

Powering Up Your Formulations

BASF Performance and Formulation Additives

 **BASF**

We create chemistry

Global Additives Webpage



For more information about BASF's Additives please visit the global webpage:



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Powering Up Your Formulations

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.

Sustainability

At BASF, we create chemistry for a sustainable future.

Our corporate commitments cover every part of our value chain and operations to deliver long-term business success, including:

- source responsibly and produce efficiently
- produce safely for people and the environment
- drive sustainable solutions with our stakeholders

We are driving a transition pathway for our customers which holistically provides a realistic plan and timetable towards implementing usage of our best available solutions.

As a front runner in the global member-driven initiative TfS (Together for Sustainability) BASF contributes to deliver a global standard for environmental, social and governance performance for chemical supply chains.

With the industry increased focus to address environmental and health concerns, we used our comprehensive knowledge base on chemicals and developed a proprietary certified digital solution to calculate the cradle-to-gate Product Carbon Footprint (PCF) for our entire portfolio supporting our customer's product choice. The calculations comply with the ISO 14067 and the TfS methodology, which is the accepted standard for many global players in the chemical industry.

Additives as part of BASF group,

- creates value for customers with our sustainable solutions fulfilling regulatory requirements and market standards (focus on elimination of VOCs, CMR-components).
- furthermore, commits to create solutions beyond regulatory requirements via offering products with renewable content, improve product durability, and enabling eco-label conformity.
- consistently drives to ensure high EHS standard and eco-efficient production process (e.g., lower operator exposure with automation, renewable energy and emission reduction).

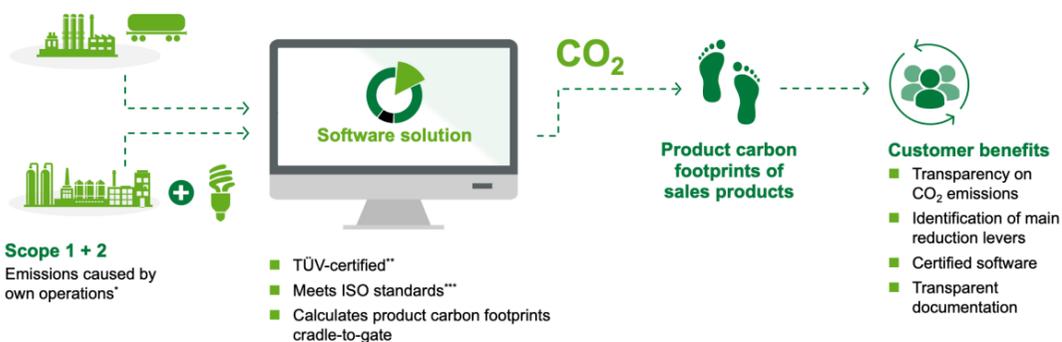
- supports our customers in calculating product carbon footprint for their own products with SCOTT.
- enables customers to navigate through challenges and seize opportunities, using the strong expertise of the global Additives team.

The BASF Formulation and Performance Additives are ready to Powering Up Your Formulations and pushing to the next level of the green transformation towards sustainable growth.

Reliable information about the carbon footprint of your materials

We have built an industry-leading certified digital solution to calculate product carbon footprints

Scope 3
Emissions caused by suppliers and generation of raw materials



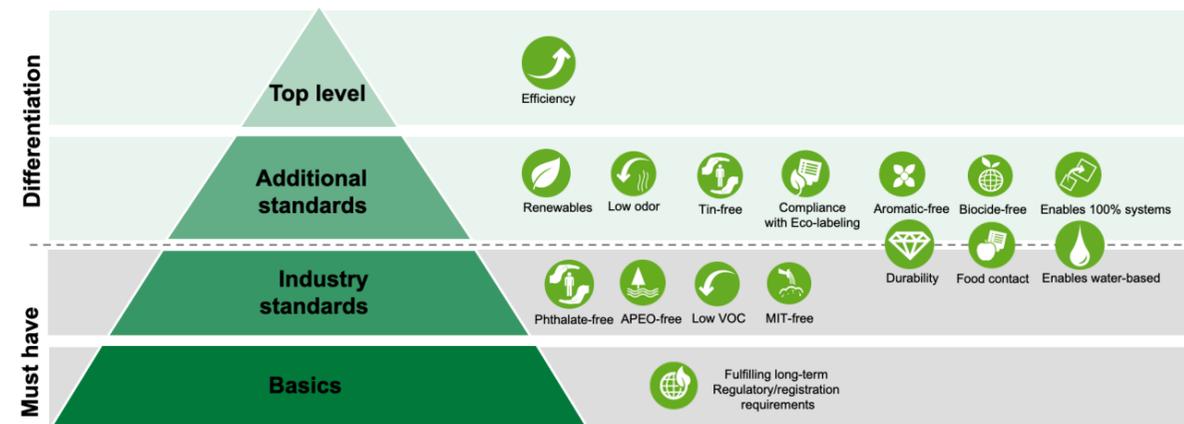
* Energy generation and chemical processes.
** ISO 14067:2018.
*** ISO 14040:2006, 14044:2006, 14067:2018, GHG Protocol Product Standard.

If you want to learn more about Product Carbon Footprint calculation at BASF:



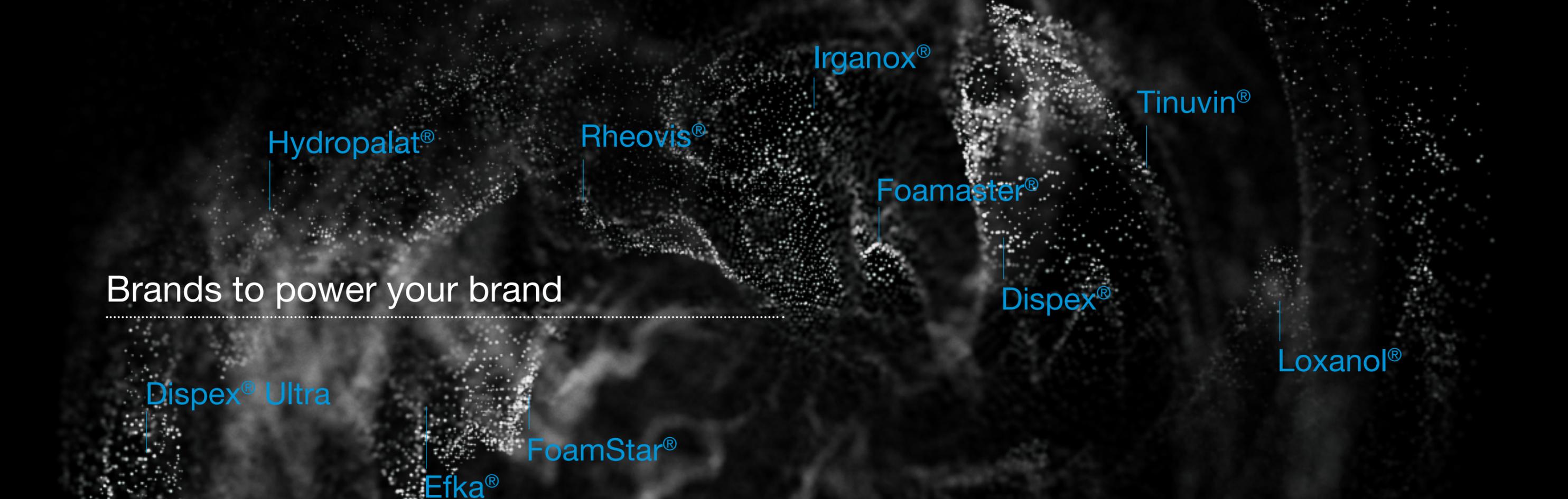
Sustainability Drivers in Additives

Zero pollution and health & safety as basic mechanism for products & technologies



If you want to learn more about Sustainability at BASF:





Brands to power your brand

Dispex® Ultra

Efka®

FoamStar®

Hydropalat®

Rheovis®

Irganox®

Foamaster®

Dispex®

Tinuvin®

Loxanol®

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 water-based 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 water-based 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 water-based 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 water- 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

Key benefits

- Solutions for water- and solvent-based applications
- Improved sustainability (e.g. eco-labeling, low VOC)
- Easy stir-in during processing
- Long-term durability
- Excellent long-term color retention
- Lower coat weight without compromising stability
- Long service life / renovation intervals e.g. in architectural applications
- Prevents surface defects

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 (ECO) line for water-based 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.

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 – as well as adhesives & sealants and printing & packaging – 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 range	Chemistry	Characteristics
Tinuvin®	Light Stabilizers	Excellent protection from degradation through ultraviolet radiation coupled with compatibility in water- and solvent-based systems.
Lignostab®	HALS	Lignin Stabilizer via wood pretreatment, color retention, improved durability.
Chimassorb®	Light Stabilizers	Protection from degradation through ultraviolet radiation coupled with compatibility in water- and solvent-based systems.

Light Stabilizers

Technical information, features and benefits

Product name	Chemistry	Physical Form	Melting Point (°C)	Molecular Weight (g/mol)
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UV Absorbers for water-based systems

Tinuvin® 1130	Benzotriazole (BTZ)	Liquid	-	637 & 975
Tinuvin® 9945-DW ECO		Liquid, 45% active	-	452
Tinuvin® 400-DW ECO	HydroxyPhenylTriazine (HPT), best photo- and thermal-permanence, no interaction with amines, strong alkali and metal catalysts	Liquid, 20% active	-	647
Tinuvin® 479-DW ECO		Liquid, 20% active	-	678
Tinuvin® 477-DW ECO	Tris-ResorcinyITriazine (TRT), high photo-permanence	Liquid, 20% active	-	Isomer Mix

HALS for water-based systems

Tinuvin® 123-DW ECO	N-OR HALS	Liquid, 30% active	-	737
Tinuvin® 249-DW ECO	N-R HALS	Liquid, 40% active	-	482

Blends for water-based systems

Tinuvin® 5333-DW ECO	UVA / HALS blend	Liquid, 40% active	-	Mixture
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Lignin stabilizers

Lignostab® 1198	Activated HALS	Solid	66-70	172
Lignostab® 530	ESQ	Liquid, 10% in water	-	711

Automotive & Transportation	Industrial	Furniture & Flooring	Architectural	Adhesives & Sealants	Printing & Packaging	Features and benefits
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■	■	■	■	■	■	UVA for medium performance coatings, requires predissolution in cosolvent.
	■	■	■	■	■	Multipurpose UVA for medium to high durability requirements.
■	■	■	■	■	■	Blue shifted UVA for high performance applications, excellent spectral coverage in combination with Tinuvin® 477-DW ECO or with Tinuvin® 479-DW ECO.
■	■	■		□	■	UVA with extremely high extinction coefficient, for highest durability requirements in clear coats, specifically suited for thin film applications.
		■	■	□	■	Red shifted UVA for high performance wood coatings.
■	■	■	■	■		Non-basic HALS for high performance formulations, no interaction with sensitive dispersions.
■	■	■	■			Non-basic HALS, no interaction with sensitive dispersions.
	■	■	■		■	UVA / HALS blend with broad spectral coverage for high performance applications.
		■	■			Lignin stabilizer for wood impregnation.
		■	■			Lignin stabilizer solution for wood impregnation without imparting initial wood color.

■ Recommended
□ Suitable

Light Stabilizers

Technical information, features and benefits

Product name	Chemistry	Physical Form	Melting Point (°C)	Molecular Weight (g/mol)
UV Absorbers for non-aqueous systems and powder coatings				
Chimassorb® 81 (ED)	Benzophenone (BP)	Solid	47-51	326
Tinuvin® P	Benzotriazole (BTZ)	Solid	128-132	225
Tinuvin® 99-2		Liquid, 95% in 2-methoxy-1-propyl acetate	-	452
Tinuvin® 171		Liquid	-	395
Tinuvin® 326		Solid	138-142	316
Tinuvin® 384-2		Liquid, 95% in 2-methoxy-1-propyl acetate	-	452
Tinuvin® 900		Solid	138-142	448
Tinuvin® 928		Solid	109-113	442
Tinuvin® 1130		Liquid	-	637 & 975
Tinuvin® Carboprotect®		Solid	132-136	560
Tinuvin® 400		HydroxyPhenylTriazine (HPT), best photo- and thermal-permanence, no interaction with amines, strong alkali and metal catalysts	Liquid, 85% in 1-methoxypropan-2-ol	-
Tinuvin® 405	Solid		73-77	584
Tinuvin® 479	Solid		39-43	678
Tinuvin® 477	Tris-ResorcinyTriazine (TRT), high photo-permanence	Liquid, 80% in 2-methoxy-1-propyl acetate	-	Mixture

Automotive & Transportation	Industrial	Furniture & Flooring	Architectural	Adhesives & Sealants	Printing & Packaging	Features and benefits
	■	■	■	■	■	UVA for moderate durability requirements; mass stabilization of gel coats.
	■			■		UVA for medium performance coatings.
■	■	■	■			UVA for medium performance coatings.
	■	■		■		UVA for medium performance coatings.
	■	■		■		Chlorinated red shifted UVA, allows <1% transmittance up to 370nm; limited solubility in organic solvents.
■	■			■		Multipurpose 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 coatings.
■						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.
■	■	■	■	■	■	Blue shifted UVA for high durability coatings including UV curing systems, excellent spectral coverage in combination with Tinuvin® 477 or 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 specifically suited for thin film applications; for highest durability requirements; suitable for powder coatings and UV curing systems.
	■	■	■	■	■	Red shifted UVA, for high durability wood coating requirements, allows <1% transmittance up to 370nm.

