

Technical information, features and benefits

Product name	Description	Solids (%)	Viscosity (mPa·s)	VOC content (%)	Recommended for low-VOC paints*	Tin-free
Rheology modifiers designed to be used in water-based systems						
Rheovis® VP 1231	Vinylpyrrolidone copolymer	30	~2200	<1	●	●
Rheology modifiers designed to be used in solvent-based systems						
Efka® RM 1463	Polyamide wax	20	Paste	80		●
Efka® RM 1469	Polyamide wax	20	Paste	80		●
Efka® RM 1506	Polyamide wax	24	Paste	76		●
Efka® RM 1900	Modified hydrogenated castor oil	100	Powder	<0.1		●
Efka® RM 1920	Hydrogenated castor oil	100	Powder	<0.1		●
Efka® RM 1965	Overbased calcium sulfonate complex	~70	Paste	30		●
Natural attapulgite clay						
Attagel® 40	Natural attapulgite clay	100	Powder	<0.1	●	●
Attagel® 50	Natural attapulgite clay	100	Powder	<0.1	●	●

All products except Rheovis® PU 1214 and Rheovis® PU 1250 comply with APEO-free claims. APEO has not been intentionally added.
Product may comprise minor traces as ubiquitiously occuring impurities cannot be excluded.

Recommended for			Features and benefits
Water-based systems	Solvent-based systems	Solvent-free systems	
●			Modified vinylpyrrolidone-vinylacetate copolymer thickener with maximum thickening effect at a pH of about 5; can be used as protective colloid in the production of dispersions
	●		Pre-activated polyamide wax thickener; excellent anti-sagging and anti-settling properties for solvent based industrial, architectural, heavy duty and marine coatings
	●		Pre-activated polyamide wax thickener; excellent anti-sagging and anti-settling properties for solvent based OEM and refinish, as well as for wood coatings; minimum effect on color and gloss
	●		Anti-settling and anti-hard caking agent for solvent based systems; hard paste type of polyethylene wax dispersed in xylene; well suited for most solvent-based systems in dipping, spraying and aerosol applications
	●	●	Offers excellent sag resistance for non-aqueous formulations; higher temperature stability
	●	●	Offers excellent sag resistance for non-aqueous formulations; standard thixotropy
	●		Prevents settling of pigments in solvent-based coatings by developing a more shear-thinning rheological behavior; prevents formation of hard pigment sedimentation
●	●	●	Thickening agent offering improved anti-sagging, anti-spatter and syneresis control
●	●	●	Thickening agent offering improved anti-sagging, anti-spatter and syneresis control; more efficient than Attagel® 40

* Recommended for low-VOC paints and coatings if VOC content <1%.
Measurements done according to the EU Ecolabel 2014/312/EU for indoor and outdoor paints and varnishes.
For products with a VOC level above 15% the value is based on calculation according to recipe.

Rheology modifiers

Product selector

Product name	Description	Water-based coatings							
		Architectural							
		High PVC paints	Matt/interior	Silk/semi-gloss	Gloss	Wood paints and stains	Exterior and elastic paints plasters	Colorants	Low-VOC
Rheology modifiers designed to be used in water-based systems									
Rheovis® AS 1125 NA	Non-associative thickener: anionic polyacrylate copolymer (ASE)		□			□	□		■
Rheovis® AS 1127	Non-associative thickener: anionic polyacrylate copolymer (ASE)								
Rheovis® AS 1130	Non-associative thickener: anionic polyacrylate copolymer (ASE)		□			□	□		■
Rheovis® AS 1337	Non-associative thickener: anionic polyacrylate copolymer (ASE)		□	□		□	□		■
Rheovis® AS 1920	Non-associative thickener: anionic polyacrylate copolymer (ASE)	■	■				■		
Rheovis® HS 1152	Associative thickener: anionic polyacrylate copolymer, hydrophobically modified (HASE)		■	■		■	■		■
Rheovis® HS 1162	Associative thickener: anionic polyacrylate copolymer, hydrophobically modified (HASE)		□	□	□	■	□		■
Rheovis® HS 1212	Associative thickener: anionic polyacrylate copolymer, hydrophobically modified (HASE)		■	■		■	■		■
Rheovis® HS 1332	Associative thickener: anionic polyacrylate copolymer, hydrophobically modified (HASE)		□	□	□	■	□		■
Rheovis® PE 1320 NC	Associative thickener: hydrophobic modified polyether (HMPE)	■	■	■	■	■	■		
Rheovis® PE 1331	Associative thickener: hydrophobic modified polyether (HMPE)		■	■	■	■	■		■
Rheovis® PU 1185	Associative thickener: hydrophobic modified ethoxylated urethane (HEUR)	■	■	■	■	■	■		■
Rheovis® PU 1191	Associative thickener: hydrophobic modified ethoxylated urethane (HEUR)		■	■	■	■	■		■
Rheovis® PU 1214 NC	Associative thickener: hydrophobic modified ethoxylated urethane (HEUR)	■	■	■	■	■	■		
Rheovis® PU 1235	Associative thickener: hydrophobic modified ethoxylated urethane (HEUR)		■	■	■	■	■		■
Rheovis® PU 1250 NC	Associative thickener: hydrophobic modified ethoxylated urethane (HEUR)		■	■	■	■	■		
Rheovis® PU 1251	Associative thickener: hydrophobic modified ethoxylated urethane (HEUR)	■	■	■	■	■	■		■
Rheovis® PU 1291	Associative thickener: hydrophobic modified ethoxylated urethane (HEUR)	■	■	■	■	■	■		■

The data in the product selector table is a first recommendation. Suitability of a product should always be checked in the actual paint, coating or ink.

