



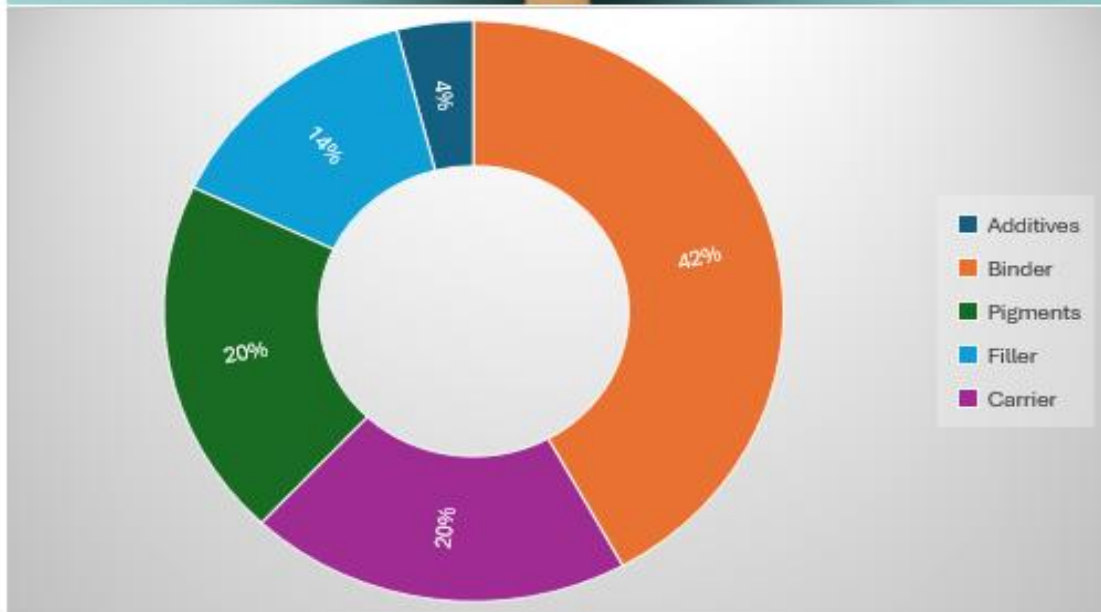
ADDITIVES

ADVANCED PERFORMANCE TECHNOLOGY
for paints, coatings and inks

A small percentage with a BIG impact!



The Composition of Paint



A little makes a big splash !

Coatings additives improve product properties and eliminate or reduce problems occurring during formulating paint systems, thus optimizing production processes. Coatings additives – high performance additives for your paint formulations. Coatings additives help you meet the challenges typically appearing in paint formulations and offer customized solutions with regard to improved pigment wetting, defoaming, air release, substrate wetting or surface slip. Using additives you will also meet the requirements for water and scratch resistance, increased adhesion to aged coating surfaces or UV protection, to name but a few.



- Architectural & Construction Coating
- Automotive OEM & Refinish Coating
- Industrial Coating
- Can & Coil Coating
- Wood & Furniture Coating
- Powder Coating
- Floor Coating
- Printing Inks
- Protective & Marine Coating
- Printing Inks
- Adhesive
- Flame Retardant
- Epoxy-Systems
- UV-curable Coating

Additives enhance the performance of paint formulations by modifying rheological properties, improving flow and leveling, reducing foam, improving pigment dispersability, accelerating cure and crosslinking, improving adhesion and reducing defects.

Our portfolio includes low VOC, and hazardous air pollutant substance-free (HAPS free) technologies for solvent-borne, water-borne, high solids, powder coatings, and energy curable systems in both existing and emerging markets.



About Additives

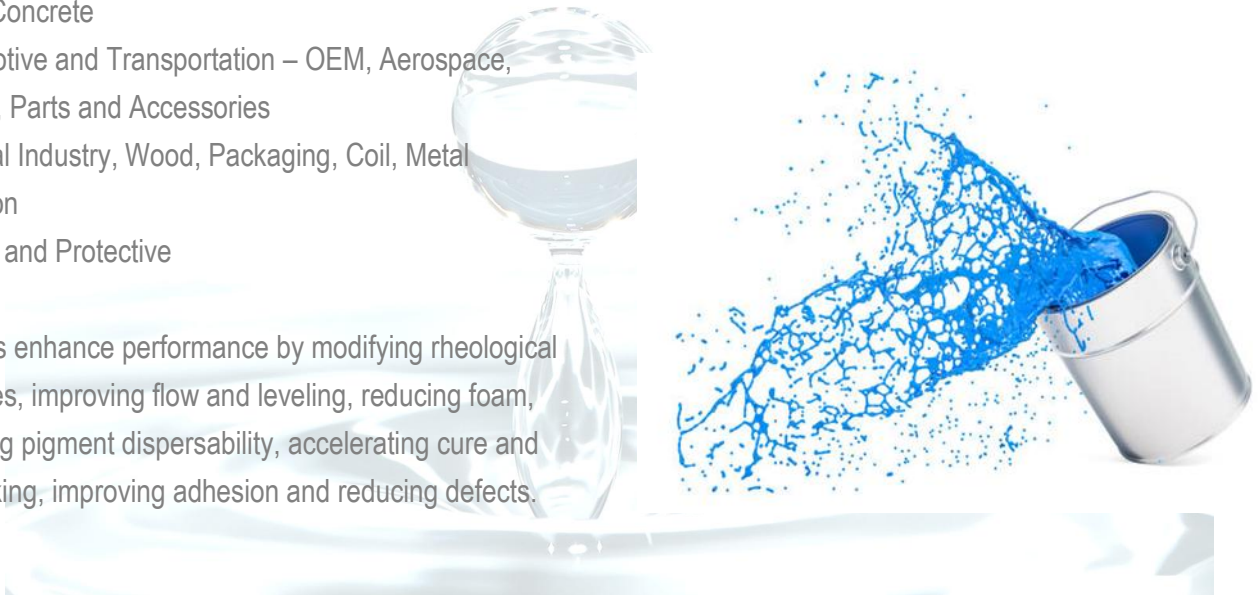
The coating resins and additives portfolio is on the leading edge of performance. This broad package of products enables our customers to bring coatings faster to the market, solve problems and enhance properties. We offer a broad range of additives for the formulation of coatings. Our portfolio includes low VOC, and hazardous air pollutant substance-free (HAPS free) technologies for solvent-borne, water-borne, high solids, powder coatings, and energy curable systems in both existing and emerging markets:

- Architectural-decorative Wall and Trim Coatings, Stains, Concrete
- Automotive and Transportation – OEM, Aerospace, Refinish, Parts and Accessories
- General Industry, Wood, Packaging, Coil, Metal Protection
- Marine and Protective

Additives enhance performance by modifying rheological properties, improving flow and leveling, reducing foam, improving pigment dispersability, accelerating cure and crosslinking, improving adhesion and reducing defects.

Our high performance dispersants and grinding resins are at the forefront of technology for the preparation of binder free pigment concentrates and pastes. The highest level of pigment, at the lowest VOC, without effects on corrosion resistance and other properties are achieved in systems using wetting and dispersing additives.