■ Recommended
□ Suitable

Light Stabilizers

Technical information, features and benefits

Product name	Chemistry	Physical Form	Melting Point (°C)	Molecular Weight (g/mol)
Tinuvin® 292	N-R HALS	Liquid	-	509 & 370
Tinuvin® 292 HP		Liquid	-	509 & 370
Tinuvin® 770 DF (ED)	N-H HALS	Solid	81-85	480
Tinuvin® 123	N-OR HALS	Liquid	-	737
Tinuvin® 5100	N-OR HALS	Liquid	-	737
Tinuvin® 152	N-OR HALS	Solid	72-76 (Tg)	757
Tinuvin® 249	N-R HALS	Liquid	-	482
Tinuvin® 144	N-R HALS	Solid	148-152	685
Tinuvin® 622 SF	Oligomeric N-R HALS	Solid	57-61 (Tg)	3,100-4,000
Chimassorb® 2020 FDL (ED)	Oligomeric N-H HALS	Solid	92-96	2,600-3,400
Irgastab® UV 22	Quinodine	Liquid	-	Mixture

HALS for non-aqueous systems and powder coatings

Automotive & Transportation	Industrial	Furniture & Flooring	Architectural	Adhesives & Sealants	Printing & Packaging	Features and benefits
■	■	■	■	■	■	Multipurpose basic HALS for various applications, use in water-based coatings may require addition of cosolvents, may interact with sensitive dispersion binders.
■	■			□	■	Multipurpose 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-basic HALS for oxidative curing coatings.
■	■					Non-migrating, 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.
■	■			■		Antioxidant-functionalized HALS with tribo electric charging activity for power coatings.
	■			■		Low-basic HALS for powder coating applications with very good antioxidant properties, limited solubility in organic solvents.
	■			■		Oligomeric HALS with thermally stabilizing and antioxidant properties for various coatings applications, particularly recommended for adhesives and sealants.
		■			■	In-can stabilization of coatings.

■ Recommended
□ Suitable

Light Stabilizers

Technical information, features and benefits

Product name	Chemistry	Physical Form	Melting Point (°C)	Molecular Weight (g/mol)
Light stabilizer blends				
Tinuvin® 111 FDL	N-Alkyl / N-R HALS	Solid	60-98 (Tg)	Mixture
Tinuvin® 5050	BTZ / N-R HALS	Liquid	-	Mixture
Tinuvin® 5060	BTZ / N-OR HALS	Liquid	-	Mixture
Tinuvin® 5070	BTZ / N-R HALS	Liquid	-	Mixture
Tinuvin® 5151		Liquid	-	Mixture
Tinuvin® 5248	HPT / N-R HALS	Liquid	-	Mixture
Tinuvin® 5251		Liquid	-	Mixture
Tinuvin® 5866	UVA / N-R HALS	Solid	-	Mixture
Tinuvin® B 75 (ED)	UVA / N-R HALS / AO	Liquid	-	Mixture

Automotive & Transportation	Industrial	Furniture & Flooring	Architectural	Adhesives & Sealants	Printing & Packaging	Features and benefits
	■					HALS blend for powder coating applications with tribo electric charging activity.
	■	■	■	■		UVA / HALS blend for solvent-based applications.
	■	■	■	■		UVA / non-basic HALS blend for solvent-based oxidative curing coatings.
■	■	■	■	■		UVA / non-basic HALS blend, low color for solvent-based applications, enabling label-free alternative to Tinuvin® 5050.
■	■	■	■	■		UVA / HALS blend for solvent-based medium performance coatings.
■	■	■	■			UVA / HALS blend for high-performance solvent-based applications.
■	■		■			UVA / HALS blend for high performance solvent-based applications.
	■			■		Stabilizer blend for adhesive and sealants applications.
	■	■		■		Stabilizer blend for furniture and flooring applications.

■ Recommended
□ Suitable

Antioxidants and Optical Brighteners

Key benefits

- Solutions for water- and solvent-based applications
- Improved sustainability (e.g. eco-labeling)
- Easy stir-in during processing
- Effective protection from thermally induced oxidation during processing
- Yellowing prevention during processing
- Improves stability of adhesives and sealants
- Prevents loss of mechanical properties
- Lower coat weight without compromising stability

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, adhesives and sealants 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 water-based 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.

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 for your formulations and even co-innovate to develop novel solutions. For more information, you can also look here: www.basf.com/additives

Product range	Chemistry	Characteristics
Irganox®	Antioxidants	Prevent oxidation of polymers from heat exposure from production, processing to extending application service life.
Irgafos®	Antioxidants	Prevent oxidation of polymers from heat exposure from production, processing to extending application service life. Helps to retain integrity of coatings.
Irgastab®	Antioxidants blends	Thermal and process stabilizer, focusing on adhesive and sealant applications.
Tinopal®	Optical Brighteners	Fluorescent whitening agents, brightens coatings, masks yellowing.

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		Liquid, 40% active	-	587
Irganox® 1010 (ED)		Solid	110-125	1,178
Irganox® 1035		Solid	63-78	643
Irganox® 1076 (ED)		Solid	50-55	531
Irganox® 1135		Liquid	-	390
Irganox® 1726		Solid	28	537
Phosphite (secondary antioxidant)				
Irgafos® 126 (ED)	Phosphite	Solid	160-175	604
Irgafos® 168 (ED)		Solid	183-186	647
Thioether (secondary antioxidant)				
Irganox® PS 802 FL	Thioether	Solid	50-55	683
Irganox® PS 800 L		Solid	39-41	515

Automotive & Transportation	Industrial	Furniture & Flooring	Architectural	Adhesives & Sealants	Printing & Packaging	Features and benefits
■	■			■	■	AO for solvent-based and powder-coating applications, not to be used in direct-fired gas ovens.
	■			■	■	AO for water-based coating applications, not to be used in direct-fired gas ovens.
■	■			■	■	AO for solvent-based and powder-coating applications, not to be used in direct-fired gas ovens.
	■					AO for solvent-based coating applications, not to be used in direct-fired gas ovens.
■	■			■	■	AO for 100% and solvent-based applications, not to be used in direct fired gas ovens.
■	■			■	■	AO for all solvent-based applications, not to be used in direct fired gas ovens.
				■		AO for hot melt and rubber applications.
■	■			■		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 for long term thermal stability, may profit from combination with primary AO. Hot melt applications.
				■		Thiosynergist suitable for long term thermal stability, may profit from combination with primary AO. Good solubility. Hot melt applications.

■ Recommended
□ Suitable

Antioxidants and Optical Brighteners

Technical information, features and benefits

Product name	Chemistry	Physical Form	Melting Point (°C)	Molecular Weight (g/mol)
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Antioxidant blend

Irganox® B 225 (ED)		Solid	>100	
Irganox® B 900	Phenol / phosphite	Solid	>50	
Irgastab® Plus 5193		Solid	180-190	
Irgastab® Plus 5170 MG	Phenol / thioether	Solid	160-170	

Optical brightener

Tinopal® NFW 10 LIQ	Biphenyl-stilbene	Liquid, 10% active	-	563
Tinopal® OB CO	Benzoxazole	Solid	196-203	431
Tinopal® SFP	Triazine-stilbene	Solid	-	1,305

Automotive & Transportation	Industrial	Furniture & Flooring	Architectural	Adhesives & Sealants	Printing & Packaging	Features and benefits
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■	■			■		AO blend for powder-coating applications, not to be used in direct fired gas ovens.
■	■			■		AO blend for powder-coating applications, not to be used in direct fired gas ovens.
	■			■		AO blend for adhesives and sealants applications.
	■			■		AO blend for adhesives and sealants applications.
	■		■	■	■	Water-based solution for white and pastel tone paints, clear coats, overprint varnishes.
	■		■	■	■	Solid optical brightener for solvent-based and 100% applications, white and pastel tone paints, clear coats, overprint varnishes.
	■		■	■	■	Highly efficient water-soluble form, especially recommended to enhance brightness of pure white and pastel shades.

■ Recommended
□ Suitable

Dispersing Agents

Key benefits

- Excellent compatibility with a broad range of resin systems
- Highest performance with all kind of pigment classes
- Improved sustainability
- Shorter dispersion time
- Reduced mill base viscosity
- Prevention of pigment settling, flooding and floating
- Increased color strength and hiding power
- Highest transparency and jetness
- Enhanced gloss

Our extensive portfolio of dispersing agents contains solutions for water-based, 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, polymerization technology and formulations, our experts will work with you to find 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 control and improved coloristics.

The Efka® PX and Dispex® Ultra PX ranges comprise our top-line dispersing agents. They are characterized by a defined polymer architecture, which provides high affinity for the pigment surface and robust stabilization against flocculation. These additives help to differentiate formulations with improved properties,

such as higher transparency and exceptional jetness development. Also, improved value in use of high-performance pigments can be achieved by enhancing color strength.

Our latest developments have focused on advancing water-based formulations with products like Dispex® Ultra PX 4290 and Dispex® Ultra CX 4452. Improved durability or reduced total cost of formulation can be achieved by using our hydrophobic dispersants Dispex® CX 4248 and Dispex® CX 4348. For solvent-based applications Efka® PX 4787 provides optimal milling efficiency, which can support in reducing energy consumption.

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

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, 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, 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, excellent viscosity reduction and stabilization.

Dispersing Agents

Technical information, features and benefits

Product name ¹	Description	Technical information				Pigments				Concentrates	
		Solids (%) ²	VOC content (%) ²	Amine value	Acid value	Carbon black	Organic pigments	Inorganic pigments	Extenders	Resin-free	Resin-containing

Anionic dispersing agents based on polyacrylic acid

Dispex® AA 4030	Ammonium polyacrylate	30	<0.1	-	-			■	■			
Dispex® AA 4040		45	<0.1	-	-			■	■			
Dispex® AA 4135		35	<0.1	-	-			■	■			
Dispex® AA 4140		43	<0.1	-	-			■	■			
Dispex® AA 4141	Sodium polyacrylate	43	<0.1	-	-			■	■			
Dispex® AA 4144		35	<0.3	-	-			■	■			
Dispex® AA 4145		45	<0.6	-	-			■	■			
Dispex® AA 4935		>91	<0.1	-	-			■	■			
Dispex® CX 4230	Ammonium polyacrylate copolymer	28	<0.5	-	-			■	■			
Dispex® CX 4231		30	<1	-	-			■	■			
Dispex® CX 4234		35	<0.5	-	-			■	■			
Dispex® CX 4240		40	<0.1	-	-			■	■			
Dispex® CX 4248		32	<0.1	-	-			■	■			
Dispex® CX 4320		Carboxylic acid copolymer, sodium salt	25	<0.1	-	-			■	■		
Dispex® CX 4340			40	<0.1	-	-			■	■		
Dispex® CX 4345		Sodium polyacrylate copolymer	45	<1	-	-			■	■		
Dispex® CX 4348		32	<0.1	-	-			■	■			
Dispex® HIDE CX 4540	Opacity enhancer	41	<0.2	-	-			■	■			

¹ All products comply with APEO-free claims. APEO has not been intentionally added.

² All measurements reflect approximate values.

³ Measurements done according to the EU Ecolabel 2014/312/EU for indoor and outdoor paints and varnishes. For products with a VOC level above 10% the value is based on calculation according to recipe.

⁴ Contolled free radical polymerization.

⁵ Needs synergist.