Industrial and automotive							100% systems				Solvent-based coatings									
Air-drying coatings																				
Alkyd emulsions	Polyurethane emulsions	Styrene acrylic / acrylic emulsions	Baking coatings / enamels	2-pack PUR coatings	2-pack epoxy coatings	Emulsions polymerization / latex handling	Powder coatings	UV-curable coatings	2-pack epoxy coatings / 2-pack PUR coatings	Unsaturated polyester (UPE)	NC coatings	Alkyds, long oil	Alkyds, medium oil	High-solids industrial systems	Polyacrylates, polyurethane	PVC / Vinyl	2-pack PUR coatings	2-pack epoxy coatings	Baking / stoving enamels	Coil coating
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■	■	■	□	■	□															

■ Excellent
□ Good

Rheology modifiers

Product selector

Product name	Description	Water-based coatings							
		Architectural							
		High PVC paints	Matt/interior	Silk/semi-gloss	Gloss	Wood paints and stains	Exterior and elastic paints plasters	Colorants	Low-VOC
Rheology modifiers designed to be used in water-based systems									
Rheovis® PU 1341	Associative thickener: hydrophobic modified ethoxylated urethane (HEUR)	■	■	■	■	■	■		■
Rheovis® VP 1231	Vinylpyrrolidone copolymer		□	■	■		■		■
Rheology modifiers designed to be used in solvent-based systems									
Efka® RM 1463	Polyamide wax								
Efka® RM 1469	Polyamide wax								
Efka® RM 1506	Polyamide wax								
Efka® RM 1900	Modified hydrogenated castor oil								
Efka® RM 1920	Hydrogenated castor oil								
Efka® RM 1965	Overbased calcium sulfonate complex								
Natural attapulgite clay									
Attagel® 40	Natural attapulgite clay	■	■	■		■	■		■
Attagel® 50	Natural attapulgite clay	■	■	■		■	■	■	■

The data in the product selector table is a first recommendation. Suitability of a product should always be checked in the actual paint, coating or ink.

Industrial and automotive							100% systems				Solvent-based coatings									
Air-drying coatings																				
Alkyd emulsions	Polyurethane emulsions	Styrene acrylic / acrylic emulsions	Baking coatings / enamels	2-pack PUR coatings	2-pack epoxy coatings	Emulsions polymerization / latex handling	Powder coatings	UV-curable coatings	2-pack epoxy coatings / 2-pack PUR coatings	Unsaturated polyester (UPE)	NC coatings	Alkyds, long oil	Alkyds, medium oil	High-solids industrial systems	Polyacrylates, polyurethane	PVC / Vinyl	2-pack PUR coatings	2-pack epoxy coatings	Baking / stoving enamels	Coil coating
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■	■	■	■	■	■				■	■				■	■			■	■	

■ Excellent
□ Good

Key benefits for your formulations

- Outstanding efficiency, allowing lower dosage
- Improved appearance
- Versatility in water-based and solvent-based systems
- Reliable anti-cratering and fisheye prevention

With wetting agents and surface modifiers for water-based and non-aqueous coatings, we can provide solutions for almost any paint, coating and ink system. Our broad technology portfolio includes polymeric, oligomeric and surfactant-based products such as slip agents with very good recoatability and wetting properties or polymeric flow and leveling agents that offer excellent appearance. Formulators value wetting agents and surface modifiers from BASF for high efficiency, allowing dosage reduction and universal suitability.

Excellent flow and reduced surface tension

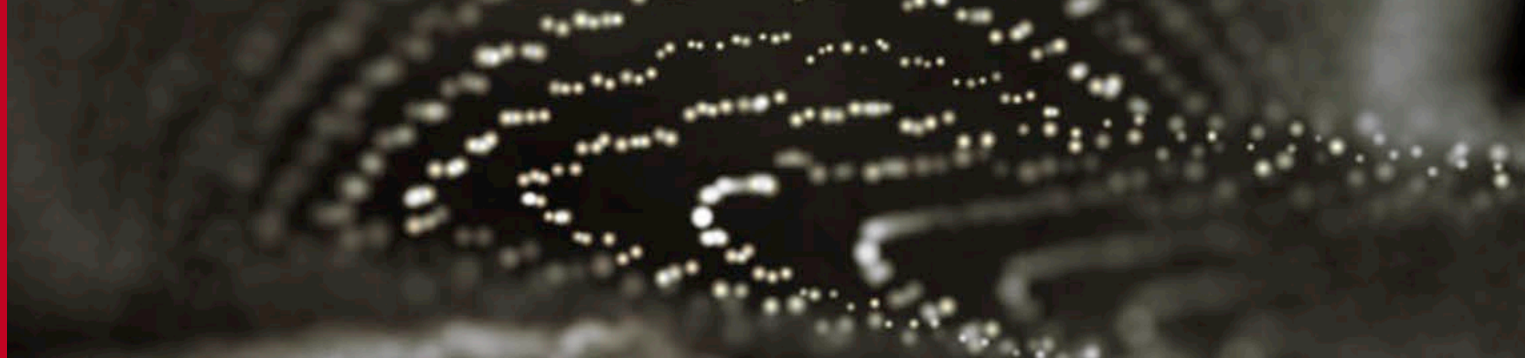
One of the strengths of our product range is a class of very versatile interfacially active additives, fluorinated polyacrylates. These flow and leveling agents offer significant advantages over pure polyacrylates. While straight polyacrylic copolymers feature good flow performance, although they do not sufficiently reduce the surface tension of a formulation to solve problems like cratering or poor substrate wetting. In contrast, polyacrylates with fluorinated side chains can lower surface tension for excellent flow and leveling combined with anti-cratering and good wetting behavior.

Wetting agents and surface modifiers

Fluorocarbon-modified polyacrylates also outperform organomodified silicones in terms of flow, substrate wetting and fisheye resistance. On the other hand, polysiloxanes can provide strong surface-slip and anti-blocking effects as well as surface tension reduction.