- Wetting and Dispersing Additives
- Flow and Leveling Additives
- Defoamer and Deaerater
- Rheology Modifier
- Catalysts and Drier

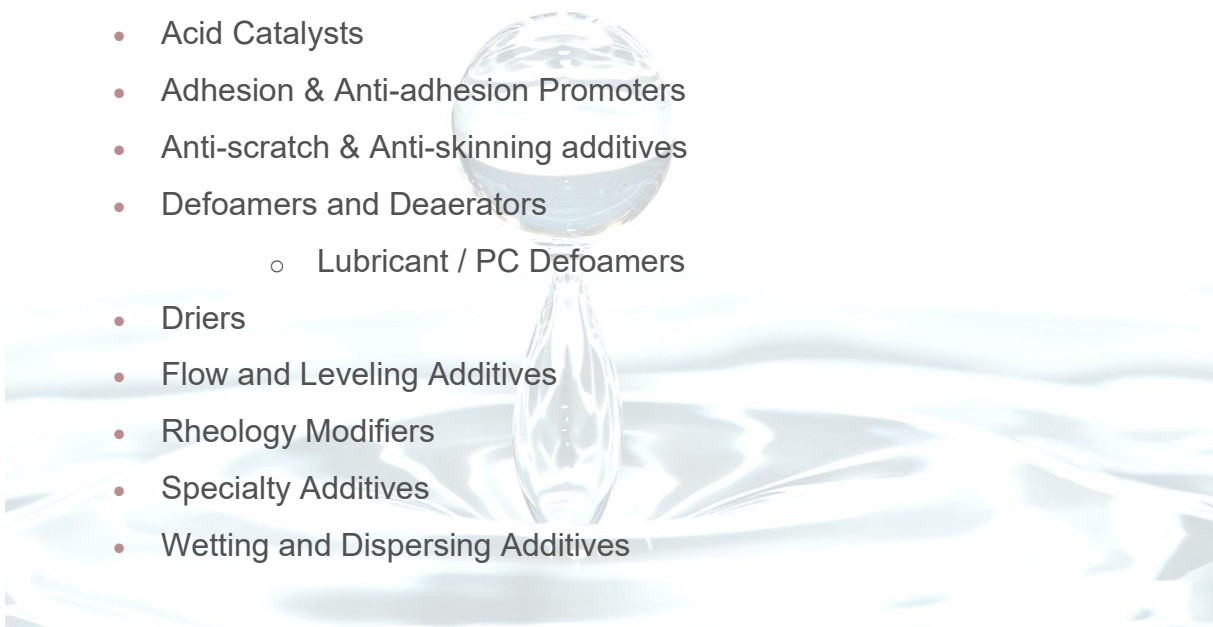


VARENA provides next-generation additives product line

Our portfolio not only includes a global-leading collection of dispersants and flow/leveling additives, but also exhibits our commitment to greener and safer technologies with our line of cobalt-free driers and continued developments in low VOC and hazardous air pollutant substance-free (HAPS free) technologies for solventborne, waterborne, high solids, powder coatings, and energy curable systems in both existing and emerging markets.

Our additives are designed to provide solutions regardless of the technology:

- Powder Coating Additives
- Radcure (UV/EB) additives
- Acid Catalysts
- Adhesion & Anti-adhesion Promoters
- Anti-scratch & Anti-skinning additives
- Defoamers and Deaerators
 - Lubricant / PC Defoamers
- Driers
- Flow and Leveling Additives
- Rheology Modifiers
- Specialty Additives
- Wetting and Dispersing Additives



Additives for Can Coatings



Additives for Automotive Coatings



Additives for Printing Inks



Additives for Coil Coatings



Additives for Powder Coatings



Additives for Wood Coatings



Additives for Architectural Coatings



Additives for Protective & Marine Coatings



Additives for Flooring



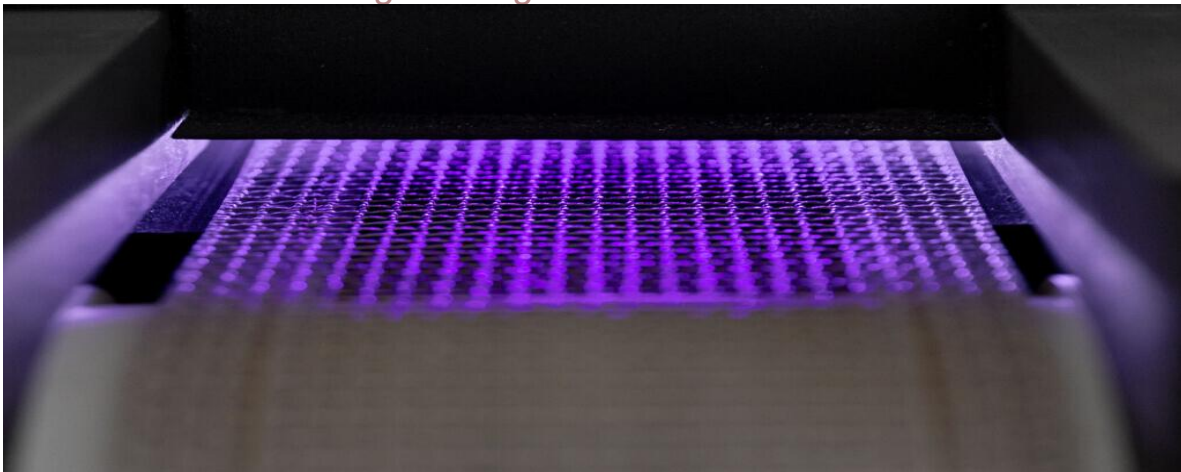
Additives for Metal and Glass Coatings



Additives for Plastic Coatings



Additives for UV-Curing Coatings



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Flash rust inhibitors

What does flash corrosion mean?

Flash corrosion is the general and rapid corrosion that instantly occurs when metals are exposed to corrosion environments.

Metals such as copper and aluminium can oxidise rapidly to form a layer for passivation. In this process, corrosion inhibitors are typically used to hinder formation of a passivation layer by keeping oxygen interaction on the surface.

Flash corrosion is also known as flash rusting or flashing.

Flash rust may occur during the drying process when aqueous **DTM** coatings are applied to ferrous substrates. This is problematic in cases of aqueous corrosion-protection coatings because the protective properties may be negatively influenced.

VARENA Additive **CorroProtect** flash rust inhibitors hinder the corrosion by forming stable complexes with the free iron particles and avoiding oxygen interaction.

SYNTHORA CorroProtect; Rust inhibitor

Product	Chemical characteristic	Highlighted application/Effect	Active substance [%]	Use level [%] (on total formulation)
CorroProtect 4456	Organic salts and morpholine derivate	VOC- and nitrite-free, for all waterborne DTM systems incl. 1K/2K PUR	30	0.5 – 2.0
CorroProtect 4458	Organic salts	VOC- and nitrite-free, preferably for polymer-emulsion-based DTM systems	38	0.5 – 2.0
CorroProtect 790	Epoxy phosphate ester	Used as additive for waterborne stoving enamels.	72	5-15
CorroProtect 800	Epoxy phosphate ester	Used as additive for waterborne stoving enamels.	73	5-15



Miscellaneous additives

Beside the above-mentioned groups of coating additives, VARENA provides a number of products **SYNTHORA AddiTech** for various purposes.