System				Industry							Features and benefits
Recommended for low VOC systems ³	Water-based	Solvent-based	Solvent-free	Architectural	Construction	General Industrial	Furniture & Flooring	Automotive	Printing & Packaging	Adhesives & Sealants	

■	■			■	■	□	□		■	■		Standard dispersing agent for inorganic fillers and pigments, suitable for exterior applications.
■	■			■	■	□	■		■	■		Low polydispersity with higher efficiency for inorganic fillers and pigments, suitable for exterior coatings.
■	■			■	■	□	■					Standard dispersing agent for inorganic fillers and pigments.
■	■			■	■	□	■		■	■		Low polydispersity for efficient dispersing properties and liquefying effect.
■	■			■	■	□	■					Low polydispersity for efficient dispersing properties and liquefying effect.
■	■			■	■	□	■					Efficient dispersing properties, excellent gloss development.
■	■			■	■	□	□		■	■		Very efficient dispersing agent for inorganic fillers and pigments, especially TiO ₂ .
■	■			■	■	□				■		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
■	■			■	■	□	■			■		Hydrophobic character lowers leaching tendency (snail trails) in exterior paints, reduces water uptake, enables high-gloss.
■	■			■	■	□	□					Hydrophobic dispersing agent, provides early blister resistance and improves associative thickener response.
■	■			■	■	□	■			□		For inorganic pigments and extenders, more hydrophobic than Dispex® AA 4040.
■	■			■	■	□	■					Most hydrophobic dispersing agent, suitable for TiO ₂ reduction and high-gloss; good blistering and snail trail resistance.
■	■			■	■	□	■		□	■		Excellent dispersing performance; improves gloss, wet-scrub and blocking-resistance; excellent ZnO compatibility.
■	■			■	■	□	□			□		For inorganic pigments and extenders, balanced hydrophobicity.
■	■			■	■	□	□					Delivers higher wet-scrub resistance with pronounced hydrophobic character.
■	■			■	■	□	□					Most hydrophobic dispersing agent for interior, with potential to optimize binder and TiO ₂ content.
■	■			■	■	□	□					Most efficient dispersing agent for low PVC paints; enhanced opacity with potential to reduce TiO ₂ content.

■ Recommended

□ Suitable

Dispersing Agents

Technical information, features and benefits

Product name ¹	Description	Technical information				Pigments				Concentrates	
		Solids (%) ²	VOC content (%) ²	Amine value	Acid value	Carbon black	Organic pigments	Inorganic pigments	Extenders	Resin-free	Resin-containing

Low molecular weight dispersing agents mainly for water-based systems

Dispex® Ultra FA 4404	Chelating agent	50	<0.1	-	-		■	■			
Dispex® Ultra FA 4416	Surfactant mixture	75	<2	-	-		□	■	■	■	
Dispex® Ultra FA 4420	Fatty acid modified emulsifier (FAME)	100	<1	35	22	□	■	■	□	■	
Dispex® Ultra FA 4425		100	<1	47	46	□	■	■	□	■	
Dispex® Ultra FA 4430	Non-ionic fatty alcohol ethoxylate	30	-	-	-	□	■			■	
Dispex® Ultra FA 4431	Aliphatic polyether with acidic groups	100	<0.1	-	100		■	■		■	
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	<0.1	-	25		■	■		■	
Dispex® Ultra FA 4484	Phosphoric acid ester, sodium salt	26	<0.1	-	-		■	■		■	

System				Industry							Features and benefits	
Recommended for low VOC systems ³	Water-based	Solvent-based	Solvent-free	Architectural	Construction	General Industrial	Furniture & Flooring	Automotive	Printing & Packaging	Adhesives & Sealants		Composites
■	■			■		■	■			□		Anionic dispersing agent; excellent liquefying effect in inorganic pigment slurry formulations.
	■			■		■	■	□				Suitable for inorganic and organic pigments and pigment concentrates.
■	■	■	■	■		■	■	□		■	■	Universal dispersing agent; also suitable as co-dispersant; improves compatibility and color acceptance in basepaints.
■	■	■	■	■		■	■	□		□	■	Dispersing agent for universal colorants for decorative tinting systems; excellent compatibility with aromatic-free alkyd paints.
	■			■	■					■		Improves storage stability and compatibility of pigment pastes.
■	■	■	■	■		■	■	□	■	■	■	Dispersing agent for inorganic pigments and fillers for decorative and industrial coatings.
■	■			■		■	■	■	■	□		Non-ionic dispersant for organic pigment concentrates, enhances effect pigment orientation.
■	■			■		■	■	□	■	■		Universal non-ionic wetting and dispersing agent; APEO alternative for improved color acceptance, gloss and storage stability.
■	■			■		■	■	□	■			Anionic wetting and dispersing agent; especially suitable for inorganic pigment concentrates.
■	■			■		■	■	□				Neutralized anionic wetting and dispersing agent; especially suitable for universal inorganic pigment concentrates.

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² All measurements reflect approximate values.

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⁴ Controlled free radical polymerization.

⁵ Needs synergist.

■ Recommended

□ Suitable

Dispersing Agents

Technical information, features and benefits

Product name ¹	Description	Technical information				Pigments			Concentrates	
		Solids (%) ²	VOC content (%) ²	Amine value	Acid value	Carbon black	Organic pigments	Inorganic pigments	Extenders	Resin-free

Low molecular weight dispersing agents mainly for solvent-based systems

Efka® FA 4600	Surface active anionic compounds	35	27.5	-	-		■	■			
Efka® FA 4601	Blend of fatty alcohol sulfates	47	16	-	-		■	■			
Efka® FA 4608	Hydroxyl functional, modified carboxylic acid	100	<1	85	-		■	■	■		
Efka® FA 4609	Solution of a copolymer with acidic groups	52	48	-	50		■	■			■
Efka® FA 4610	Acidic polyester polyamide	50	50	-	140		■	■			
Efka® FA 4611	Copolymer with acidic groups	100	<2.5	-	129		■	■			■
Efka® FA 4620	Acidic polyether	100	<2.5	-	290		■	■			
Efka® FA 4644	Unsaturated polyamide and acid ester salts	52	48	16	25	□	■	■			
Efka® FA 4647	Unsaturated fatty acid-modified polyamide salts	80	20	30	40	□	■	■			
Efka® FA 4654	Carboxylic acid salts	52	48	51	53	□	■	■			
Efka® FA 4663	Salts of a polycarboxylic acid	50	50	56	56		■	■			
Efka® FA 4665	Modified carboxylic acid blend	52	48	-	120		■	■			
Efka® FA 4666	Unsaturated carboxylic acid	52	48	-	140		■	■			
Efka® FA 4672	Mixture of ionic and non-ionic esters	99	<2	-	-		■	■			

System				Industry							Features and benefits	
Recommended for low VOC systems ³	Water-based	Solvent-based	Solvent-free	Architectural	Construction	General Industrial	Furniture & Flooring	Automotive	Printing & Packaging	Adhesives & Sealants		Composites
		■				■		□				Anti-settling agent for non-aqueous systems; provides good anti-settling properties in polar systems.
		■				■		□				Anti-settling agent for non-aqueous systems; good anti-settling properties for medium-polar systems.
■		■		■		■	■					For solvent-based decorative systems; from low to polar solvent containing systems.
		■	□			■	■	■	■			Excellent dispersant for inorganic pigments, especially TiO ₂ ; strong reduction of mill base viscosity; increased hiding power.
		■	□			■					■	Suitable for inorganic pigments in industrial coatings and dispersion of extenders and fillers in composites (SMC + BMC).
■		■	■			■	■	■	■	■	■	Solvent-free dispersing agent; strong reduction of mill base viscosity; high pigment and filler loading; increased hiding power.
■	■	■	■	■		■	■			■	■	Efficient dispersant for inorganic pigments; dispersion of extenders and fillers in composite formulations (SMC+BMC).
		■	□	■		■	□	□		■	■	For solvent-based and solvent-free systems; also effective for gelling bentonite concentrates.
		■	■			■		□			■	Strong viscosity reduction for dispersing fillers in SMC, BMC and other filled and reinforced compounds.
		■		■		■	□	■				For low-polar to medium-polar systems; also for bentonite gels.
		■	□	■		■		■				Provides excellent anti-settling and anti-floating properties, improves alu flakes orientation.
		■	□			■		■		■	■	For polyurethane systems and stoving enamels; also for orientation of aluminum pigments in CAB automotive base coats.
		■	□			■		□			■	For polyurethane systems and stoving enamels; strong anti-settling effect.
■		■	■			■		□		■	■	Solvent-free dispersant for reactive resins; for inorganic pigments and fillers in epoxy, UPE and PUR 100% systems.

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⁴ Controlled free radical polymerization.

⁵ Needs synergist.

■ Recommended

□ Suitable

Dispersing Agents

Technical information, features and benefits

Product name ¹	Description	Technical information				Pigments				Concentrates	
		Solids (%) ²	VOC content (%) ²	Amine value	Acid value	Carbon black	Organic pigments	Inorganic pigments	Extenders	Resin-free	Resin-containing
Dispex® Ultra PA 4550		50	<1	27	-	□	■	□	■	■	
Dispex® Ultra PA 4560	Modified polyacrylate polymer	40	<1	25	-	□	■	□	■	■	
Dispex® Ultra PA 4590		40	25	39	6	■	■	□	■	□	
Dispex® Ultra PX 4275		37.5	<0.5	-	-	□	■	■	■	■	
Dispex® Ultra PX 4290	Copolymer	40	<0.1	-	9	■	■	■	□	■	
Dispex® Ultra CX 4452	Anionic copolymer	40	<0.1	-	-			■	■	□	
Dispex® Ultra PX 4522	Non-ionic polymer	100	<0.1	-	-	■	■		■		
Dispex® Ultra PX 4525	Blend of amine- and acid-functional polymers	92	<1	16	33	■	■	■	□	■	
Dispex® Ultra PX 4575	Acrylic block copolymer (CFRP ⁴)	40	<0.1	32	-		□	■	□	■	
Dispex® Ultra PX 4585		50	<0.1	20	-	■	■	□	■	□	
Efka® PA 4400		40	60	42	-	□	■	□	□	■	
Efka® PA 4401	Modified polyacrylate polymer	50	50	50	-				□	■	
Efka® PA 4404		40	60	36	-	□	■	□	□	■	
Efka® PA 4450		50	50	-	110		■	■	□	■	

High molecular weight dispersants

System				Industry							Features and benefits	
Recommended for low VOC systems ³	Water-based	Solvent-based	Solvent-free	Architectural	Construction	General Industrial	Furniture & Flooring	Automotive	Printing & Packaging	Adhesives & Sealants		Composites
■	■			□		■	■	■				pH-independent with broad compatibility in water-based systems; good water resistance properties.
■	■			■		■	■	■	■	□		For water-based decorative and industrial coatings, pH-independent; broad compatibility.
	■	□		■		■	■	□	■			Suitable for stabilizing universal pigment concentrates for industrial coatings.
■	■			□		■	■	■				Specifically designed for semi-gloss and high-gloss paint formulations and pigment concentrates.
■	■			■		■	■	■	■	□		Excellent for water-based universal colorants with broadest pigment affinity. Suitable for coatings, printing inks and adhesives.
■	■			■	□	■	■	■	□	□		Excellent for inorganic pigments and transparent iron oxides; strong viscosity reduction with low-foaming during milling.
■	■	□		■		□	□	□	■			Universal, non-ionic wetting and dispersing agent; improves gloss development, color strength and color acceptance.
■	■	□		■		■	□					Universal wetting and dispersing agent for organic and inorganic pigments; improves color strength and color acceptance.
■	■			■		■	■	■	■			Excellent performance with inorganic pigments; broad compatibility across binder systems; for colorants and co-grinding.
■	■			■		■	■	■	■			Best-in-class for high-jetness application and enhanced coloristics for industrial and automotive coatings; broad binder compatibility.
	■					■		■				Specifically used in coil coating applications and polyester / melamine stoving enamels.
	■					■		■		■	■	Industrial coatings, automotive topcoats; for industrial colorants in combination with grinding resins such as Laropal® A81.
	■					■		■	■			For automotive OEM and refinish topcoats; also suitable for coil coating applications.
	■	□				■		■				For organic and inorganic pigments in non-aqueous systems.

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⁴ Controlled free radical polymerization.

⁵ Needs synergist.

■ Recommended

□ Suitable

Dispersing Agents

Technical information, features and benefits

Product name ¹	Description	Technical information				Pigments				Concentrates	
		Solids (%) ²	VOC content (%) ²	Amine value	Acid value	Carbon black	Organic pigments	Inorganic pigments	Extenders	Resin-free	Resin-containing

High molecular weight dispersants

Efka® PU 4009	Modified polyurethane polymer	60	40	9	13	□	■	■	□	■	■
Efka® PU 4010		51	49	6	12	□	■	■	□	■	■
Efka® PU 4015		50	50	10	-	□	■	■	□	■	■
Efka® PU 4046		40	60	19	-	■	■	□		■	■
Efka® PU 4047		35	65	17	-	■	■	□		■	■
Efka® PU 4050		45	55	14	-	■	■	■		■	■
Efka® PU 4061		30	70	8	-	■	■	■		■	■
Efka® PU 4063		45	55	10	-	■	■	■		■	■

Recommended for low VOC systems ³	Water-based	Solvent-based	Solvent-free	Architectural	Construction	Industry					Features and benefits
						General Industrial	Furniture & Flooring	Automotive	Printing & Packaging	Adhesives & Sealants	

■	■			■	□	□					■	Suitable for general industrial application for optimum value in use.
■	■			■	■	□			■		■	General industrial coatings and wood coatings, for stabilization of TiO ₂ and matting agents.
■				■	□	□						Solvent-based industrial coatings, delivers low viscosity in high-pigmented systems.
■	□			■	■	■						General industrial coatings, broad pigment affinity.
■	□			■	■	■					■	Standard dispersing agent for optimum performance in industrial applications, 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.