The experts at BASF Performance and Formulation Additives are glad to support you in finding the right wetting agents and surface modifiers for your formulations. You can also find out more here: www.basf.com/additives

Product range	Chemistry	Characteristics
Hydropalat®	Alkoxylated surfacants	Low-foaming substrate wetting agents for water-based applications
Efka® Hydropalat®	Silicone surfacants	Substrate-wetting agents with generally very low static surface tension
Hydropalat®	Sulfosuccinates	Cost-effective substrate-wetting agents with excellent dynamic surface-tension reduction
Efka® Hydropalat®	Fluorinated polyacrylates	High-performance acrylate leveling agents for water-based and solvent-based applications
Hydropalat®	Star-shaped polymers	Defoaming wetting agents based on star-shaped polymers for excellent dynamic surface-tension reduction



Product name	Description	Solids (%)	VOC content (%)	Recommended for low-VOC systems*
Substrate wetting agents				
Hydropalat® WE 3111	Polymer-based surfactant	~80	<1	●
Hydropalat® WE 3120	Alkoxylated surfactants	>99.5	<0.5	●
Hydropalat® WE 3135	Alkoxylated surfactants	100	<0.1	●
Hydropalat® WE 3136	Alkoxylated surfactants	100	<0.1	●
Hydropalat® WE 3147	Alkoxylated surfactants	70	<1	●
Hydropalat® WE 3155	Alkoxylated surfactants	100	<0.1	●
Hydropalat® WE 3167	Alkoxylated surfactants	100	<0.1	●
Hydropalat® WE 3220	Silicone surfactants	~87.5	~12.5	
Hydropalat® WE 3221	Silicone surfactants	45	55	
Hydropalat® WE 3225	Silicone surfactants	~93	~7	
Hydropalat® WE 3311	Alkoxylated surfactants	100	<0.1	●
Hydropalat® WE 3317	Alkoxylated surfactants	100	<0.1	●
Hydropalat® WE 3320	Polymer-based surfactant	~90	<0.1	●
Hydropalat® WE 3322	Polymer-based surfactant	> 99	<1	●
Hydropalat® WE 3323	Star-shaped polymers	>97	<3	●
Hydropalat® WE 3370	Fluorinated polyacrylates	60	<10	
Hydropalat® WE 3475	Sulfosuccinates	75	~6	
Hydropalat® WE 3477	Sulfosuccinates	77	~6	
Hydropalat® WE 3650	Modified alkoxylates	>96	<0.5	●
Hydropalat® WE 3694	Alkoxylated surfactants	>85	<15	●
Hydropalat® WE 3966	Block copolymer	100	<0.5	●
Hydropalat® WE 3987	Alkoxylated surfactants	100	<0.1	●

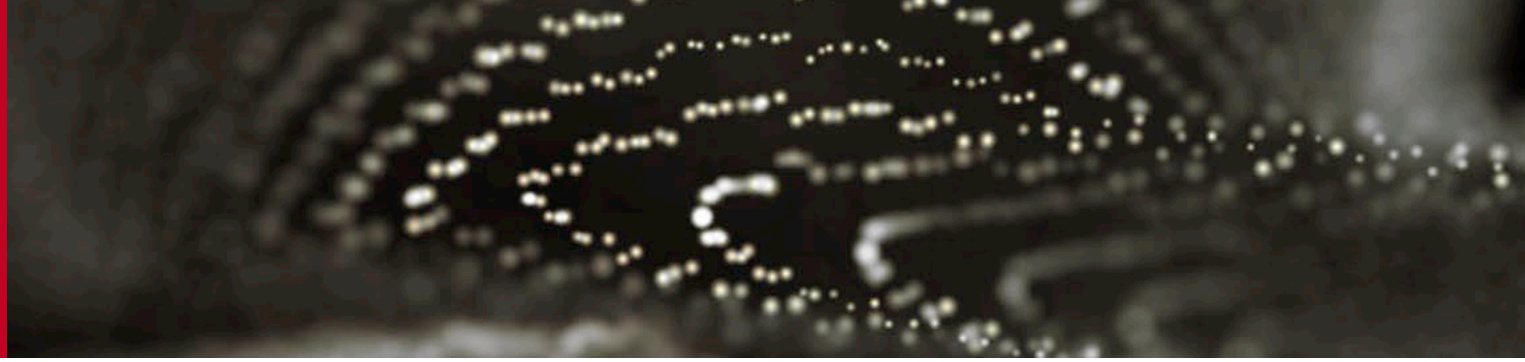
All products comply with APEO-free claims. APEO has not been intentionally added.
Product may comprise minor traces as ubiquitously occurring impurities cannot be excluded.