SYNTHORA AddiTech; Miscellaneous additives

Product	Appearance	Non-volatiles [%]	Use level [%] (on total formulation)	Use level [%] (on total formulation)
AddiTech 410	Clear to slightly turbid, yellowing, low-viscosity liquid	13	0.5 – 2.0	Viscosity stabilizer, anti-skinning and anti-gelling agent for solvent-based air-drying and stoving alkyd paints.
AddiTech 412	Clear to slightly turbid, yellowing, low-viscosity liquid	65	0.5 – 1.0	Solvent-free compatibility agent for easier incorporation of driers into water-based alkyd emulsion paints.
AddiTech 425	Clear, yellowing liquid	51	0.2 – 1.5	Silicon-free additive, imparts an equal structure to wax-containing coil coatings; improves degassing, reduces popping; also for clear coats.
AddiTech 428	Clear, low-viscosity liquid	10	3.0 – 6.0	Silicon-free additive for structured, wax-free coil coatings; causes orange-peel effect; improves degassing.
AddiTech 481	Clear, medium-viscosity liquid	100	0.1 – 2.0	Silicon-free flow and leveling additive for solvent-borne, solvent-free and aqueous systems; improves leveling, flexibility and adhesion; reduces blistering in thick layers of two-pack PUR coatings.
AddiTech 470	Clear, brownish liquid	12	0.1 – 1.0	Cobalt-free primary drier for aqueous alkyd systems; provides fast surface drying, good through drying and hardness development.
AddiTech 422	Slightly yellowish liquid	50	0.2 – 0.8	Cationic surface active additive; increase the conductivity of electrostatic sprayable paint systems; effective at low use levels.
AddiTech 560	Brownish liquid	12	1.5 – 3.0	Cobalt-free drier for alkyd systems; free from 2-ethyl hexanoic acid.
AddiTech 415	Clear to slightly turbid, yellow-brownish, low-viscosity liquid	65	0.1 – 0.5	Oxime-free anti-skinning agent with pigment-wetting properties.
AddiTech FR 500	White powder	min. 98	approx. 10	Halogen-free flame retardant, based on encapsulated phosphoric compounds for water-based polymer dispersion and solvent-based polymer binders.



Anti-skinning agents

When air-drying paints and coatings come in contact with atmospheric oxygen, they tend to form surface skin. Anti-skinning agents are therefore added as coating additives to induce uniform drying, prevent skin formation and shrinkage.



Wetting and dispersing agents

Process of pigment dispersing

The art of paint production is to combine raw materials in liquid and powdered ingredients in such a way that the end product fulfils the highest quality requirements.

The most complex and expensive part of the production process is the wetting and dispersing step. Pigments and fillers must be wetted by the liquids, ground to a minimum particle size and then homogeneously distributed to achieve maximum colour strength, gloss and hiding power. Finally this status needs to be stabilised to ensure the paint quality over the time.

Wetting and dispersing is a very time- and energy-consuming process and would not be possible without modern wetting and dispersing agents.

If the wetting and dispersing is not optimal, several problems may appear like, for examples, loss of gloss, colour changes, separation and others.

VARENA offers a growing portfolio of high-quality wetting and dispersing agents **SYNTHORA WetDisperse** for both aqueous and non-aqueous formulations.



SYNTHORA WetDisperse Wetting and dispersing agents

Product	Chemical characteristic	Active substance [%]	Main uses and characteristics
WetDisperse 810S	Modified block copolymer	100	Easy-to-use, universal dispersion for decorative and industrial coatings, recommended for solvent-borne and solvent-free systems.
WetDisperse 811S	Modified polymer	100	Easy-to-use, universal dispersion for decorative and industrial aqueous coatings; first choice for medium oil alkyds when gloss matters.
WetDisperse 840W	Modified block copolymer	50	Universal, outstanding cost-performance ratio for aqueous systems.
WetDisperse 844W	Modified block copolymer	40	40% version of 840W for aqueous systems.
WetDisperse 845W	Modified block copolymer	50	Similar to 840W, optimized for micronized iron oxides.
WetDisperse 846W	Modified polyacrylate	50	For highly loaded concentrates of various pigments, especially effective with carbon blacks for aqueous systems.
WetDisperse 850W	Modified polyacrylate	50	Universal, no effect on film hardness; for maximum pigment paste concentration take WetDisperse 840W or 870W.
WetDisperse 860W	Modified polyacrylate amine-free	44	Universal. No effect on film hardness; lowest water uptake; for maximum pigment paste concentration take 840W or 870W.
WetDisperse 870W	Modified alcohol ethoxylate	80	Very effective, low use level, outstanding for printing inks.
WetDisperse 438T	Special polymer	100	Special additive for solvent based alkyd systems, it enhances the dispersing of pigments and increases the gloss.

Our products offer a huge range of wetting and dispersing agents on different chemical bases. Our products are suitable for a variety of applications. These range from use in paints and coatings to many other areas of industrial applications.

Applications / Overview of Uses of SYNTHORA WetDisperse

Product	Use in		Systems			Use levels (typical values) Pigment concentrates (% on pigment)				
	Pigment concentrate	Direct grinding	Decorative	Industrial	Printing inks	TiO ₂	Inorganic pigments	Organic pigments	Carbon blacks	Mineral pigments (% on total formulation)
WetDisperse 810S	○	●	●	●	○	●	●	●	●	0.2-4
WetDisperse 811S	○	●	●	●	○	●	●	●	●	0.2-4
WetDisperse 840W	●	●	●	●	◐	8-10	15-25	25-60	100-120	2-3
WetDisperse 844W	●	●	●	●	○	10-12	20-20	30-75	130-150	2-3
WetDisperse 845W	●	●	●	●	◐	8-10	15-25	25-60	100-120	2-3
WetDisperse 846W	●	◐	●	●	◐	8-10	15-25	25-60	100-120	2-3
WetDisperse 850W	◐	●	●	●	◐	10-12	20-30	30-75	130-150	2-3
WetDisperse 860W	◐	●	●	●	◐	10-12	20-40	30-90	130-150	2-3
WetDisperse 870W	●	○	○	○	●	○	○	15-30	50-60	

● recommended ◐ partially suitable ○ not recommended

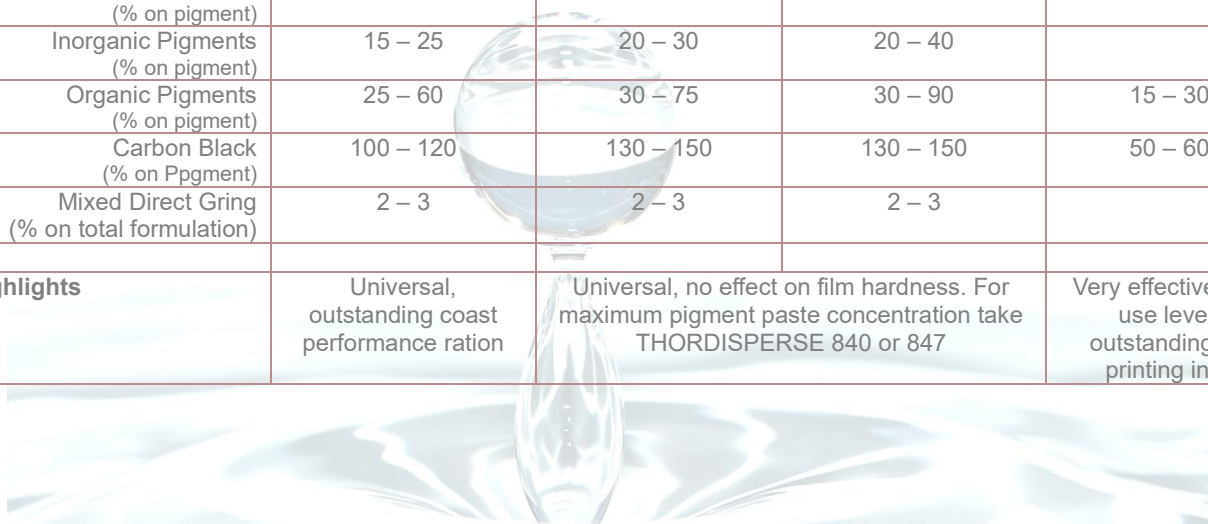


Wetting and dispersing agents

The additives stabilize pigments (inorganic, organic and also effect pigments) and fillers.