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⁴ Controlled free radical polymerization.

⁵ Needs synergist.

■ Recommended

□ Suitable

Dispersing Agents

Technical information, features and benefits

Product name ¹	Description	Technical information				Pigments				Concentrates	
		Solids (%) ²	VOC content (%) ²	Amine value	Acid value	Carbon black	Organic pigments	Inorganic pigments	Extenders	Resin-free	Resin-containing

High molecular weight dispersants

Efka® PX 4300	Acrylic block copolymer (CFRP ⁴)	80	20	56	-	■	■	□	■	■
Efka® PX 4310		50	50	19	-	■	■	□	■	□
Efka® PX 4320		50	50	28	-	■	■	□	■	■
Efka® PX 4330		70	30	28	-	□	■	■	□	□
Efka® PX 4340		55	45	4	-	□	■	□	■	■
Efka® PX 4350		51	49	12	-	□	■	□	■	■
Efka® PX 4701		100	<2.5	40	-	■	■	□	■	□
Efka® PX 4703		100	<2.5	56	-	■	■	□	■	■
Efka® PX 4733		100	<2.5	25	-	■	■	■	□	■
Efka® PX 4753		51	49	12	-	■	■	■	□	■
Efka® PX 4780	Advanced polymer	100	<2.5	20	-	■	■	□	■	■
Efka® PX 4787		70	30	15	-	■	■	□	■	■

Recommended for low VOC systems ³	System			Industry							Features and benefits
	Water-based	Solvent-based	Solvent-free	Architectural	Construction	General Industrial	Furniture & Flooring	Automotive	Printing & Packaging	Adhesives & Sealants	

■	■			■	□	■	■	■	■	■	■	High-end dispersing agent for solvent-based industrial coatings including medium- and long-oil alkyds.
■				■		■	□	■	■			Best-in-class for high-jetness application and enhanced coloristics for industrial and automotive coatings; polar to mid-polar systems.
■				■		■	□	■	■	□		Delivers ultra-high jetness with carbon black and high transparency with organic pigments; suitable for mid-polar to non-polar systems.
■	■	□	■	■	■	■	■	■	■			For industrial and decorative coatings; industrial colorants in combination with grinding resins such as Laropal® A81.
■				■		■	■	■		■		For industrial and automotive systems; good performance in CAB-modified systems, 2-pack PUR and 2-pack epoxies.
■	■	□		■		■	□	■	■			Excellent gloss due to enhanced compatibility and improves dispersion of Cu-Phthalocyanine pigments.
■	■	■		■	■	■	■	■	■	■		For high-performance pigments, suitable for energy-curable systems and solvent-based applications.
■	■	■		■	■	■	■	■	■			For UV-curable and mild-solvent ink-jet systems, including UV-curable flexographic-, litho- and screen inks.
■	■	■		■	■	■	■	■	■	■		Suitable for energy-curable and solvent-based systems; broad pigment affinity, including matting agents.
■	■		■	■	■	■	■	■				Dispersing agent for high-quality solvent-based coatings; suitable for high-performance organic pigments.
■	■	■		■	■	■	■	■	■	■		Highly efficient, cross-linkable dispersing agent for excellent film properties; strong viscosity reduction during milling.
■	■	□	■	■	■	■	■	■				Highly efficient, cross-linkable dispersing agent for excellent film properties; strong viscosity reduction during milling.

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⁴ Controlled free radical polymerization.

⁵ Needs synergist.

■ Recommended

□ Suitable

Defoamers

Key benefits

- Solutions for water-based and non-aqueous formulations
- Improved sustainability (e.g. renewables, low VOC, low odor)
- Broad country registrations
- Food contact compliance
- Effective foam suppression and micro foam elimination.
- Cost savings due to shorter production processes
- Faster bubble break time
- Prevention of surface defects

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 defined 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 low VOC, 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.

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

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

Defoamers

Technical information, features and benefits

Product name ¹	Description	Technical information		Incorporation		Appearance			Application				
		Solids (%) ²	VOC content (%) ²	High-shear / Mill base	Low-shear / Let down stage	Matt to semi-matt	Semi-gloss	Gloss	Brush and roller	Spray	Roller coatings	Micro foam elimination	Bubble break time
Foamaster® MO 2108	Mineral oil based	100	<0.1	■	■	■	■	■	■	■	■	■	■
Foamaster® MO 2111		100	<0.1	□	■	■	□	■	■	■	■	■	■
Foamaster® MO 2114		100	2	■	■	■	■	■	■	■	■	■	■
Foamaster® MO 2122		100	<0.1	■	■	■	■	■	■	■	■	■	■
Foamaster® MO 2133		>98	2	■	■	■	□	■	■	■	■	■	■
Foamaster® MO 2134		100	<0.1	■	■	■	■	■	■	■	■	■	■
Foamaster® MO 2140		>98	2	■	■	■	□	■	■	■	■	■	■
Foamaster® MO 2150		100	<0.1	■	■	■	□	■	■	■	■	■	■
Foamaster® MO 2152		>97	3	■	■	■	■	■	■	■	■	■	■
Foamaster® MO 2155 AG		100	<0.1	■	■	■	□	■	■	■	■	■	■
Foamaster® MO 2157		Emulsified mineral oil with hydrophobic particles	25	<0.1	■	■	■	□	■	■	■	■	■
Foamaster® MO 2159			25	<0.1	■	■	■	■	■	■	■	■	■
Foamaster® MO 2170		Mineral oil based	>92	8	■	■	■	■	■	■	■	■	■
Foamaster® MO 2172			>95	5	■	■	■	■	■	■	■	■	■
Foamaster® MO 2185	>94		6	■	■	■	■	■	■	■	■	■	
Foamaster® MO 2190	>93		7	■	■	■	□	■	■	■	■	■	
Foamaster® MO NDW	100		<0.1	■	■	■	□	■	■	■	■	■	
Foamaster® MO NXZ	100		<0.1	■	■	■	□	■	■	■	■	■	

Recommended for low VOC systems ³	Systems				Industry								Water-based						
	Water-based	Solvent-based	Solvent-free	Architectural	Construction	General Industrial	Furniture & Flooring	Automotive	Printing & Packaging	Adhesives & Sealants	Composites	Alkyd emulsions	Polyurethane	Styrene acrylic / Acrylic emulsions	Vinylacetate	Baking coatings / enamels	2-pack PUR & Epoxy	Emulsions polymerization	Natural rubber
■	■			■	■					■			■	■					■
■	■			■	■	■	■	■		■			■	■				□	■
	■			■	■								■	■					
	■			■	■								■	■				■	
■	■			■	■	■	■					■	■	■	■	■	■		
■	■			■	■			■		■			■	■				■	
■	■			■	■	■	■					■	■	■	■	■			
■	■			■	■							■	■	■	■	■			■
■	■			■	■	■	■						■	■					■
■	■			■	■	■	■			■			■	■					■

¹ All products comply with APEO-free claims. APEO has not been intentionally added.

² All measurements reflect approximate values.

³ Measurements done according to the EU Ecolabel 2014/312/EU for indoor and outdoor paints and varnishes. For products with a VOC level above 10% the value is based on calculation according to recipe.

⁴ Contolled free radical polymerization.

⁵ Needs synergist.

■ Recommended
□ Suitable

Defoamers

Technical information, features and benefits

Product name ¹	Description	Technical information		Incorporation		Appearance			Application				
		Solids (%) ²	VOC content (%) ²	High-shear / Mill base	Low-shear / Let down stage	Matt to semi-matt	Semi-gloss	Gloss	Brush and roller	Spray	Roller coatings	Micro foam elimination	Bubble break time
Foamaster® NO 2306	Natural oil based	100	<0.5	■	■	■	□		■	■			
Foamaster® NO 2331		100	<0.1	■	■	■	■	□	■	■			
Foamaster® NO 2335		100	<0.1	■	■	■	■	□	■	■			
Foamaster® WO 2310	White oil based	100	<0.1	■	■	■	■	□	■	■			
Foamaster® WO 2323		100	<0.1	■	■	■	■	□	■	■			
Foamaster® WO 2360		100	<0.1	■	■	■	■	□	■	■			
Foamaster® WO 2390		100	<0.5										
FoamStar® ED 2521	Emulsion based	20	<0.1	■	■	■	■	■	■	■	■	■	
FoamStar® ED 2522		20	<0.1	■	■	□	■	■	■	■	■	■	
FoamStar® ED 2523		27	<0.1	■	■	■	■	□					
FoamStar® ED 2528		28	<0.1	■	■	□	■	■	■	■	■	■	
FoamStar® PB 2706	Polymer based	98	2	■	■				■	■	■		
FoamStar® PB 2724		100	<0.5		■		□	■	■			■	
FoamStar® SI 2210	Modified silicone based	100	<0.1	■	■		□	■	■	■	■	■	
FoamStar® SI 2213		100	<0.1	■	■		□	■	■	■	■		
FoamStar® SI 2217		100	<0.1	■				■	■	■	■		
FoamStar® SI 2240		100	<0.1	■	□	■	□	■	■	■	■		
FoamStar® SI 2250		100	<1	■		■	■		■	■	■		
FoamStar® SI 2280		>99	<1		■	■	■	■	■	■	■		
FoamStar® SI 2281		100	<0.1	■	■	■	■	■	■	■	■		
FoamStar® SI 2292		>10	90		■	■	■	■	■	■	■		
FoamStar® SI 2299		100	<0.1	■	■	■	■	■	■	■	■	■	

Recommended for low VOC systems ³	Systems			Industry								Water-based							
	Water-based	Solvent-based	Solvent-free	Architectural	Construction	General Industrial	Furniture & Flooring	Automotive	Printing & Packaging	Adhesives & Sealants	Composites	Alkyd emulsions	Polyurethane	Styrene acrylic / Acrylic emulsions	Vinylacetate	Baking coatings / enamels	2-pack PUR & Epoxy	Emulsions polymerization	Natural rubber
■	■	■	■	■	■	■	■	■	■	■							□		□
■	■			■					■	■	□	□	■	■	□	□	■	■	□
■	■			■					■	■	□	□	■	■	□	□	■	■	□
■	■			■	■	■		□	■	■	□	□	■	■	□	□	■	■	■
■	■	■		■	■	■			■	■	□	□	■	■	□	□	■	■	■
■	■			■	■	■	■	■	■	■	□	□	■	■	■	■	■	■	□
■	■			■	■	■	■	■	■	■	□	□	■	■	■	■	■	■	□
■	■			■	■	■	■	■	■	■	□	□	■	■	■	■	■	■	□
■	■			■	■	■	■	■	■	■	□	□	■	■	■	■	■	■	□
■	■			■	■	■	■	■	■	■	□	□	■	■	■	■	■	■	□
■	■			■	■	■	■	■	■	■	□	□	■	■	■	■	■	■	□
■	■			■	■	■	■	■	■	■	□	□	■	■	■	■	■	■	□

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⁴ Contolled free radical polymerization.
⁵ Needs synergist.