Wetting agents and surface modifiers

Technical information, features and benefits

Recommended for			Features and benefits
Water-based systems	Solvent-based systems	Solvent-free systems	
●			Alkyl phenol free, proprietary, non–ionic ethoxylate aliphatic alcohol
●			Low-foaming wetting agent for aqueous formulations; excellent reduction of dynamic surface tension
●			A difunctional block copolymer surfactant terminating in primary hydroxyl groups; non-ionic and 100% active; HLB ~19
●			A difunctional block copolymer surfactant terminating in primary hydroxyl groups; non-ionic and 100% active; HLB ~7
●			Alkyl phenol free; non–ionic surfactant; stabilizes high inorganic filler content coatings; HLB ~18
●	●		Water-soluble polyalkylene glycol that is 100% active
●			Difunctional block copolymer surfactant terminating in primary hydroxyl groups; non-ionic surfactants that is 100% active and relatively non-toxic; HLB ~16
●		●	Silicone surfactant with strong reduction of surface tension in aqueous formulations; excellent substrate and anti-crater additive with good recoatability
●			Silicone surfactant in dipropylene glycol monomethyl ether with strong reduction of surface tension in aqueous formulations; excellent substrate and anti-crater additive with good recoatability
●		●	Silicone-based wetting agent with pronounced defoaming action for all kinds of aqueous coating formulations; combines excellent compatibility and wetting action with defoaming properties.
●			Non-volatile and non-ionic surfactant, which is used in water-based coatings as a wetting and dispersing agent for enhanced color development / acceptance and improved substrated wetting; HLB ~8
●			Difunctional block copolymer surfactant terminating in primary hydroxyl groups; non-ionic surfactants that is 100% active and relatively non toxic; HLB 7-12
●			Non-volatile and non-ionic surfactant, which is used in water-based coatings as a wetting and dispersing agent for enhanced color development / acceptance and improved substrated wetting; HLB ~14
●			Anti-foaming, wetting and leveling agent
●			Non-ionic wetting agent for aqueous formulations with pronounced defoaming characteristics; excellent anti-cratering additive
●			Fluorocarbon-modified polyacrylate; excellent substrate wetting, leveling and anti-cratering; problem solver in water-based systems, against sissing and has pronounced effect on leveling
●			Highly efficient sulfosuccinate wetting agent; strong reduction of dynamic surface tension; standard product used in overprint varnishes
●			Highly efficient sulfosuccinate wetting agent; strong reduction of dynamic surface tension; alternative solvent
●			Highly effective, low foaming, substrate wetting agent for water-based coatings and ink applications
●			Non-ionic wetting agent for aqueous formulations with excellent wetting and emulsification properties; low foaming and low surface tension
●			Label-free, effective, low foaming, non-ionic surfactant; miscible with anionic, cationic and non-ionic surfactants; excellent improvement of shock stability in inks; strong improvement of compatibility
●			Solid grade (prill) difunctional block copolymer surfactant terminating in primary hydroxyl groups; non-ionic surfactant that is 100% active and relatively non-toxic; HLB >24

* Recommended for low-VOC paints and coatings if VOC content <1%.
Measurements done according to the EU Ecolabel 2014/312/EU for indoor and outdoor paints and varnishes.
For products with a VOC level above 15% the value is based on calculation according to recipe.



Product name	Description	Solids (%)	VOC content (%)	Recommended for low-VOC systems*
Flow and leveling agents				
Efka® FL 3277	Fluorinated polyacrylates	100	<2.5	
Efka® FL 3670	Fluorinated polyacrylates	70	30	
Efka® FL 3740 EH	Copolyacrylates	>95	<0.5	●
Efka® FL 3745	Copolyacrylates	>96	<0.5	●
Efka® FL 3770	Fluorinated polyacrylates	50	50	
Efka® FL 3772	Fluorinated polyacrylates	60	40	
Efka® FL 3777	Fluorinated polyacrylates	70	30	
Efka® FL 3778	Copolyacrylates	70	30	
Efka® FL 3785	Copolyacrylates	50	50	
Slip and leveling agents				
Efka® SL 3030	Modified polysiloxanes	52	48	
Efka® SL 3031	Modified polysiloxanes	52	48	
Efka® SL 3033	Modified polysiloxanes	15	85	
Efka® SL 3035	Modified polysiloxanes	52	48	
Efka® SL 3200	Modified polysiloxanes	>95	<0.5	●
Efka® SL 3210	Modified polysiloxanes	100	<1	●
Efka® SL 3236	Modified polysiloxanes	100	<1	●
Efka® SL 3257	Modified polysiloxanes	>95	<0.5	●
Efka® SL 3288	Modified polysiloxanes	>99	<1	●
Efka® SL 3299	Modified polysiloxanes	100	<1	●
Efka® SL 3883	Reactive polysiloxanes	70	30	
Hydropalat® SL 3682	Aqueous dispersion of an ultra-high molecular weight silicone	65	<1	●

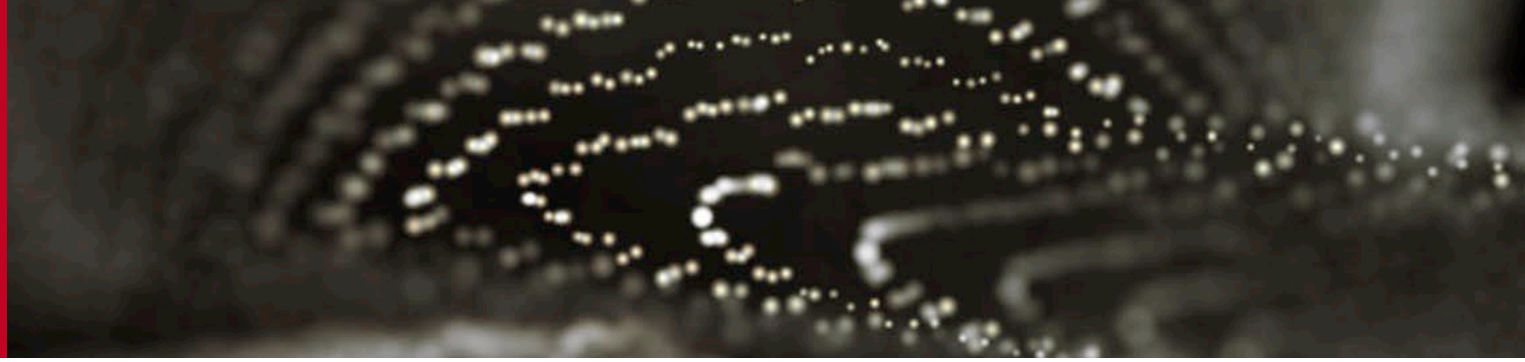
All products comply with APEO-free claims. APEO has not been intentionally added.
Product may comprise minor traces as ubiquitously occurring impurities cannot be excluded.