SYNTHORA WetDisperse for Aqueous Systems

	WetDisperse 840W	WetDisperse 845W	WetDisperse 846W	WetDisperse 847W
Chemical Characterization	Modified block copolymer	Modified polyacrylate	Modified polyacrylate, amine free	Modified alcohol ethoxylate
Active Content (approx. In water)	50%	50%	44%	80%
Preferred Use Field:				
Pigment Concentrates	■ ■	■	■	■ ■
Direct Grind	■ ■	■ ■	■ ■	
Paints & Coatings	■	■	■	■
Printing Inks	■	■	■	■ ■
Inorganic Pigments	■	■	■	
Organic Pigments	■	■	■	■ ■
Carbon Black	■	■	■	■ ■
Mixed Pigmentations	■	■	■	
Typical Use Levels:				
TiO ₂ (% on pigment)	8 – 10	10 – 12	10 – 15	
Inorganic Pigments (% on pigment)	15 – 25	20 – 30	20 – 40	
Organic Pigments (% on pigment)	25 – 60	30 – 75	30 – 90	15 – 30
Carbon Black (% on Ppgment)	100 – 120	130 – 150	130 – 150	50 – 60
Mixed Direct Gring (% on total formulation)	2 – 3	2 – 3	2 – 3	
Highlights	Universal, outstanding coast performance ration	Universal, no effect on film hardness. For maximum pigment paste concentration take THORDISPERSE 840 or 847		Very effective, low use level, outstanding for printing inks



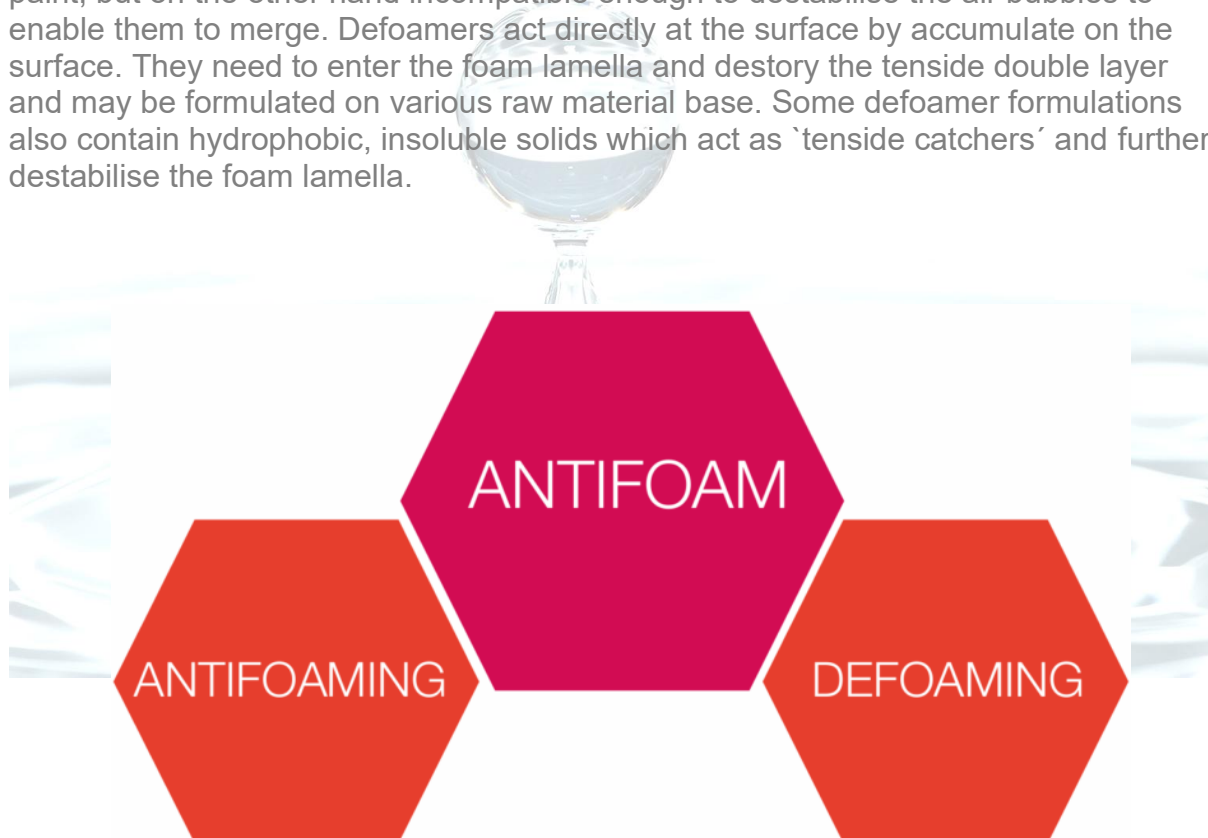
SYNTHORA WetDisperse for Non-Aqueous Systems

	WetDisperse 810S	WetDisperse 811S
Chemical Characterization	Modified block copolymer	Modified polymer
Active Content	100%	
Preferred Use Field:		
Direct Grind	■	■
Alkyds	■	■
Other Binders	■	■
Inorganic Pigments	■	■
Organic Pigments	■	■
Carbon Black	■	■
Mixed Pigmentations	■	■
Typical Use Levels:	2 – 4 % on total formulation	
Highlights	Easy to use, universal dispersant for decorative and industrial coatings	Easy to use, universal dispersant for decorative and industrial coatings. First choice for medium oil alkyds when gloss matters



Defoamers

Especially in aqueous paints and coatings, foam formation is a problem which may significantly disturb the production processes. These problems may appear in different situations. Wetting of powdered ingredients means that air between the particles is replaced by liquids and then distributed in the mill charge. Furthermore, the mixing itself leads to additional air entrapment. Both cases finally result in foam formation which can lead to problems if not removed. High levels of foam may increase the paint volume significantly and exceed the vessel volume. The same problems may arise during the filling of the end product. Finally, foam bubbles in the applied film may result in surface defects. Foam bubbles need to rise up to release the entrapped air at the surface. Bubbles of low air volume, which are distributed in the entire wet paint, tend to stabilise their position because their lifting power does not overcome the viscosity. This phenomenon is known as 'micro foam'. These small bubbles need to merge and form bigger bubbles with a higher lifting power which they can rise up to the surface. This is the task of so called 'de-airing agents' which have a balanced compatibility. They must be compatible enough to be active in the entire paint, but on the other hand incompatible enough to destabilise the air bubbles to enable them to merge. Defoamers act directly at the surface by accumulate on the surface. They need to enter the foam lamella and destroy the tenside double layer and may be formulated on various raw material base. Some defoamer formulations also contain hydrophobic, insoluble solids which act as 'tenside catchers' and further destabilise the foam lamella.



Silicone antifoam can effectively remove and suppress foam in the production process.