■ Recommended
 □ Suitable

Defoamers

Technical information, features and benefits

Product name ¹	Description	Technical information		Incorporation		Appearance			Application				
		Solids (%) ²	VOC content (%) ²	High-shear / Mill base	Low-shear / Let down stage	Matt to semi-matt	Semi-gloss	Gloss	Brush and roller	Spray	Roller coatings	Micro foam elimination	Bubble break time

For water-based systems

FoamStar® ST 2400		100	<1	■	■	■	□	■	■	■	■	■
FoamStar® ST 2410		>98	2	■	■	■	□	■	■	■	■	■
FoamStar® ST 2412		>98	2	■	■	■	□	■	■	■	■	■
FoamStar® ST 2420		>99	<0.5	■	■	■	■	■	■	■	■	■
FoamStar® ST 2434		>98	2	□	■	■	■	■	■	■	■	■
FoamStar® ST 2437	Star polymer based	100	<1	■	■	■	□	■	■	■	■	■
FoamStar® ST 2438		100	<0.5	■	■	■	■	■	■	■	■	■
FoamStar® ST 2439		>98	2	■	■	■	■	■	■	■	■	■
FoamStar® ST 2445		>99	1	■	■	■	■	■	■	■	■	■
FoamStar® ST 2446		>99	1	■	■	■	■	■	■	■	■	■
FoamStar® ST 2454		100	0.5	■	■	■	■	■	■	■	■	■

Recommended for low VOC systems ³	Systems			Industry							Water-based								
	Water-based	Solvent-based	Solvent-free	Architectural	Construction	General Industrial	Furniture & Flooring	Automotive	Printing & Packaging	Adhesives & Sealants	Composites	Alkyd emulsions	Polyurethane	Styrene acrylic / Acrylic emulsions	Vinylacetate	Baking coatings / enamels	2-pack PUR & Epoxy	Emulsions polymerization	Natural rubber
■	■			□	□	□	□	■				■	■	■	□	■			
■	■			■	■	□	□					■	■	■	■	■			
■	■			■	■	□	□					■	■	■	■	■			
■	■			■	■	□	□					■	■	■	■	■			□
■	■			■								■	■	■	■	■			
■	■	□	□	■	■	■	■	□	□	■		■	■	■	■	■			
■	■	□	□	■	■	■	■					■	■	■	■	■			
■	■	□	□	■	■	■	■					■	■	■	■	■			
■	■				■	■		■		■			■	■					

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⁴ Controlled free radical polymerization.

⁵ Needs synergist.

■ Recommended
□ Suitable

Defoamers

Technical information, features and benefits

Product name ¹	Description	Technical information		Incorporation		Application			
		Solids (%) ²	VOC content (%) ²	Early stage of production (recommended)	At the end of production (moderate shear for good)	Brush and roller	Spray	Roller / Curtain coatings	Flooring
Efka® PB 2001		26	74	■	■	■	■	■	□
Efka® PB 2010		-	80	■	■	■	■	■	□
Efka® PB 2020	Silicone-free	-	80	■	■	■	■	■	□
Efka® PB 2720 AN		-	60	■	■	■	■	■	
Efka® PB 2725		-	60	■	■	■	■	■	
Efka® PB 2744	Polymer based, silicone-containing	100	<0.1	■				□	■
Efka® PB 2770	Polymer based, silicone-free	100	<0.1	■	■			□	■
Efka® SI 2722 S	Silicone based	-	>70	■				□	
Efka® SI 2723		-	<25	■				□	■

For non-aqueous systems

System	Industry										Solvent-free systems				Solvent-based								
	Recommended for low VOC systems ³	Solvent-based	Solvent-free	Architectural	Construction	General Industrial	Furniture & Flooring	Automotive	Printing & Packaging	Adhesives & Sealants	Composites	UV-curable	2-pack PUR & Epoxy coatings	Unsaturated polyester (UPE)	SMPs (Silane modified polymers)	NC coatings	Alkyds, medium and long oil	High-solids industrial systems	Polyacrylates, polyurethane	2-pack PUR & Epoxy systems	Baking / Stoving enamels	Coil coating Polyester / Melamine	
	■	■	■			■	■			■	■	■	■	■	■	■	■	■	■	■	■	■	■
	■	■				■	■	■		■	■		■	■	■	■	■	■	■	■	■	■	■
	■	■	■			■	■		■	■		■	■	■	■	■	■	■	■	■	■	■	■
	■	■				■	■	■	■	■		□	■	■	■	■	■	■	■	■	■	■	■
	■	■				■	■		■	■		■	■	■	■	■	■	■	■	■	■	■	■
		■				■				■		■	■	■	■	■	■	■	■	■	■	■	■
	■	■				■	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■

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⁴ Controlled free radical polymerization.

⁵ Needs synergist.

■ Recommended
□ Suitable

Rheology Modifiers

Key benefits

- Broad range of rheology profiles
- High efficiency across many resin types
- pH-independency (PU / PE)
- Improved sustainability
- Improved wash and scrub-resistance
- Low impact on water-uptake / whitening
- Excellent leveling and sag resistance
- Reduced spattering

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 low in VOCs, odors, free of APEO and tin.

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, wax and urea 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.

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 customers are seeking. For example, you can modify the rheological behavior of water-based 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 with strong anti-settling properties and good syneresis control.
Efka® RM	Miscellaneous	Excellent anti-settling and anti-sag properties.

Rheology Modifiers

Technical information, features and benefits

Product name ¹	Description	Technical information			Functionality								
		Solids (%) ²	VOC content (%) ²	Product viscosity (mPas) ²	Low-shear (Brookfield)	Mid-shear (KU)	High-shear (ICI)	Associative interaction	Anti-settling	Spray application / Anti-sag	Improved leveling / Newtonian flow	pH-independent	High water / Scrub resistance

For water-based systems

Attagel® 15	Natural attapulgite clays	100	<0.1	Powder	■			■	■			■	■
Attagel® 30		100	<0.1	Powder	■			■	■			■	■
Attagel® 40		100	<0.1	Powder	■			■	■			■	■
Attagel® 50		100	<0.1	Powder	■			■	■			■	■
Rheovis® AS 1110	Anionic polyacrylate copolymers (ASE)	25	<0.2	20	■			■	■				
Rheovis® AS 1125		25	<0.1	<20	■			■	■				
Rheovis® AS 1127		40	<0.1	50	■			■	■				
Rheovis® AS 1130		30	<0.1	<40	■			■	■				
Rheovis® AS 1180		30	<10	300	■			■					
Rheovis® AS 1187		55	<10	<3,000	■			■					
Rheovis® AS 1189		57	<10	<1,500	■			■					
Rheovis® AS 1337		30	<0.1	30			■				■		
Rheovis® AS 1956		>85	<0.3	Powder	■			■	■				

Recommended for low VOC systems ³	System				Industry							Features and benefits
	Water-based	Solvent-based	Solvent-free	Architectural	Construction	General Industrial	Furniture & Flooring	Automotive	Printing & Packaging	Adhesives & Sealants	Composites	

■	■	□ ⁵		■						■		Economical grade for thickening asphalt emulsions and roof coatings with slightly coarser particle size than Attagel® 30.
■	■	□ ⁵		■	■					■		Economical grade of attapulgite for tape joint compound applications that can tolerate a coarser grade than Attagel® 40 while still providing rheological benefits.
■	■	□ ⁵		■			■					Additionally to key benefits, it improves anti-spatter and syneresis control.
■	■	□ ⁵		■		■	■	■				Additionally to key benefits, it improves anti-spatter and syneresis control with a smaller particle size than Attagel® 40.
■	■			■		■	■					Advantageous shear thinning rheology profile, for good spray characteristics. Used e.g. in pigment concentrates to prevent settling and sedimentation.
■	■			■	■				■	■		Shear thinning rheology curve providing a high yield point.
■	■			■	■				■			Broad food contact compliance with freeze-thaw stable product form, offering reduced syneresis.
■	■			■	■	■	■	■	■	■		Highly efficient and shear thinning rheology curve, used in pigment and filler slurries. Standard in automotive formulations.
	■				■	□				■		Highly efficient, inverse emulsion, especially suited for adhesive systems.
	■				■	□				■		Highly active, inverse emulsion with outstanding low-shear thickening efficiency which can be used in a pH range between 6-12; sodium salt.
	■				■	□				■		Highly active, inverse emulsion with outstanding low-shear thickening efficiency which can be used in a pH range between 4-12; ammonia salt.
■	■			■					■	■		Most newtonian rheology profile in the Rheovis® AS range.
■	■			■						■		Micronized, highly efficient granula with excellent blushing resistance in clear coats.

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⁴ Controlled free radical polymerization.

⁵ Needs synergist.

■ Recommended

□ Suitable

Rheology Modifiers

Technical information, features and benefits

Product name ¹	Description	Technical information			Functionality								
		Solids (%) ²	VOC content (%) ²	Product viscosity (mPas) ²	Low-shear (Brookfield)	Mid-shear (KU)	High-shear (ICI)	Associative interaction	Anti-settling	Spray application / Anti-sag	Improved leveling / Newtonian flow	pH-independent	High water / Scrub resistance

For water-based systems

Rheovis® HS 1153		40	<0.1	<50	■		■	■	■							
Rheovis® HS 1162		35	<0.1	<50	■		■	■	■							■
Rheovis® HS 1169		30	<0.1	<50	■		■	■	■							
Rheovis® HS 1181		30	<0.2	<50	■		■	■	■							
Rheovis® HS 1184	Hydrophobically modified anionic polyacrylate copolymers (HASE)	30	<0.2	28	■		■	■	■							
Rheovis® HS 1185		30	<0.2	30	■		■	■	■							
Rheovis® HS 1212		40	<0.5	<50		■		■								■
Rheovis® HS 1276		30	<0.2	<100		■		■								
Rheovis® HS 1303		25	<0.2	<50				■	■			■				
Rheovis® HS 1332		40	<0.1	<50				■	■			■				
Rheovis® HS 1980		97	<0.5	Powder	■			■	■	■						

Recommended for low VOC systems ³	System				Industry							Features and benefits
	Water-based	Solvent-based	Solvent-free		Architectural	Construction	General Industrial	Furniture & Flooring	Automotive	Printing & Packaging	Adhesives & Sealants	

■	■				■	■				■			High polymer content. Imparts slight thixotropy and prolongs the open time. Especially recommended for paints and plasters.
■	■				■	■	■	■	■	□	■		Combines slightly thixotropic flow behavior with low water uptake. Has no impact on wet adhesion even after long water contact.
■	■				■	■					■	■	Recommended as co-thickener for spray applications with lower water uptake and elongation of open time.
■	■				■	■							Good leveling and syneresis control; partial HEC replacement possible.
■	■				■	■							High thickening power and less water absorption than Rheovis® HS 1181.
■	■				■	■							High thickening power for plasters and texture combined with low odor and less water absorption than Rheovis® HS 1181.
■	■				■	■					■	■	Allround mid-shear thickener with high polymer content, excellent efficiency and sizable food contact compliance.
■	■				■								Mid- to high-shear thickener with pronounced ICI contribution.
■	■				■	■	■	■			■		Most efficient high-shear HASE with most newtonian flow behaviour in the Rheovis® HS range; increases layer thickness and reduces spatter.
■	■				■						■	■	High polymer content with newtonian flow behavior; improves leveling; sizable food contact compliance.
■	■				■							■	Powder HASE thickener, recommended for water proofing membranes.

¹ All products comply with APEO-free claims. APEO has not been intentionally added.

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⁴ Controlled free radical polymerization.

⁵ Needs synergist.

■ Recommended

□ Suitable

Rheology Modifiers

Technical information, features and benefits

Product name ¹	Description	Technical information			Functionality									
		Solids (%) ²	VOC content (%) ²	Product viscosity (mPas) ²	Low-shear (Brookfield)	Mid-shear (KU)	High-shear (ICI)	Associative interaction	Anti-settling	Spray application / Anti-sag	Improved leveling / Newtonian flow	pH-independent	High water / Scrub resistance	

For water-based systems

Rheovis® PU 1192		32	<0.1	3,000	■		■	■	■		■	■
Rheovis® PU 1193		25	<20	3,000	■		■	■	■		■	■
Rheovis® PU 1235		25	<20	1,200		■		■	■		■	■
Rheovis® PU 1256	Hydrophobically modified ethoxylated urethanes (HEUR)	35	<0.1	23,000		■		■	■		■	■
Rheovis® PU 1291		40	<0.1	2,700		■		■	■		■	■
Rheovis® PU 1331		18	<0.1	4,500			■	■		■	■	■
Rheovis® PU 1340		20	<0.1	2,500			■	■		■	■	■
Rheovis® PU 1341		20	<0.1	2,800			■	■		■	■	■
Rheovis® PE 1320		40	<20	1,600			■	■		■	■	■
Rheovis® PE 1330	Hydrophobically modified polyethers (HMPE)	30	<0.1	4,500			■	■		■	■	■
Rheovis® PE 1331		21	<0.1	2,300			■	■		■	■	■
Rheovis® UR 1120	Modified urea	45	55	100	■			■		■	■	
Rheovis® VP 1231	Modified vinylpyrrolidone copolymer	30	<0.1	2,200		■						

Recommended for low VOC systems ³	System			Industry								Features and benefits
	Water-based	Solvent-based	Solvent-free	Architectural	Construction	General Industrial	Furniture & Flooring	Automotive	Printing & Packaging	Adhesives & Sealants	Composites	

■	■			■	■	■	■			■		Most efficient low-shear HEUR combined with low VOC, combining convenient handling and easier defoaming.
	■				■	■	■	■	■			Most efficient low-shear HEUR, combining convenient handling and easier defoaming.
	■				■	■	■	■		■	■	Build of low- and mid-shear viscosity with moderate contribution to high-shear viscosity combined with excellent syneresis control.
■	■				■		■	■				Slightly pseudoplastic and low VOC.
■	■				■	■	■	■	■	■	■	High efficiency, low VOC, excellent ICI thickening and easy handling.
■	■				■		■	■		■	■	High efficient high-shear (ICI) build combined with low VOC.
■	■				■	■	■	■		□		Excellent high-shear thickener imparting excellent flow and low VOC (preferred in EMEA).
■	■				■	■	■	■				Excellent high-shear thickener imparting excellent flow and low VOC (preferred outside EMEA).
	■					■	■	■	■			High solids, imparts excellent flow.
■	■					■	■	■		■	■	Most newtonian rheology profile imparting excellent flow and low VOC (preferred in EMEA).
■	■					■	■	■			■	Most newtonian rheology profile imparting excellent flow and low VOC (preferred outside EMEA).
	■						■	■	■			Outstanding thixotropic flow behavior combining anti-sagging with good leveling.
■	■					■	■	■	■		■	Shows maximum thickening effect at a pH of ~5; can be used as protective colloid in the manufacturing of dispersions.