Wetting agents and surface modifiers

Technical information, features and benefits

Recommended for			Features and benefits
Water-based systems	Solvent-based systems	Solvent-free systems	
	●	●	Fluorocarbon-modified polyacrylate; solvent-free version of Efka® FL 3777
	●		Fluoro-modified polyacrylate; solvent-based industrial and wood coatings; improved leveling and defoaming performance compared to Efka® FL 3600
	●	●	Silicone- and solvent-free flow and leveling agent with air-release properties for non-aqueous coatings
	●	●	Silicone- and solvent-free flow and leveling agent with air-release properties
	●		Fluorocarbon-modified polyacrylate; solvent-based industrial and wood coatings; improved leveling and defoaming performance compared to Efka® FL 3777
●	●		Fluorocarbon-modified polyacrylate; leveling and anti-cratering; can be used in both water- and solvent-based systems
	●		Fluorocarbon-modified polyacrylate; solvent-based systems, coil coatings, OEM and industrial coatings; excellent combination of low foam, substrate wetting and leveling
	●	●	Acrylic polymer; solvent-based systems, coil coatings, OEM and industrial coatings; excellent combination of low foam, substrate wetting and leveling
	●	●	Acrylic polymer; leveling agent for industrial coatings and coil coatings, 2-pack PUR, 2-pack epoxy; baking enamels
●	●		Organically modified polysiloxane; improved slip and mar-resistance; very compatible
	●		Organically modified polysiloxane; solvent-based metal, wood and paper coatings including UV-cured
	●	●	Organically modified polysiloxane; improved surface flow; excellent compatibility in clear coats
●	●		Organically modified polysiloxane; solvent- and water-based coatings, stoving enamels, unsaturated PE including UV-cured
●	●	●	Universal silicone-based solvent-free slip and leveling agent; suitable for aqueous, solvent-based and UV formulations
●	●	●	Broad spectrum and efficient flow and slip enhancer; economic solutions
	●	●	Solvent-free modified polysiloxane; solvent-based wood finishes, industrial coatings and solvent-free floor coatings
●	●	●	Highly effective solvent-free slip additive and leveling agent for non-aqueous coatings and UV systems
●	●	●	Organically modified polysiloxane; strong slip and surface smoothness effect for high-gloss industrial coatings
●	●	●	Organically modified polysiloxane; strong slip and surface smoothness effect for high-gloss industrial coatings
	●	●	Polysiloxane-modified with unsaturated terminal groups; UV-curing systems for wood, plastic and paper coatings
●			Strong slip and anti-blocking additive for aqueous systems; good compatibility properties

* Recommended for low-VOC paints and coatings if VOC content <1%.
Measurements done according to the EU Ecolabel 2014/312/EU for indoor and outdoor paints and varnishes.
For products with a VOC level above 15% the value is based on calculation according to recipe.



Product name	Description	Water-based coatings							
		Architectural							
		High PVC paints	Matt/interior	Silk/semi-gloss	Gloss	Wood paints and stains	Exterior and elastic paints plasters	Colorants	Low-VOC
Substrate wetting agents									
Hydropalat® WE 3111	Polymer-based surfactant	■	■	■	■	■	■	■	■
Hydropalat® WE 3120	Alkoxylated surfactants			■	■	□			■
Hydropalat® WE 3135	Alkoxylated surfactants			■	■	■	■		■
Hydropalat® WE 3136	Alkoxylated surfactants			■	■	■	■		■
Hydropalat® WE 3147	Alkoxylated surfactants								
Hydropalat® WE 3155	Alkoxylated surfactants			■	■	■	■		■
Hydropalat® WE 3167	Alkoxylated surfactants			■	■	■	■		■
Hydropalat® WE 3220	Silicone surfactants			■	■	■			
Hydropalat® WE 3221	Silicone surfactants			■	■	■			
Hydropalat® WE 3225	Silicone surfactants			■	■	■			
Hydropalat® WE 3311	Alkoxylated surfactants	■	■	■	■	■	■		■
Hydropalat® WE 3317	Alkoxylated surfactants			■	■	■	■		■
Hydropalat® WE 3320	Polymer-based surfactant	■	■	■	■			■	■
Hydropalat® WE 3322	Polymer-based surfactant		■	■	■		■	■	■
Hydropalat® WE 3323	Star-shaped polymers			■	■	■			■
Hydropalat® WE 3370	Fluorinated polyacrylates			■	■				
Hydropalat® WE 3475	Sulfosuccinates			■	■	□			
Hydropalat® WE 3477	Sulfosuccinates			■	■	□			
Hydropalat® WE 3650	Modified alkoxylates			■	■	□			■
Hydropalat® WE 3694	Alkoxylated surfactants			■	■	□			■
Hydropalat® WE 3966	Block copolymer								■
Hydropalat® WE 3987	Alkoxylated surfactants			■	■		■	■	■

The data in the product selector table is a first recommendation. Suitability of a product should always be checked in the actual paint, coating or ink.