SYNTHORA FoamStop AQUA; Anti-foaming agents for aqueous formulations

Product	Chemical characteristic	Active substance [%]	Use level (on total formulation)
FoamStop AQUA 210	Silica containing PDMS solution	80	0.1 – 1.7
FoamStop AQUA 223	Silica containing PDMS	100	0.1 – 1.0
FoamStop AQUA 224	Silica containing PDMS	100	0.1 – 1.0
FoamStop AQUA 226	Silica containing PDMS	100	0.1 – 1.0
FoamStop AQUA 204	Silicone containing solution	25	1.0 – 4.0
FoamStop AQUA 228	Silica containing PDMS solution	66	0.1 – 1.0
FoamStop AQUA 241	Silica containing PDMS solution	30	0.3 – 1.0
FoamStop AQUA 242	Silica containing PDMS solution	26	0.1 – 1.0
FoamStop AQUA 250	Silicone- and mineral-oil free	100	0.3 – 1.0
FoamStop AQUA 251	Silicone- and mineral-oil free	100	0.3 – 1.0
FoamStop AQUA 229	Silicone based defoamer	100	0.1 – 1.0

SYNTHORA FoamStop; Anti-foaming agents for non-aqueous formulations

Product	Chemical characteristic	Active substance [%]	Use level (on total formulation)
FoamStop PD 170	PDMS solution	10	0.03 – 0.5
FoamStop PD 172	PDMS solution	5	0.05 – 0.8
FoamStop PD 125	Silicone-free formulation of defoaming actives	80	0.2 – 1.5
FoamStop PD 102	PDMS solution	1.3	0.4 – 2.0
FoamStop AC 103	Solution of acrylate-mod. PDMS	13.5	0.2 – 1.5
FoamStop AC 135	Solution of polyacrylate-mod. PDMS	8.5	0.5 – 1.0
FoamStop PD 123	PDMS solution	12	0.5 – 1.0

Applications / Overview of Uses of SYNTHORA FoamStop AQUA

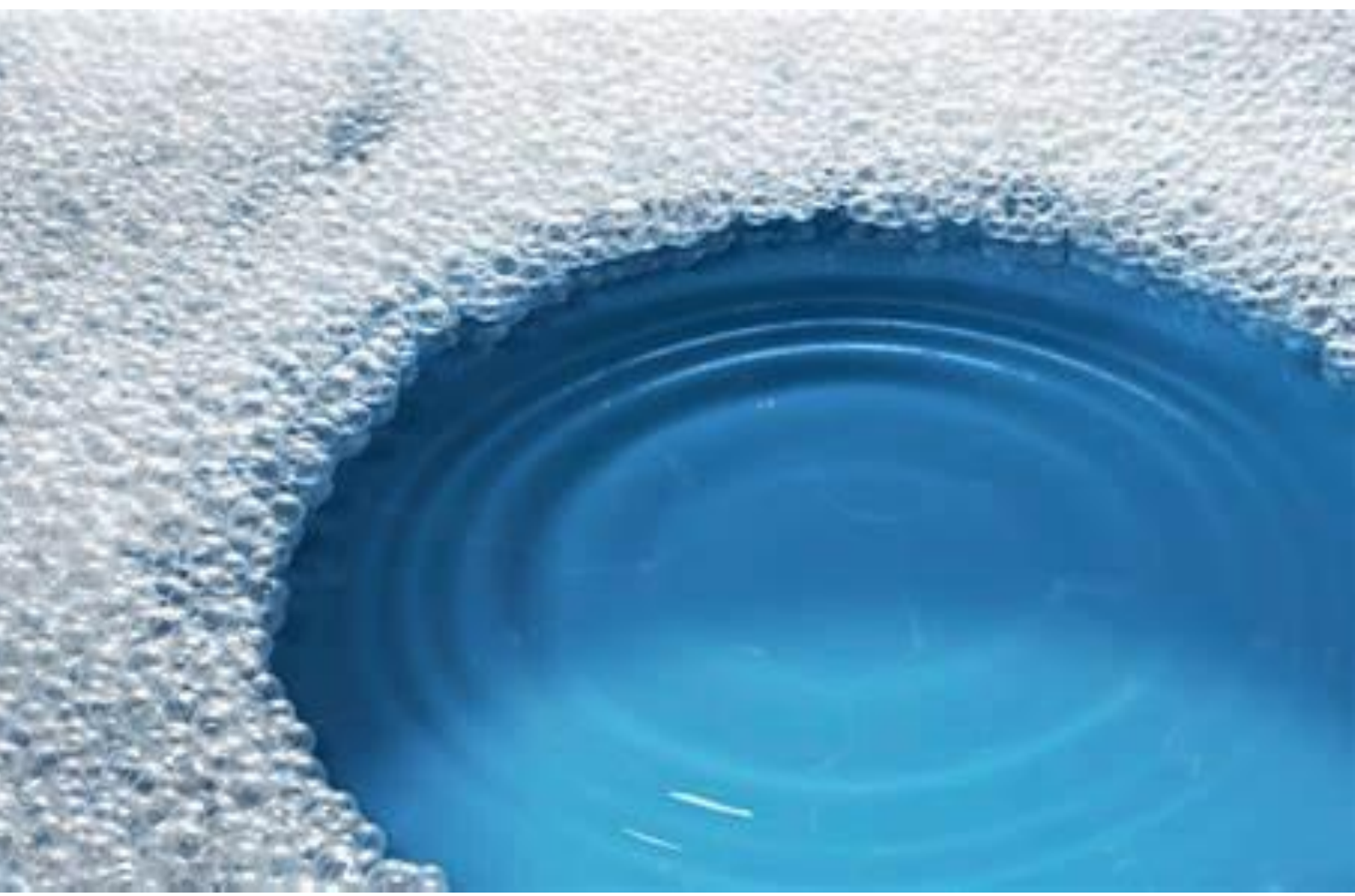
Product	Addition point			Use						Application			Curing method	
	Grinding stage	Let down	Post add	Decorative	Industrial	Automotive	Wood/Furniture	Adhesives	Printing inks	Brush/Roll	Spray	Dipping	Air	2-pack
AQUA 210	○	●	○	○	○	○	○	○	●	●	○	○	●	●
AQUA 223	○	●	○	●	●	●	●	●	●	●	●	●	●	●
AQUA 224	●	○	○	●	●		●	●	○	●	●	●	●	○
AQUA 226	●	○	○	●	●	○	●	●	○	●	●	●	●	○
AQUA 228	●	●	○	●	●	●	●	●	●	●	●	●	●	●
AQUA 241	○	●	●	●	●	●	●	●	●	○	●	●	●	●
AQUA 242	○	●	●	○	●	○	○	○	○	●	●	○	●	○

● recommended ○ partially suitable ○ not recommended

Defoamer selection guide for aqueous paint formulations

Selecting the right defoamer for a particular formulation decision between compatibility and effectivity. A defoamer that is too compatible does not solve the foam problem and one that is too incompatible removes the foam but results in surface defects. A defoamer, or combination of defoamers, that is most effective at the lowest level of surface defects must be found.

The following graph will help you find the correct defoamer from the VARENA SYNTHORA FoamStop portfolio:



Applications / Overview of Uses of SYNTHORA FoamStop

Product	Solvent system					Use					Application			Curing method			
	Solvent-borne	Solvent-free	High solids	Decorative	Industrial	Flooring system	Automotive	Wood/Furniture	Coil coating	Printing inks	Brush/Roll	Spray	Dipping	Air	Oven	2-pack	UV
FoamStop PD 170	●	◐	●	●	●	◐	●	●	○	●	●	●	●	●	○	●	○
FoamStop PD 172	●	◐	●	●	●	◐	●	●	○	●	●	●	●	●	○	●	○
FoamStop PD 125	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	○
FoamStop PD 102	●	●	◐	◐	◐	●	○	○	○	○	●	●	●	●	○	●	○
FoamStop AC 103	●	◐	●	●	●	◐	●	●	○	●	●	●	●	●	○	●	●
FoamStop AC 135	●	●	●	●	●	●	◐	◐	○	○	●	◐	◐	●	○	●	○
FoamStop PD 123	●	●	●	●	●	●	◐	◐	○	○	●	◐	◐	●	○	●	○

● recommended ◐ partially suitable ○ not recommended



Substrate wetting agents

Paints and coatings need to cover the coated area evenly to give a perfect impression, but sometimes problems occur due to differences in the surface tension of the paint and the surface energy of the substrate.