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⁴ Controlled free radical polymerization.

⁵ Needs synergist.

■ Recommended

□ Suitable

Rheology Modifiers

Technical information, features and benefits

Product name ¹	Description	Technical information			Functionality								
		Solids (%) ²	VOC content (%) ²	Product viscosity (mPas) ²	Low-shear (Brookfield)	Mid-shear (KU)	High-shear (CI)	Associative interaction	Anti-settling	Spray application / Anti-sag	Improved leveling / Newtonian flow	pH-independent	High water / Scrub resistance

For solvent-based systems

Efka® RM 1410	Modified urea	52	48	100	■				■	■	■		
Efka® RM 1469	Polyamide wax	20	80	Paste	■				■	■			
Efka® RM 1900	Modified hydrogenated castor oil	100	<0.1	Powder	■				■	■			
Efka® RM 1920	Hydrogenated castor oil	99	<0.1	Powder	■				■	■			
Efka® RM 1965	Overbased calcium sulfonate complex	70	30	Paste	■				■				

Recommended for low VOC systems ³	System			Industry								Features and benefits
	Water-based	Solvent-based	Solvent-free	Architectural	Construction	General Industrial	Furniture & Flooring	Automotive	Printing & Packaging	Adhesives & Sealants	Composites	

		■			■	■	■	■					Introduces highly thixotropic flow behavior combining anti-sagging with good leveling with minimum effect on gloss.
		■				■	■	■					Pre-activated polyamide wax for solvent-based OEM & refinish as well as for wood coatings with minimum effect on color and gloss.
		■	■			■	■			■			Provides excellent sag resistance for non-aqueous formulations; higher temperature stability.
		■	■			■	■	■	■				Provides excellent sag resistance for non-aqueous formulations; standard thixotropy.
		■				■	■	■					Prevents settling of pigments by developing a more shear thinning rheological behavior; prevents the formation of hard pigment sediments.

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⁴ Contolled free radical polymerization.

⁵ Needs synergist.

■ Recommended

□ Suitable

Wetting Agents and Surface Modifiers

Key benefits

- Solutions for water-based and non-aqueous formulations
- High efficiency at low dosage
- Excellent compatibility and low-foaming
- Improved sustainability
- Improved substrate wetting and leveling
- Enhanced effects for extended durability

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.

Improved flow and substrate wetting

Organomodified silicones are a very versatile class of polymers. Depending on the degree of modification and the overall silicone oil content they can be employed as substrate wetting agents, flow and leveling agents and/or slip agents. In general, silicone-based additives reduce the surface tension of a formulation rather drastically. Silicones are very surface-active polymers that provide low surface tension and they always try to orientate themselves on the air/liquid interface. This makes them ideal raw materials for interfacially active additives. Silicone surfactants, due to their short chain lengths will not provide surface slip in most paint systems.

Alkoxylated surfactants are usually cost-effective, non-ionic wetting agents. Depending on the starting alcohol, the ratio of

ethylene oxide to propylene oxide and the overall degree of alkoxylation, their hydrophilic-lipophilic balance (HLB) can vary widely. Some alkoxylated surfactants are especially low-foaming wetting agents.

A very special class of alkoxylated surfactants are star-shaped polymers. The hyperbranched structure of these non-ionic surfactants was modified to give them additional wetting and defoaming properties. They are non-ionic wetting agents that are virtually 100% active and designed for the use in water-based coatings for metals, woods and plastics. These liquid products are free of silicones and are not formulated with additional solvents.

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
Hydopalat®	Alkoxylated surfactants	Low-foaming substrate wetting agents for water-based applications.
Efka® Hydopalat®	Silicone surfactants	Substrate-wetting agents with generally very low static surface tension.
Hydopalat®	Sulfosuccinates	Cost-effective substrate-wetting agents with excellent dynamic surface-tension reduction.
Efka®	Polyacrylates	Acrylate leveling agents for solvent-based and solvent-free applications.
Hydopalat®	Star-shaped polymers	Defoaming wetting agents based on star-shaped polymers for excellent dynamic surface-tension reduction.

Wetting Agents and Surface Modifiers

Technical information, features and benefits

Product name ¹	Description	Technical information		Functionality							
		Solids (%) ²	VOC content (%) ²	Slip	Anti-blocking & Scratch resistance	Leveling	Low-foaming / De-aeration	Substrate wetting	Recoatibility	Anti-cratering	Pigment wetting & Color acceptance

Systems				Industry							Features and benefits
Recommended for low VOC systems ³	Water-based	Solvent-based	Solvent-free	Architectural	Construction	General Industrial	Furniture & Flooring	Automotive	Printing & Packaging	Adhesives & Sealants	

Flow and leveling agents

Efka® FL 3730		>98	<0.5		■	■		■				
Efka® FL 3740		>95	<0.5		■	■		■				
Efka® FL 3741	Copolyacrylates	>95	<0.5		■	■		■				
Efka® FL 3745		>96	<0.5		■	■		■				
Efka® FL 3750		100	<1.0		■	■		■				
Efka® FL 3755		52	48		■	■		■				
Efka® FL 3930	Acrylate copolymer on silica	100	<0.5		■			■				

■	■	■				■	■						Silicone-free leveling agent with gloss improvement; suitable for pigmented acid-curing systems with Efka® PB 2001.
■		■	■	■		■	■		■	■			Silicone-free flow and leveling agent with air-release properties for solvent-based, solvent free and powder coatings system.
■		■	■	■		■	■	■	■				Silicone-free flow and leveling agent with air-release properties; excellent compatibility.
■		■	■			■	■						Silicone-free flow and leveling agent with air-release properties for solvent-based, solvent free and powder coatings system.
■		■	■	■		■	■	■	■	■			100% version of Efka® FL 3755; suitable for solvent and solvent-free application.
			■	■		■	■	■					Silicone-free and highly compatible leveling agent with excellent flow; no impact on recoatability and intercoat adhesion.
■			■			■							Acrylic leveling agent on silica gel, suitable for powder coatings.

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² All measurements reflect approximate values.

³ Measurements done according to the EU Ecolabel 2014/312/EU for indoor and outdoor paints and varnishes. For products with a VOC level above 10% the value is based on calculation according to recipe.

⁴ Controlled free radical polymerization.

⁵ Needs synergist.

■ Recommended

□ Suitable

Wetting Agents and Surface Modifiers

Technical information, features and benefits

Product name ¹	Description	Technical information		Functionality								
		Solids (%) ²	VOC content (%) ²	Slip	Anti-blocking & Scratch resistance	Leveling	Low-foaming / De-aeration	Substrate wetting	Recoatibility	Anti-cratering	Pigment wetting & Color acceptance	Emulsifier

Systems				Industry							Features and benefits
Recommended for low VOC systems ³	Water-based	Solvent-based	Solvent-free	Architectural	Construction	General Industrial	Furniture & Flooring	Automotive	Printing & Packaging	Adhesives & Sealants	

Slip and leveling agents

Efka® SL 3030		52	48		■	■	□	■		■	■	
Efka® SL 3031		52	48	■	■	■		■		■	■	
Efka® SL 3033		15	85	■	■	■		■		■		
Efka® SL 3035		52	48	■	■	■		■	□		■	
Efka® SL 3200	Modified polysiloxanes	>95	<0.5	■	■	■		■		■		
Efka® SL 3210		100	<1	■	■	■		■				
Efka® SL 3230		98	<0.1	■	■	■		■		■		
Efka® SL 3236		100	<1	■		■	■	■			■	

				■	■		■	■	■	■		■	Improves slip and mar-resistance with good compatibility; suitable for high-gloss systems.
					■			■	■			■	Improves leveling and mar-resistance and acts as an anti-blocking agent; compatible with all medium to high polarity solvent-based systems.
						■	■	■		■		■	Increases slip and surface smoothness, improves scratch, abrasion resistance and anti-block properties of clearcoat.
				■	■		■	■	■			■	Improves leveling and increases slip and mar-resistance, highly suitable for automotive clearcoat in combination with Efka® FL 3755.
				■	■	■	■		■	■		■	Universal silicone-based solvent-free slip and leveling agent; suitable for aqueous, solvent-based and UV formulations.
				■	■	■	■	■		■	□		Increase substrate wetting, slip, surface smoothness and gloss; good compatibility with a broad range of printing ink systems.
				■	■	■	■	■				■	Universal, high slip and leveling agent especially designed for solvent-based and UV-curable wood and industrial coatings and printing inks.
				■		■	■					■	Excellent thermal stability with improved leveling and surface smoothness; supports defoaming for a defect-free application.

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⁵ Needs synergist.

■ Recommended

□ Suitable

Wetting Agents and Surface Modifiers

Technical information, features and benefits

Product name ¹	Description	Technical information		Functionality								
		Solids (%) ²	VOC content (%) ²	Slip	Anti-blocking & Scratch resistance	Leveling	Low-foaming / De-aeration	Substrate wetting	Recoatibility	Anti-cratering	Pigment wetting & Color acceptance	Emulsifier

Systems				Industry							Features and benefits
Recommended for low VOC systems ³	Water-based	Solvent-based	Solvent-free	Architectural	Construction	General Industrial	Furniture & Flooring	Automotive	Printing & Packaging	Adhesives & Sealants	

Slip and leveling agents

Efka® SL 3257		>95	<0.5	■	■	■		■		■	
Efka® SL 3258	Modified polysiloxanes	>95	<0.5	■	■	■	□	■			
Efka® SL 3259		>95	<0.5	■	■	■		■		■	
Efka® SL 3288		>99	<1	■	■	■	□	■			
Efka® SL 3299	Functional polysiloxane	100	<1	■	■	■		■			
Efka® SL 3883		70	30	■	■	■	■	■			
Hydropalat® FL 3635	Mixture of low molecular polymers	4	95			■	■	■	■		
Hydropalat® SL 3683	Ultra-high molecular weight silicone	65	<0.2	■	■		■				

■	■	■	■			■	■		■	■	■	Excellent slip with good levelling; broad compatibility across various resin systems.
■	■	■	■			■			■			Good balance of slip and leveling with broader compatibility.
■	■	■	■			■	■		■			Good balance of slip and leveling with enhanced compatibility for water-based and UV-systems.
■	■	■	■	■		■	■	■				Hydroxy-functional silicone with good levelling and optimized slip performance; promotes surface smoothness effect for high-gloss industrial coatings.
■	■	■	■	■		■	■	■	■			Hydroxy-functional silicone with strong and sustained slip effect for improved scratch resistance.
										□	■	Polysiloxane-modified with unsaturated terminal groups; enhances scratch resistance in UV-curable systems for wood, plastic and paper coatings.
	■					■		■				Prevents pin-holes and reduces boiling marks in water-based coatings; APEO-free.
■	■			■		■	■		■			Strong anti-blocking performance with good compatibility in water-based systems; enhances scratch resistance; low cyclic silicone content.

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⁴ Contolled free radical polymerization.

⁵ Needs synergist.