Wetting agents and surface modifiers

Product selector

Industrial and automotive							100% systems				Solvent-based coatings									
Air-drying coatings																				
Alkyd emulsions	Polyurethane emulsions	Styrene acrylic / acrylic emulsions	Baking coatings / enamels	2-pack PUR coatings	2-pack epoxy coatings	Emulsions polymerization / latex handling	Powder coatings	UV-curable coatings	2-pack epoxy coatings / 2-pack PUR coatings	Unsaturated polyester (UPE)	NC coatings	Alkyds, long oil	Alkyds, medium oil	High-solids industrial systems	Polyacrylates, polyurethane	PVC / Vinyl	2-pack PUR coatings	2-pack epoxy coatings	Baking / stoving enamels	Coil coating
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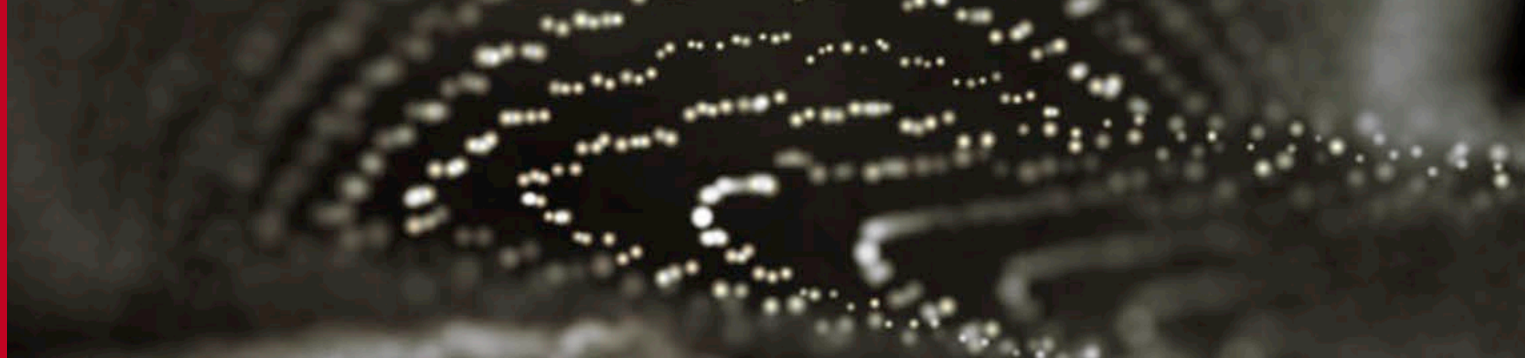
■ Excellent
□ Good



Product name	Description	Water-based coatings							
		Architectural							
		High PVC paints	Matt/interior	Silk/semi-gloss	Gloss	Wood paints and stains	Exterior and elastic paints plasters	Colorants	Low-VOC
Flow and leveling agents									
Efka® FL 3277	Fluorinated polyacrylates								
Efka® FL 3670	Fluorinated polyacrylates								
Efka® FL 3740 EH	Copolyacrylates								
Efka® FL 3745	Copolyacrylates								
Efka® FL 3770	Fluorinated polyacrylates								
Efka® FL 3772	Fluorinated polyacrylates			■	■	■			
Efka® FL 3777	Fluorinated polyacrylates								
Efka® FL 3778	Copolyacrylates								
Efka® FL 3785	Copolyacrylates								
Slip and leveling agents									
Efka® SL 3030	Modified polysiloxanes				■	□			
Efka® SL 3031	Modified polysiloxanes								
Efka® SL 3033	Modified polysiloxanes								
Efka® SL 3035	Modified polysiloxanes				■	□			■
Efka® SL 3200	Modified polysiloxanes								
Efka® SL 3210	Modified polysiloxanes				■	□			■
Efka® SL 3236	Modified polysiloxanes								
Efka® SL 3257	Modified polysiloxanes								
Efka® SL 3288	Modified polysiloxanes				■	□			
Efka® SL 3299	Modified polysiloxanes				■	□			■
Efka® SL 3883	Reactive polysiloxanes								
Hydropalat® SL 3682	Aqueous dispersion of an ultra-high molecular weight silicone				■	■			■

The data in the product selector table is a first recommendation. Suitability of a product should always be checked in the actual paint, coating or ink.

Wetting agents and surface modifiers

Product selector

Industrial and automotive							100% systems				Solvent-based coatings									
Air-drying coatings																				
Alkyd emulsions	Polyurethane emulsions	Styrene acrylic / acrylic emulsions	Baking coatings / enamels	2-pack PUR coatings	2-pack epoxy coatings	Emulsions polymerization / latex handling	Powder coatings	UV-curable coatings	2-pack epoxy coatings / 2-pack PUR coatings	Unsaturated polyester (UPE)	NC coatings	Alkyds, long oil	Alkyds, medium oil	High-solids industrial systems	Polyacrylates, polyurethane	PVC / Vinyl	2-pack PUR coatings	2-pack epoxy coatings	Baking / stoving enamels	Coil coating
								■	■	■	■	■	■	■	■	■	■	■	■	■
								■	■	■		■	■	■	■	■	■			■
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■	■	■																		

■ Excellent
□ Good

Film-forming agents

BASF offers film-forming agents including coalescents, open-time prolongers and plasticizers. Our portfolio focuses on high-performance and sustainable products with renewable content that are non-phthalate and have lowest-possible VOC emissions in systems ranging from paints to plasters and sealants.

Our coalescing agents and plasticizers deliver high performance coupled with extremely low VOC content. We also provide a complete range of open-time prolongers based on renewable raw materials. Different chemical compounds and functional groups enable you to fine-tune your formulations for specific properties, including low film-forming temperatures, increased plasticization, reduced brittleness and improved adhesion.

Key benefits for your formulations

- Sustainable products
- Qualification for low-VOC or VOC-free EU labeling
- Solutions for aqueous and solvent-based formulations
- Enhanced mechanical properties
- Improved workability

At BASF Performance and Formulation Additives, you will find experts in your specific needs who are glad to support you in finding the right film-forming agents for your formulations. For more information, you can also look here: www.basf.com/additives

Product range (coalescents)	Chemistry	Characteristics
Loxanol® CA	Coalescents	Lower film-forming temperature, improved film formation

Product range (open-time prolongers)	Chemistry	Characteristics
Loxanol® OT	Dispersions of oleo-compounds	Increased open time, prevention / reduction of crack formation, improved workability

Product range (plasticizers)	Chemistry	Characteristics
Loxanol® PL	Plasticizers	Plastification for water-based formulations
Efka® PL	Plasticizers	Plastification for solvent-based and 100% systems