In these cases, the surface tension of the paint system must be reduced by using substrate wetting additives.

The **SYNTHORA WetCore** additive grades listed in the table on the page 11 were designed to improve the wetting and coverage of substrates with low surface energy without increasing the surface slip of the dried film.

SYNTHORA WetCore; Substrate wetting agents

Product	Chemical characteristic	Active substance [%]	Use level [%] (on total formulation)	Highlighted application / Effect
WetCore 345	Formulation of silicone copolyether and dioctylsulphosuccinate	71	0.3 – 1.5	Improves the substrate wetting and penetration of aqueous formulation.
WetCore 341	Polyethermod. PDMS trisiloxane	50	0.2 – 1.5	For all kinds of aqueous air-drying industrial, automotive, wood and architectural coatings and 2-pack PUR; no influence on surface slip, no foam stabilization.
WetCore 344	PDMS copolymer	100	0.1 – 1.0	For all kinds of aqueous air-drying industrial, automotive, wood and architectural coatings and 2-pack PUR systems; no influence on surface slip, no foam stabilization; better against craters than WetCore 341 .
WetCore 328	Maleic resin	100	0.2 – 1.5	A wetting agent for wood impregnation and solvent as well water-dilutable premix applications.
WetCore 354	Maleic resin	100	0.2 – 2.0	A wetting agent for wood impregnation and solvent as well water-dilutable premix applications.
WetCore 346	Dioctylsulphosuccinate / PDMS	70	0.3 – 1.5	For water borne coatings, by reducing the surface tension causes Add 3460 better substrate wetting on substrates with low surface energy. The penetration in porous substrates such as wood or paper is improved. Surface defects as craters, orange peel and edge pulling are significantly reduced.
WetCore 301	Dioctylsulphosuccinate	70	0.1 – 1.0	Additive for improving the wetting and leveling of water borne coatings on different substrates. Typical applications are coatings on wood, printing inks, care products, adhesives, etc.



Wetting agents and surface modifiers

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.

Applications / Overview of Uses of **SYNTHORA WetCore**

Product	Use						Application			Curing method		Effects		
	Decorative	Industrial	Automotive	Wood/Furniture	Adhesives	Printing inks	Brush/Roll	Spray	Dipping	Air	2-pack	Substrate wetting	Flow and leveling	Surface defects
WetCore 345	●	●	○	●	●	●	●	●	●	●	○	●	●	●
WetCore 341	●	●	●	●	●	○	●	●	●	●	●	●	●	●
WetCore 344	●	●	●	●	●	●	●	●	●	●	●	●	●	●

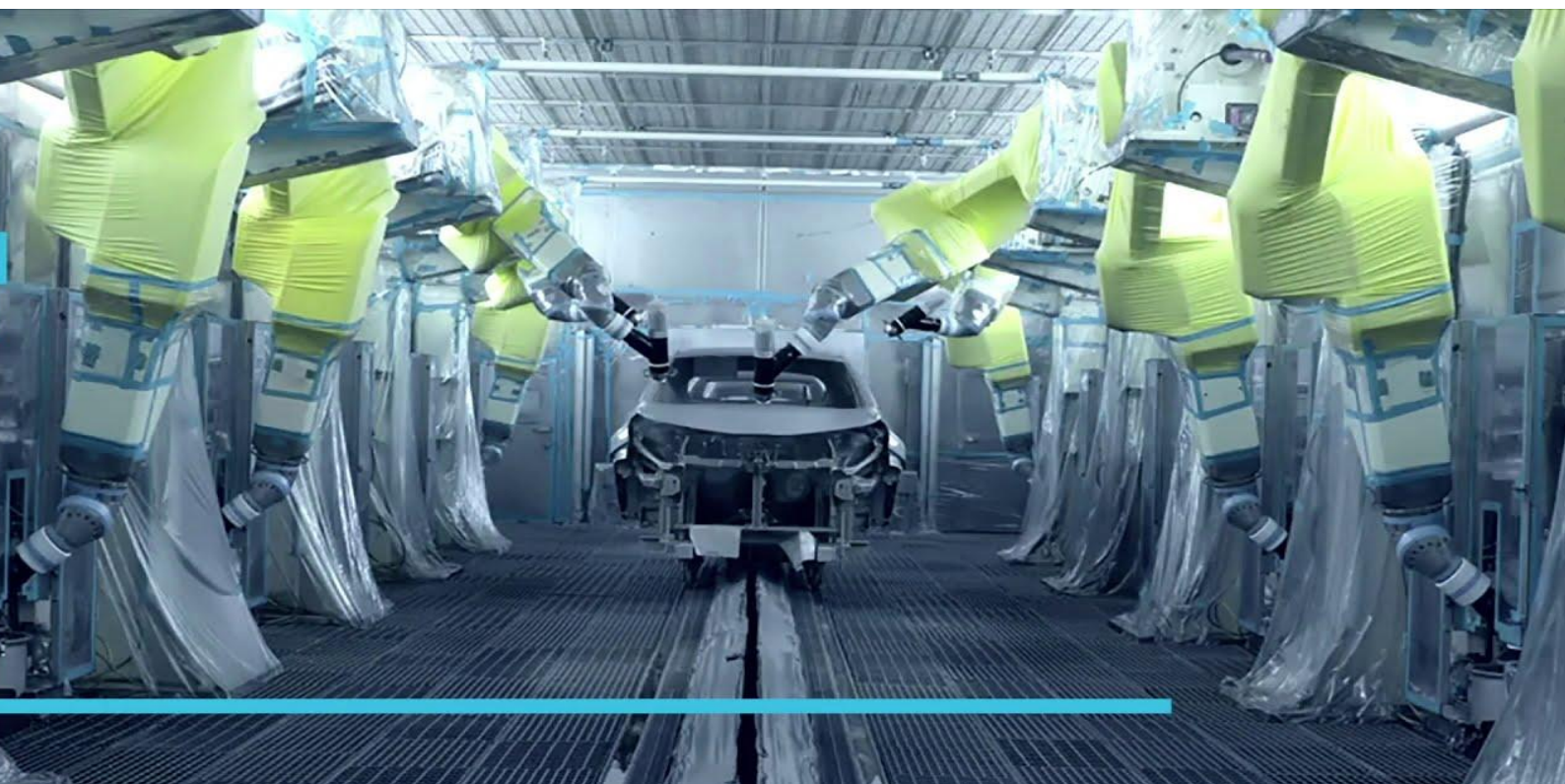
● recommended ○ partially suitable ○ not recommended

Substrate wetting additives for aqueous systems

Substrate wetting agents are an important formulation component in any modern waterborne coating formulation. How well a coating wets a substrate plays a very decisive role in the quality of a coating.

Our two highly effective additives **SYNTHORA WetCore 341** and **SYNTHORA WetCore 344** cause a considerable reduction in the surface tension of aqueous systems and can be used for the application in industrial and automotive coatings as well as paints and varnishes.

We piqued your interest? Have a look at our slider below and feel free to contact us for any Further questions.



VARENA wetting & dispersing additives „SYNTHORA WetCore“

Our dispersant & wetting additives can be applied where exceptional flow and leveling of a paint or ink film are desired. A prominent example is paint, where color particles need to be evenly distributed to guarantee perfect coloration, and other pigmented coatings. Dispersant and wetting agents combine the desired properties of both wetting agents and dispersing agents. Furthermore, our portfolio contains both ionic & non-ionic agents – we've got the right additives for your chemical solutions!