■ Recommended

□ Suitable

Wetting Agents and Surface Modifiers

Technical information, features and benefits

Product name ¹	Description	Technical information		Functionality								
		Solids (%) ²	VOC content (%) ²	Slip	Anti-blocking & Scratch resistance	Leveling	Low-foaming / De-aeration	Substrate wetting	Recoatibility	Anti-cratering	Pigment wetting & Color acceptance	Emulsifier

Systems				Industry							Features and benefits
Recommended for low VOC systems ³	Water-based	Solvent-based	Solvent-free	Architectural	Construction	General Industrial	Furniture & Flooring	Automotive	Printing & Packaging	Adhesives & Sealants	

Substrate wetting agents

Hydropalat® WE 3105		>98	<2				■	■		■	
Hydropalat® WE 3110		85	<0.1				■	■	□		■
Hydropalat® WE 3111		80	<1				■	■		■	
Hydropalat® WE 3120	AlkoxyLATED surfactants	>99	<0.3			■	■	■			
Hydropalat® WE 3130		>90	<10			■	■	■			
Hydropalat® WE 3136		100	<0.1			■	■	■			
Hydropalat® WE 3147		70	<1			□	■	■		■	■
Hydropalat® WE 3155		100	<0.1				■	■			
Hydropalat® WE 3165		65	<0.5				■	■	■	■	■

	■			■								Wetting and dispersing agent for water-based systems, specifically for solvent- and resin-free pigment pastes.
■	■			■		■	■				■	pH stable, low-foaming wetting agent with strong reduction of dynamic surface tension.
■	■			■		■						APEO-free alternative for enhanced color acceptance in water-based systems, supports pigment wetting and improves freeze-thaw stability.
■	■			■		■	■	■	■	■	■	pH stable, low-foaming wetting agent with excellent reduction of dynamic surface tension; suitable for printing inks and adhesives.
■	■			■		■	■	■	■	■	■	Low-foaming wetting agent for water-based coatings, printing inks and adhesives.
■	■			■		■	■	■				Difunctional block copolymer surfactant with primary hydroxyl groups; non-ionic and 100% active; HLB ~7.
■	■			■		■	■	■				APEO-free; non-ionic surfactant; stabilizes high inorganic filler content; suitable for emulsion polymerization; HLB ~18.
■	■			■								Water-soluble polyalkylene glycol; 100% active.
■	■			■	■	■	■	■				Excellent for pigment stabilization and improving binder compatibility.

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⁴ Controlled free radical polymerization.

⁵ Needs synergist.

■ Recommended

□ Suitable

Wetting Agents and Surface Modifiers

Technical information, features and benefits

Product name ¹	Description	Technical information		Functionality								
		Solids (%) ²	VOC content (%) ²	Slip	Anti-blocking & Scratch resistance	Leveling	Low-foaming / De-aeration	Substrate wetting	Recoatibility	Anti-cratering	Pigment wetting & Color acceptance	Emulsifier

Recommended for low VOC systems ³	Water-based	Solvent-based	Solvent-free	Industry								Features and benefits
				Architectural	Construction	General Industrial	Furniture & Flooring	Automotive	Printing & Packaging	Adhesives & Sealants	Composites	

Substrate wetting agents

Hydropalat® WE 3220		90	<4			■		■	■	■		
Hydropalat® WE 3221	Silicone surfactants	45	55			■		■	■	■		
Hydropalat® WE 3229		100	<3			■	■	■	■	■		
Hydropalat® WE 3322	Star-shaped polymers	>97	<3				■	■	■	■		
Hydropalat® WE 3323		100	<3				■	■	■	■		
Hydropalat® WE 3475	Sulfosuccinates	75	6					■	■		■	
Hydropalat® WE 3477		77	6					■	■		■	
Hydropalat® WE 3485		85	<2					■	■		■	
Hydropalat® WE 3488		50	<2					■	■		■	

	■		■	■	■	■	■	■	■	■	■	■	100% version of Hydropalat® WE 3221.
	■			■		■	■	■	■	■	■		Silicone surfactant with strong reduction of surface tension; excellent substrate wetting and anti-crater additive with good recoatability.
	■		□	■		■	■	■	■	■	■		Excellent wetting agent for high speed application with good deaeration and excellent anticratering performance, suitable for 100% UV systems.
	■			□		■	■	■	■	■	■		Excellent wetting agent with low foam stabilization and anti-cratering performance.
	■			□		■	■	■	■	■	■		Excellent surface wetting with strong deaeration and anti-cratering performance.
	■			□	■					■	■		Strong reduction of dynamic surface tension; standard product used in overprint varnishes.
	■			□	■					■			Highly efficient wetting agent; strong reduction of dynamic surface tension.
	■			□	■					■	■		Strong reduction of dynamic surface tension; solvent-free alternative to Hydropalat® WE 3475.
	■			□	■					■			Highly efficient wetting agent; strong reduction of dynamic surface tension with low foam stabilization.

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⁴ Contolled free radical polymerization.

⁵ Needs synergist.

■ Recommended

□ Suitable

Film-Forming Agents and Others

Key benefits

- Solutions for water-based and non-aqueous formulations
- Improved sustainability (e.g. renewables, low VOC, low odor)
- Food-contact compliance
- Broad country registration
- Enhanced mechanical properties
- Improved workability
- Conductivity improvement

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.

In addition, we offer a range of products with specific properties, like conductivity improvement, improvement of adhesion, early rain resistance etc.

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 class	Product name	Characteristics
Coalescents	Loxanol® CA	Lower film-forming temperature; improved film formation.
Open-time prolongers	Loxanol® OT	Dispersions of oleo-compounds; increased open time, prevention / reduction of crack formation, improved workability.
Plasticizers	Loxanol® PL	Plastification for water-based formulations.
	Efka® PL	Plastification for solvent-based and 100% systems.
Miscellaneous	Loxanol® MI	Product specific (see details).
	Efka® MI	
Conductivity aids	Efka® IO	Ionic liquids; conductivity improvement.

Film-Forming Agents and Others

Technical information, features and benefits

Product name ¹	Description	Technical information			Systems			
		Solids (%) ²	Product viscosity (mPas) ²	VOC content (%) ²	Recommended for low VOC systems ³	Water-based	Solvent-based	Solvent-free

Coalescents

Loxanol® CA 5140	Methyl ester of natural fatty acid	100	6	<0.1	■	■		
Loxanol® CA 5308	Dicarboxylic acid ester	100	6	<0.1	■	■		
Loxanol® CA 5310	Propylene glycol monoester	>98	30	2	■	■		
Loxanol® CA 5336	Linear ester based on renewable raw materials	100	5	<0.1	■	■		

Opentime prolonger

Loxanol® OT 5840	Water-based dispersion of oleochemical compounds	20	600	<0.1	■	■		
Loxanol® OT 5853		30	1.000	<0.1	■	■		
Loxanol® OT 5900	Oleochemical compounds	45		<0.1	■	■		

Plasticizer

Efka® PL 5381	Epoxidized soy bean oil	100	550	<0.1	■		■	
Efka® PL 5382		100	550	<0.1	■		■	
Efka® PL 5520 V	Butyl ester of a natural fatty acid mixture	100	10	<0.1			■	
Efka® PL 5635	Epoxidized linear ester	100	30	<0.2			■	

Architectural	Construction	General Industrial	Furniture & Flooring	Automotive	Printing & Packaging	Adhesives & Sealants	Composites	Features and benefits
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■	■	□	□			■		Highly efficient coalescing agent for interior / exterior paints: based on renewable raw materials.
■	■	□	□			■		Highly efficient coalescing agent for interior / exterior paints, elastomeric coatings, textured finishes and wood coatings.
■	■	■	□			□		Excellent balance of coalescent properties; based on renewable raw materials.
■	■	□	□			■		Highly efficient odorless coalescent complying with VOC restrictions as per 1999/13/EU and 2004/42/EU; based on renewable raw materials.
■	□							Open-time prolonger in liquid form; prevents / reduces cracking in resin-based plasters.
■	□							Highly efficient open-time prolonger; prevents / reduces cracking in resin-based plasters; improved storage stability.
■	□							Open-time prolonger in powder form.
		■	■		■	□	■	Standard epoxy plasticizer which is extraction-resistant to many industrial agents. The migration resistance is comparable with polymeric plasticizers; contains bio-based materials.
		■	■		■	□	■	Higher purified version of Efka® PL 5381, with a slightly broader food contact range; contains bio-based materials.
		■	■		■			Secondary plasticizer for lacquers, wood and furniture coatings based on nitrocellulose, as well as acid curing of one and two-component finishes. Very fast solvent release and an improvement in sanding and stacking properties as well as scratch resistance - bio-based raw materials.
		■	■		■	□	■	Plasticizer for nitrocellulose, chlorinated rubber and PVC systems as well as for cellulose acetobutyrate. Low viscosity and volatility and excellent migration resistance: based on renewable raw materials.

¹ All products comply with APEO-free claims. APEO has not been intentionally added.

² All measurements reflect approximate values.

³ Measurements done according to the EU Ecolabel 2014/312/EU for indoor and outdoor paints and varnishes. For products with a VOC level above 10% the value is based on calculation according to recipe.

⁴ Controlled free radical polymerization.

⁵ Needs synergist.

■ Recommended

□ Suitable

Film-Forming Agents and Others

Technical information, features and benefits

Product name ¹	Description	Technical information			Systems		
		Solids (%) ²	Product viscosity (mPas) ²	VOC content (%) ²	Recommended for low VOC systems ³	Water-based	Solvent-based

Plasticizer

Efka® PL 5643	Di-octyl adipate	100	10	<0.1			■
Efka® PL 5646	1,2-cyclohexanedicarboxylic acid diisononyl ester	100	50	<0.1			■
Efka® PL 5651	Bis(butylcarbitol) formal	100	100	<0.1	■	■	■
Loxanol® PL 5060	Polypropylene glycol alkylphenylether	100	94	<0.1	■	■	
Loxanol® PL 5830	Polypropylene glycol	100	60	<0.1	■	■	

Miscellaneous

Loxanol® MI 6311	Polyamide	75	700	-	■	■	
Loxanol® MI 6470	Dimethylamide of natural lactic acid	100	5	100		■	
Loxanol® MI 6627	Zinc salt of an organic nitrogen compound	>99		<0.1	■	■	
Loxanol® MI 6727	Polyamine	33	1.700	67		■	

Architectural	Construction	General Industrial	Furniture & Flooring	Automotive	Printing & Packaging	Adhesives & Sealants	Composites	Features and benefits
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			■	■	■	□	□	Phthalate-free plasticizer for the use in PVC, coatings and rubber; excellent durability with low temperature resistance and broad food contact compliance; boiling point >400°C; solvent for ceramic inkjet.
			■	■	■	■		Phthalate-free plasticizer for PVC, coatings, inks and rubber suitable for sensitive applications; boiling point ~394°C; solvent for ceramic inkjet.
■	■	■	■	■				Highly compatible plasticizer designed to provide maximum low temperature flexibility to various types of elastomers; enhances low temperature properties and reduces processing viscosities in elastomers and thermoplastic elastomers.
■	■	■	■	■		■		Highly efficient plasticizer for polymer dispersions in gloss paints, elastomeric and wood coatings.
			■	□	■	□		Improves pigment wetting and acts as a humectant to control the drying behavior of water-based formulations including pigment concentrates.
■		■						Highly efficient formaldehyde scavenger for water-based paints.
			■	□	□	□		Organic solvent-based on renewable raw materials with low toxicity for multiple applications such as paint strippers or cleaning solvents. Green and safe alternative for N-methyl pyrrolidone (NMP) and similar type of solvents.
■		■						Highly efficient corrosion inhibitor in combination with zinc phosphate.
■	■							Helps to form a protective film on the freshly applied paint and plaster; good early rain resistance; extends also the open-time of plasters.

¹ All products comply with APEO-free claims. APEO has not been intentionally added.

² All measurements reflect approximate values.

³ Measurements done according to the EU Ecolabel 2014/312/EU for indoor and outdoor paints and varnishes. For products with a VOC level above 10% the value is based on calculation according to recipe.

⁴ Controlled free radical polymerization.

⁵ Needs synergist.

■ Recommended

□ Suitable

Film-Forming Agents and Others

Technical information, features and benefits

Product name ¹	Description	Technical information			Systems			
		Solids (%) ²	Product viscosity (mPas) ²	VOC content (%) ²	Recommended for low VOC systems ³	Water-based	Solvent-based	Solvent-free

Miscellaneous

Loxanol® MI 6730		50	25.000	<0.1	■	■		
Loxanol® MI 6735	Polyethylene imine	100	15.000	<0.1	■	■	■	
Loxanol® MI 6835		50	100	<0.1	■	■		
Loxanol® MI 6840	Paraffin wax	62	350	<0.4	■	■		

Conductivity aids

Efka® IO 6779	Solution of quaternary ammonium salt	80	-	20		□	■	■
Efka® IO 6782		80	-	30		□	■	■
Efka® IO 6783	Ionic liquid, hydroxy functional ammonium salt	>98	1.100	<2		■	■	
Efka® IO 6785	Ionic liquid, non-functional imidazolium salt	>97	120	<3		■	■	
Efka® IO 6786		>97	20	<3		■	■	

Architectural	Construction	General Industrial	Furniture & Flooring	Automotive	Printing & Packaging	Adhesives & Sealants	Composites	Features and benefits
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					■	■		Used as a primer for coatings applications; highly effective adhesion promotor in multi layer packaging films; recommended for ionic / cationic binders and in a pre-treatment solution.
					■	■		Crosslinking agent for PVB (Polyvinylbutyral) inks; highly effective adhesion promotor for bonding different materials; recommended for ionic/cationic binders and in a pre-treatment solution.
■								Improves water resistance in the early stages of drying and enhances initial resistance to water (early rain resistance); suitable for paints and textured finishes.
■	■							Improved hydrophobicity; reduces mud cracks; reduces snail trail tendency under critical conditions.
□		■	■	■	□			Increases the electric conductivity of a liquid or solid paint film; long chain fatty acid modified salt.
□		■	■	■	□			Increases the electric conductivity of a liquid or solid paint film; short chain fatty acid modified salt.
□		■	■	■		■		Conductivity promotor 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 promotor 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; medium active.
□		■	■	■				Conductivity promotor 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; highly active.