Film-forming agents

Technical information, features and benefits

Product name	Description	Solids (%)	Viscosity (mPa·s)	VOC content (%)	Recommended for low-VOC paints*
Coalescents					
Loxanol® CA 5086	Non-ionic surfactant	>97	~60	<3	●
Loxanol® CA 5120	Non-ionic surfactant	>98	~80	<2	●
Loxanol® CA 5308	Dicarboxylic acid esters	100	~6	<0.1	●
Loxanol® CA 5310	Propylene glycol monoester of predominantly C-19 fatty acids	>98	~30	<2	●
Open-time prolongers					
Loxanol® OT 5853	Aqueous dispersion of oleochemical compounds	30	~1,000	<0.1	●
Plasticizers					
Efka® PL 5381	Epoxidized soy bean oil	100	~550	<0.1	●
Efka® PL 5382	Epoxidized soy bean oil	100	~550	<0.1	●
Efka® PL 5646	Phthalate free plasticizer, 1,2-Cyclohexane dicarboxylic acid, diisononyl ester	100	~50	<0.1	
Efka® PL 5651 NF	Bis(butylcarbitol) formal	>98	~100	<2	●
Miscellaneous					
Loxanol® MI 6627	Zinc salt of an organic nitrogen compound	>99	Powder	<0.1	
Conductivity Aids					
Efka® IO 6779	Solution of quaternary ammonium salt, long chain fatty acid modified	80	-	20	
Efka® IO 6780	Solution of quaternary ammonium salt, fatty acid modified	80	-	20	
Efka® IO 6782	Solution of quaternary ammonium salt, short chain alkyl modified	70	-	30	
Efka® IO 6783	Ionic liquid, hydroxy functional ammonium salt	>98	1.100	<2	●

All products comply with APEO-free claims. APEO has not been intentionally added.
Product may comprise minor traces as ubiquitiously occuring impurities cannot be excluded.

Recommended for			Features and benefits
Water-based systems	Solvent-based systems	Solvent-free systems	
●			High performance, zero-VOC, coalescing agent for water-based applications
●			High performance, zero-VOC, coalescing agent for water-based applications
●			Highly efficient coalescing agent for interior / exterior paints, elastomeric coatings, textured finishes and wood coatings
●			Excellent balance of coalescent properties
●			Highly efficient open-time prolonger; prevents / reduces cracking in resin-based plasters; improved storage stability
	●		Standard epoxy plasticizer which is extraction-resistant to many industrial agents; the migration resistance is comparable with polymeric plasticizers
	●		Higher purified version of Efka® PL 5381 with a slightly broader food contact range
	●		Phthalate-free plasticizer for the use in PVC, coatings, inks and rubber especially for toxicological sensitive applications; suitable also as VOC-free solvent / carrier in various applications; boiling point ~394°C; solvent for ceramic inkjet
●	●		Enhances low temperature properties and reduces processing viscosities in elastomers and thermoplastic elastomers
●	●		Highly efficient corrosion inhibitor in combination with zinc phosphate
	●	●	Increases the electric conductivity of a liquid or solid paint film
	●	●	Increases the electric conductivity of a liquid or solid paint film
	●	●	Increases the electric conductivity of a liquid or solid paint film
●	●	●	Conductivity promoter to adjust anti-static property of coatings and resistivity in liquid formulations to prevent static charge build-up or dust attraction during and after the drying process

* Recommended for low-VOC paints and coatings if VOC content <1%.
Measurements done according to the EU Ecolabel 2014/312/EU for indoor and outdoor paints and varnishes.
For products with a VOC level above 15% the value is based on calculation according to recipe.

Film-forming agents

Technical information, features and benefits

Product name	Description	Solids (%)	Viscosity (mPa·s)	VOC content (%)	Recommended for low-VOC paints*
Conductivity Aids					
Efka® IO 6785	Ionic liquid, non-functional imidazolium salt, medium active	>97	120	<3	●
Efka® IO 6786	Ionic liquid, non-functional imidazolium salt, highly active	>97	20	<3	●
Efka® MI 6790	Polar, long-chain ester based on natural raw materials	>99	Solid (pearls)	<3	●

All products comply with APEO-free claims. APEO has not been intentionally added.
Product may comprise minor traces as ubiquitiously occuring impurities cannot be excluded.

Recommended for			Features and benefits
Water-based systems	Solvent-based systems	Solvent-free systems	
●	●	●	Conductivity promoter to adjust anti-static property of coatings and resistivity in liquid formulations to prevent static charge build-up or dust attraction during and after the drying process
●	●	●	Conductivity promoter to adjust anti-static property of coatings and resistivity in liquid formulations to prevent static charge build-up or dust attraction during and after the drying process
●	●	●	Prevents build-up of direct current potentials during electrostatic powder spray coating

* Recommended for low-VOC paints and coatings if VOC content <1%.
Measurements done according to the EU Ecolabel 2014/312/EU for indoor and outdoor paints and varnishes.
For products with a VOC level above 15% the value is based on calculation according to recipe.

Film-forming agents

Product selector

Product name	Description	Water-based coatings							
		Architectural							
		High PVC paints	Matt/interior	Silk/semi-gloss	Gloss	Wood paints and stains	Exterior and elastic paints plasters	Colorants	Low-VOC
Coalescents									
Loxanol® CA 5086	Non-ionic surfactant	■	■	■	■	■	■		■
Loxanol® CA 5120	Non-ionic surfactant	■	■	■	■	■	■		■
Loxanol® CA 5308	Dicarboxylic acid esters		□	■	■	■	■		■
Loxanol® CA 5310	Propylene glycol monoester of predominantly C-19 fatty acids	■	■	■	■	■	■	■	■
Open-time prolongers									
Loxanol® OT 5853	Aqueous dispersion of oleochemical compounds						■		■
Plasticizers									
Efka® PL 5381	Epoxidized soy bean oil								
Efka® PL 5382	Epoxidized soy bean oil								
Efka® PL 5646	Phthalate free plasticizer, 1,2-Cyclohexane dicarboxylic acid, diisononyl ester								
Efka® PL 5651 NF	Bis(butylcarbitol) formal								
Miscellaneous									
Loxanol® MI 6627	Zinc salt of an organic nitrogen compound								
Conductivity Aids									
Efka® IO 6779	Solution of quaternary ammonium salt, long chain fatty acid modified								

The data in the product selector table is a first recommendation. Suitability of a product should always be checked in the actual paint, coating or ink.