- Enhanced pigment dispersion
- Great flow & levelling properties
- Prevention of uncontrolled flocculation
- Stable & durable
- Prevent sagging



SYNTHORA WetCore

Wetting additives offer outstanding substrate-wetting, colorant-compatibilizing, flow-control, slip-control and anti-mar agents for water-based formulations.

- Significantly improved substrate wetting and leveling, even on low-energy substrates such as plastics and contaminated substrates due to a strong reduction of the surface tension of the paint
- Preventing from surface defects such as craters, orange peel or edge alignment
- Improving pore wetting, especially in wood Coatings
- Enabling a closed coating film at low film Thicknesses
- Good recoatability
- No influence on the smoothness of the Coating



Properties

SYNTHORA WetCore 341

Highly effective additive for all water-borne coatings. Especially recommended for waterborne coating formulations with organic co-solvent content. Reduction of surface tension significantly improves substrate wetting and flow, especially on critical substrates such as plastics, but also on contaminated substrates.

No negative influence on intercoat adhesion with no or only slight foam stabilization. Surface smoothness is not increased.

SYNTHORA WetCore 344

Highly effective additive for reducing surface tension. Substrate wetting and flow are significantly improved, especially on critical substrates such as plastics, but also on contaminated substrates.

No negative influence on intercoat adhesion with no or only slight foam stabilization. Surface smoothness is not increased.



Acrylic flow and leveling agents

Differences in surface tension may not only be the cause for substrate wetting problems but also for defects on the coating surface. These differences can result from solvent evaporation, an advancing curing reaction, dust contamination or others.

Acrylic flow and leveling agents need to have a certain incompatibility with the coating system, accumulate at the coating surface and slightly reduce the surface tension of the system.

The level of incompatibility depends on the chemical composition of the polymer; it is important to find the right additive for a particular formulation.

At the wrong level of incompatibility either nothing happens or defects occur- see graph.

Acrylate offer only a low level of surface tension reduction which is sufficient in many cases. Furthermore, they do not influence the recoatability.

Whenever a stronger reduction or modifications of surface properties are required, silicone-based additives may be the better choice but have more influence on the recoatability as well.



SYNTHORA FlowAdd

Acrylic flow and leveling agents



optimal

slight turbidity in the clear coat, optimal levelling



strongly incompatible

levelling defects, strong turbidity, reduction of gloss, increase in haze

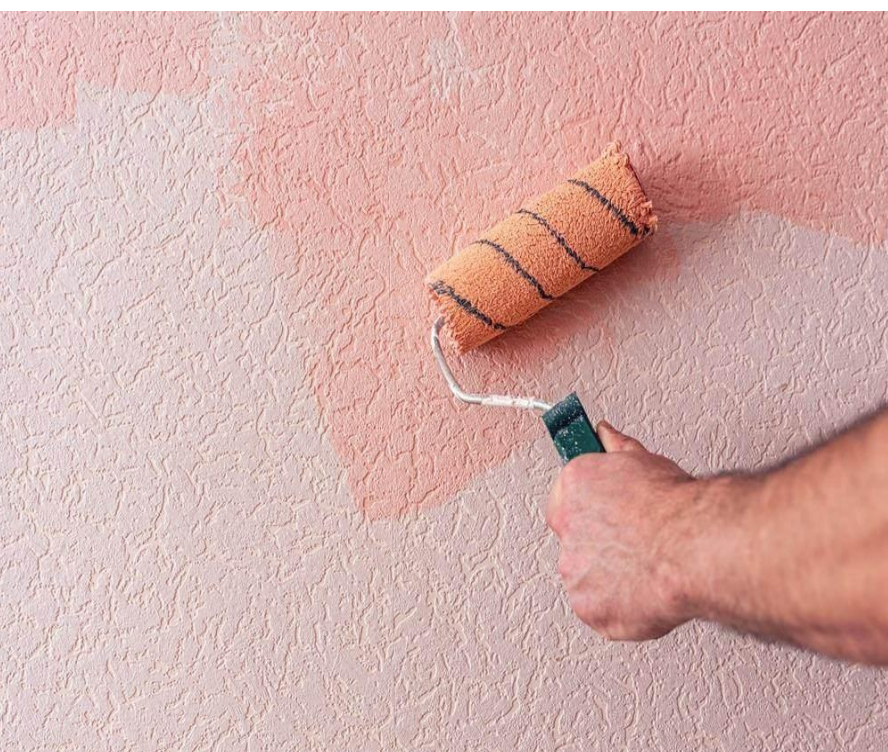


strongly compatible

levelling insufficient, no or slight turbidity

SYNTHORA FlowAdd; Acrylic flow and leveling agents

Product	Chemical characteristic	Active substance [%]	Use level [%] (on total formulation)	Highlighted application / Effect
FlowAdd FL 20	Polyacrylate	100	0.2 – 2.0	Especially for coil and can coatings; 2K-PUR and high solids; weatherproof, UV-resistant. FL 20 corresponds to FDA § 21 CFR § 175.300 and the AP (2004).
FlowAdd FL 20-50	Diluted polyacrylate	50	0.4 – 4.0	Easy to dose; especially for coil and can coatings; 2K-PUR and high solids; weatherproof, UV-resistant.
FlowAdd FL 90	Polyacrylate	100	0.5 – 1.5	Especially for coil coatings; 2K-PUR and high solids; weatherproof, UV- and hydrolysis-resistant.
FlowAdd FL 100	Polyacrylate	100	0.2 – 2.0	Especially for 1K/2K high solids; excellent weather, UV and hydrolysis stability. FL 100 prevents surface defects and improves the flexibility of coating films.
FlowAdd FL 200	Modified polyacrylate, carboxyl functional	96	0.2 – 1.5	Excellent compatibility with various resins; specially for aqueous coatings, but also for solvent-based systems, no transparency of clear coats. FL 200 corresponds to FDA § 21 CFR § 175.300 and the council of Europe resolution AP (96) 5.
FlowAdd FL 167	Silicon-free polymer	min. 98	0.2 – 2.0	Hydrolysis and UV-resistant polymeric leveling agent to prevent surface defects like crating, pinholes, orange peels, etc.. industrial adhesion and recoatability are not affected by addition of FL 167.
FlowAdd FL 190	Acrylic polymer	100	0.2 – 1.5	Used in high solids, UV curing, coil, and other coating systems for improving flow and leveling (orange peel).
FlowAdd FL 151	Acrylic polymer	50	0.2 – 2.0	For water- and solvent-based systems, imperfections such as craters, pinholes, fisheye, orange peel and swim-out.
FlowAdd FL 40-50	Silicon-free polymer	50	0.4 – 4.0	As FL 20, but with improved efficiency.
FlowAdd FL 40	Acrylic polymer	98	0.2 – 2.0	Used in solvent based coatings, high solids, coil coating and powder systems, it will correct surface imperfections, improve flexibility and increase adhesion.
FlowAdd FL 292	Acrylic polymer	67	0.1 – 1.0	Silicone free levelling agent with air release properties for different reactive resin systems, printing inks, eliminates or reduces peel; it improves the flow, dispersion and floating behaviour, prevents air entrapment.
FlowAdd FL 247	Fluorine modified acrylic polymer	70	0.3 – 2.0	Fluorine modified polymeric flow control agent for solvent based systems. For high-speed applications like coil coatings; improves substrate wetting, leveling and deairing, avoids / reduces surface imperfections.
FlowAdd FL 337-70	Fluorine modified acrylic polymer	70	0.3 – 2.0	Fluorine modified polymeric flow control agent for solvent based systems, like polyester, acrylic, epoxy, alkyd and urethane resins. It reduces surface imperfections such as craters, pinholes, fisheye, orange peel and swim-out.
FlowAdd FL 101	Colourless, high viscouse liquid	approx. 98	0.1 – 1.0	Silicon-free polymeric flow control agent for solvent-based and free coatings, printing inks, FDA § 21 CFR § 175.300



The most versatile flow and leveling agents for premium finishes

Flow and leveling are two attributes that significantly determine the aesthetics of a coating or rather the surface of a coating.