¹ All products comply with APEO-free claims. APEO has not been intentionally added.

² All measurements reflect approximate values.

³ Measurements done according to the EU Ecolabel 2014/312/EU for indoor and outdoor paints and varnishes. For products with a VOC level above 10% the value is based on calculation according to recipe.

⁴ Contolled free radical polymerization.

⁵ Needs synergist.

■ Recommended

□ Suitable

Bio-based Portfolio



BASF's dedicated bio-based portfolio offers solutions for multiple applications. Either as substitute for a fossil alternative (so called drop-ins) to reduce the carbon footprint or new products using their unique properties that can either not or not cost-efficiently be achieved with a fossil feedstock.

In addition to fossil resources, we employ renewable raw materials, mainly based on vegetable oils, fats, grains, sugar and wood. In 2022, we purchased around 1.2 million metric tons of renewable raw materials. We use these to produce ingredients for the detergent and cleaner industry and natural active ingredients for the cosmetics industry.

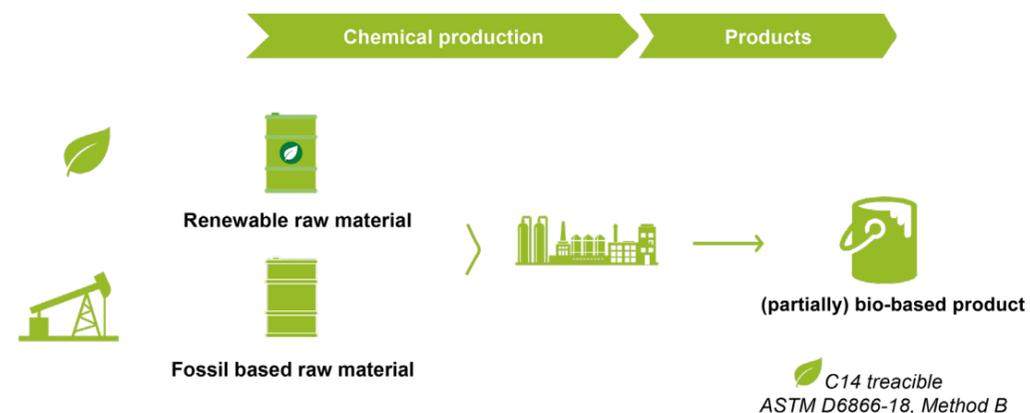
Our aim is to continuously increase the share of renewable raw materials in our value chains. As for fossil raw materials, we also consider economic criteria, aspects of supply security, and process and product safety, as well as the potential impact on sustainability along the value chain. Alongside positive effects like reducing greenhouse gas emissions, these can also have negative effects on areas such as biodiversity, land use or working conditions, depending on the raw material. This is why we carefully weigh up the advantages and disadvantages of using renewable resources, for example with Eco-Efficiency Analyses. At the same time, we seek dialog with our stakeholders to raise awareness of conflicting goals.

We also take into consideration recognized certification standards such as the Roundtable on Sustainable Palm Oil (RSPO) in our decisions.

As part of our commitment to greater sustainability, we concentrate on value chains that are relevant quantitatively or that do not yet have certification standards. We are also working on product innovations and on enhancing our production processes to improve the profitability and competitiveness of renewable resources.

Segregated bio-based products

Raw materials with renewable carbon content directly in our production



Bio-based Portfolio

Technical information, features and benefits

Product name	Biogenic Carbon (%) ¹	Features and benefits
Dispex® Ultra FA 4420	55	Universal dispersing agent; also suitable as co-dispersant; improves compatibility and color acceptance in base paint.
Dispex® Ultra FA 4437	42	Non-ionic nature; especially designed for organic pigment concentrates, supports effect pigment orientation.
Dispex® Ultra FA 4488	59	Universal, non-ionic wetting and dispersing agent; especially suitable for organic pigment concentrates.
Dispex® Ultra PA 4501	58	Product shows good pigment wetting and stabilizing performance and excellent compatibility with various resin systems.
Efka® FA 4608	91	For solvent-based decorative systems including low to polar solvent containing systems.
Efka® FA 4644	40	Solvent-based and solvent-free systems; also effective for gelling bentonite concentrates.
Efka® FA 4665	33	For polyurethane systems and stoving enamels; also for orientation of aluminum pigments in CAB automotive base coats.
Efka® FA 4666	42	For polyurethane systems and stoving enamels; strong anti-settling effect.
Efka® PB 2770	61	Silicone-free deaerator and defoamer for UV curable formulations, composites, gel coats, cast resins and adhesives, with outstanding compatibility and excellent recoatability.
Efka® PL 5381	100	Standard epoxy plasticizer which is extraction-resistant to many industrial agents. The migration resistance is comparable with polymeric plasticizers.
Efka® PL 5382	100	Higher purified version of Efka® PL 5381, with a slightly broader food contact range.
Efka® PL 5635	71	Plasticizer for nitrocellulose, chlorinated rubber and PVC systems as well as for cellulose acetobutyrate. Low viscosity and volatility and excellent migration resistance; based on renewable resources.
Efka® RM 1900	100	Provides excellent sag resistance for non-aqueous formulations; higher temperature stability.
Efka® RM 1920	100	Provides excellent sag resistance for non-aqueous formulations; standard thixotropy.
Foamaster® NO 2306	51	Universal defoamer partly based on natural oils; effectively removing of micro-foam.
Foamaster® NO 2331	98	Natural oil based defoamer for monomer stripping in latex manufacturing and emulsion polymerisation; broadest Food Contact Compliance.
Foamaster® NO 2335	97	Universal, highly efficient defoamer based on natural oils for emulsion paints; defoamer for matt to satin-finish water-based paints and coatings; extremely low S-VOC content.

Product name	Biogenic Carbon (%) ¹	Features and benefits
FoamStar® SI 2210	39	100% active content for non-pigmented and low pigmented coatings, printing inks and adhesives. provides a strong spontaneous defoaming effect with long-term defoaming persistency.
FoamStar® SI 2217	73	Highly effective defoamer for aqueous pigment concentrates and systems with high surfactant content.
Hydropalat® WE 3120	38	pH stable, low-foaming wetting agent with excellent reduction of dynamic surface tension; suitable for printing inks and adhesives.
Hydropalat® WE 3130	66	Low-foaming wetting agent for water-based coatings, printing inks and adhesives.
Hydropalat® WE 3625	100	Especially suitable as wetting and dispersing agent for the formulation of aqueous, binder- and solvent-free pigment pastes. It permits the development of universally compatible pigment concentrates.
Irganox® 1076	54	AO for solvent-based and powder coating applications.
Irganox® PS 802 FL	60	Thiosynergist suitable when high-temperature aging is required, needs combination with primary AO.
Loxanol® CA 5140	94	Highly efficient coalescing agent for interior/exterior paints: based on renewable raw materials.
Loxanol® CA 5330	95	Highly efficient coalescent based on renewable resources, excellent reduction of minimum film forming temperature (MFFT); good low temperature cure/non-yellowing/ outstanding solvency. Recommended mainly for exterior applications.
Loxanol® CA 5336	84	Highly efficient odorless coalescent complying with VOC restrictions as per 1999/13/EU and 2004/42/EU; based on renewable raw materials.
Loxanol® MI 6430	62	Monoester of a fatty acid derived from renewable raw materials; product is biodegradable; good solvency power.
Loxanol® MI 6470	63	Renewable raw material based solvent with excellent toxicological profile for multiple applications such as paint strippers or cleaning solvents; green and safe alternative for N-methyl pyrrolidone (NMP) and similar type of solvents.
Loxanol® OT 5853	80	Highly efficient open-time prolonger; prevents/reduces cracking in resin-based plasters; improved storage stability
Rheovis® PU 1192	22	Most efficient low-shear HEUR combined with low VOC, easy handling and enabling of easier defoaming.
Tinuvin® 292	37	Multipurpose basic HALS for various applications, use in water-borne coatings may require addition of cosolvents, may interact with sensitive dispersion binders
Tinuvin® 770 DF (ED)	37	HALS suitable for powder coating applications

¹ All measurements reflect approximate values based on ASTM D6866-18 (method B)

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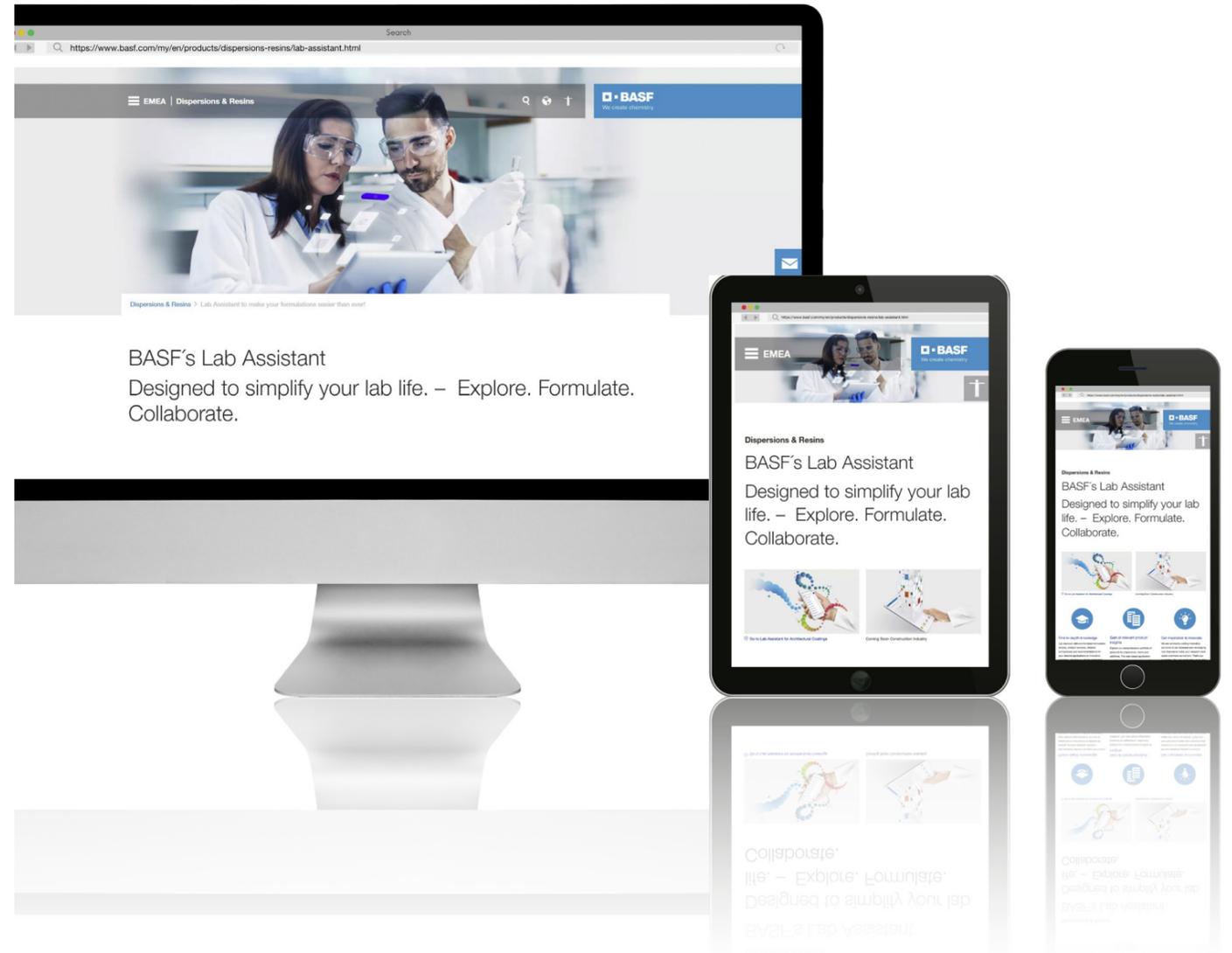
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¹ For regional product availability please kindly contact your local BASF-representative.

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