							100% systems				Solvent-based coatings										
Industrial and automotive																					
Air-drying coatings																					
Alkyd emulsions	Polyurethane emulsions	Styrene acrylic/ acrylic emulsions	Baking coatings/enamels	2-pack PUR coatings	2-pack epoxy coatings	Emulsions polymerization/ latex handling	Powder coatings	UV-curable coatings	2-pack epoxy coatings/ 2-pack PUR coatings	Unsaturated polyester (UPE)	NC coatings	Alkyds, long oil	Alkyds, medium oil	High-solids industrial systems	Polyacrylates, polyurethane	PVC/Vinyl	2-pack PUR coatings	2-pack epoxy coatings	Baking/stoving enamels	Coil coating
■	■	■	■																		
■	■	■	■																		
		■																			
■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	
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		■	■	■	■				■	■			□	■	■			■	■	■	

■ Excellent
□ Good

Film-forming agents

Product selector

Product name	Description	Water-based coatings							
		Architectural							
		High PVC paints	Matt/interior	Silk/semi-gloss	Gloss	Wood paints and stains	Exterior and elastic paints plasters	Colorants	Low-VOC
Conductivity Aids									
Efka® IO 6780	Solution of quaternary ammonium salt, fatty acid modified								
Efka® IO 6782	Solution of quaternary ammonium salt, short chain alkyl modified								
Efka® IO 6783	Ionic liquid, hydroxy functional ammonium salt								■
Efka® IO 6785	Ionic liquid, non-functional imidazolium salt, medium active								■
Efka® IO 6786	Ionic liquid, non-functional imidazolium salt, highly active								■
Efka® MI 6790	Polar, long-chain ester based on natural raw materials								■

The data in the product selector table is a first recommendation. Suitability of a product should always be checked in the actual paint, coating or ink.

Industrial and automotive							100% systems				Solvent-based coatings									
Air-drying coatings																				
Alkyd emulsions	Polyurethane emulsions	Styrene acrylic/ acrylic emulsions	Baking coatings/enamels	2-pack PUR coatings	2-pack epoxy coatings	Emulsions polymerization/ latex handling	Powder coatings	UV-curable coatings	2-pack epoxy coatings/ 2-pack PUR coatings	Unsaturated polyester (UPE)	NC coatings	Alkyds, long oil	Alkyds, medium oil	High-solids industrial systems	Polyacrylates, polyurethane	PVC/Vinyl	2-pack PUR coatings	2-pack epoxy coatings	Baking/stoving enamels	Coil coating
		■	■	■	■				■	■			□	■	■		■	■	■	
		■	■	■	■				■	■			□	■	■		■	■	■	
		■	■	■	■				■	■			□	■	■		■	■		
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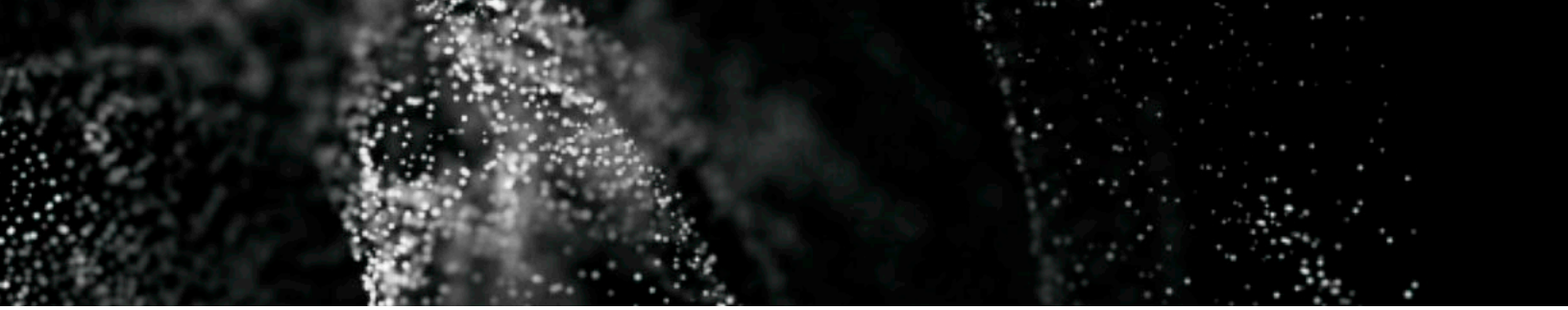
		■	■	■	■	■			■	■			□	■	■		■	■		

■ Excellent
□ Good

Index



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Contacts worldwide

Asia
BASF East Asia Regional Headquarters Ltd.
45/F, Jardine House
No. 1 Connaught Place
Central
Hong Kong
formulation-additives-asia@basf.com

Europe
BASF SE
Formulation Additives
67056 Ludwigshafen
Germany
formulation-additives-europe@basf.com

North America
BASF Corporation
11501 Steele Creek Road
Charlotte, NC 28273
USA
formulation-additives-nafta@basf.com

South America
BASF S.A.
Rochaverá - Crystal Tower
Av. das Naçoes Unidas, 14.171
Morumbi - São Paulo - SP
Brazil
formulation-additives-south-america@basf.com

ED2 0519NAe