Applications / Overview of Uses of SYNTHORA FlowAdd FL

Product	Use								Application			Curing method				Effects							
	Decorative	Industrial	Automotive	Wood/Furniture	High solids	Can coating	Coil coating	Printing inks	Brush/Roll	Spray	Dipping	Air	Oven	2-pack	UV	De-aring	Flow and leveling	Substrate defects	Flexibility/impact	Glas	Dirt pickup	Pigment flooding	Adhesion to
FL 20	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○
FL 20-50	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○
FL 90	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○
FL 40	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	●
FL 40-50	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	●
FL 307	●	●	●	●	●	○	●	○	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○
FL 100	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○
FL 151	●	●	●	●	○	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○
FL 200	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○
FL 101	●	●	●	●	●	○	●	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○
FL 240	●	●	●	●	●	○	●	○	●	●	●	●	●	●	○	●	●	●	●	○	●	○	●
FL 237-70	○	●	●	○	○	○	●	○	○	●	●	○	●	○	○	●	●	●	○	○	○	●	○

● recommended ○ partially suitable ○ not recommended



High performance acrylic flow and leveling agent for solvent-based, water-based and powder coatings

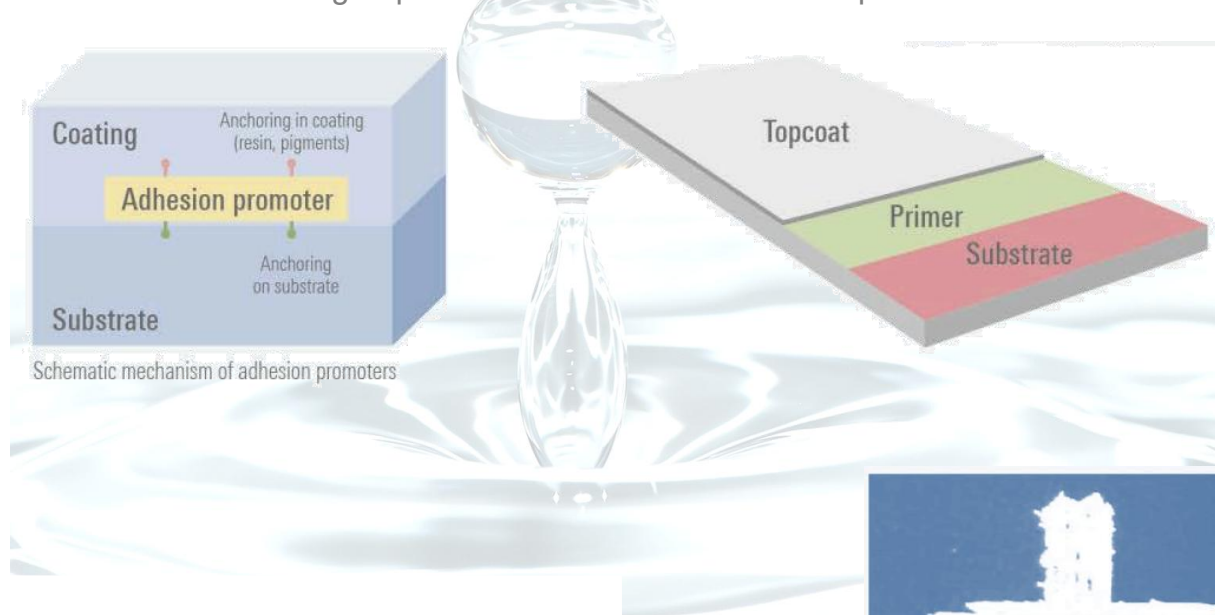
Adhesion promoters and special primers

Proper adhesion of a coating film to the substrate is necessary to offer long-time protection and adhesive properties. Weak adhesion may lead to accelerated degradation, destruction of the aesthetic and finally decrease corrosion resistance. Substrate that acts as a kind of interface – by providing on one side of the molecule affinity to the coating and/or coating ingredients and on the other side to the substrate – are therefore chosen. The choice of functional groups depends on the coating system and the substrate.

Adhesion improvement can be achieved by two different approaches: either by using a separate layer of a primer between substrate and coating or by adding the adhesion promoter directly to the coating formulation.

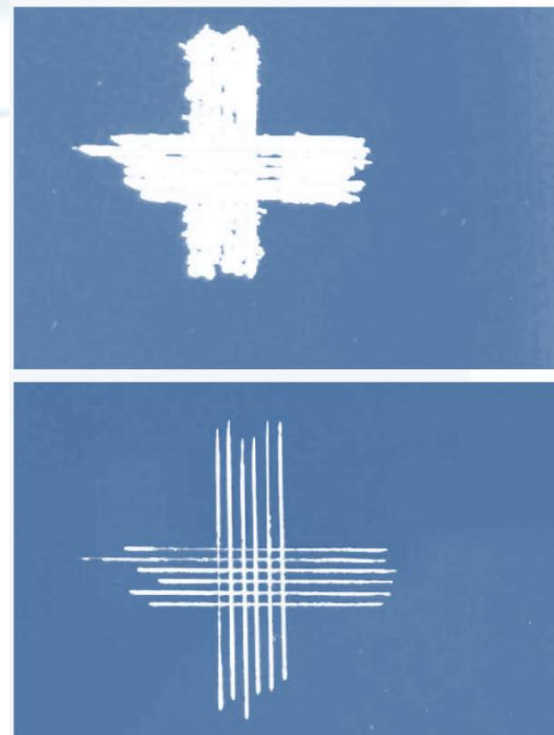
Adhesion promoters for coating applications are added to the liquid coating. After the application, they orientate on the substrate/coating interface and develop bonds both on the substrate as well as on the coating matrix. Ideally, a permanent covalent bond is created here, which significantly increases the adhesion of the coating to the substrate, thereby increasing its performance. Besides covalent bonds there are other effects which may improve adhesion.

The choice of reactive groups determines the adhesion on specific substrates.



Adhesion promoters SYNTHORA BondPro

Adhesion is one of the most critical properties for any coating, ink, adhesive, or sealant formulation. An adhesion promoter additive is often required to improve adhesion. Adhesion promoters will typically interact with the substrate and functional groups within the formulation's polymer network to form a chemical bridge between the formulation and the surface it is being applied to.



SYNTHORA BondPro; Adhesion promoter

Product	Chemical characteristic	Active substance [%]	Use level [%] (on total formulation)	Highlighted application / Effect
BondPro EP 5580	Specially mod. epoxy ester	70	1.0 – 5.0	Aqueous baking enamels and polyurethane systems.
BondPro P 5584	Specially mod. epoxy ester	77	1.0 – 3.0	Solvent-borne baking enamels and PU-systems.
BondPro SP 5586	Special polyester	75	1.0 – 3.0	Solvent-borne air-drying and stoving polyurethane systems; stable up to 180°C.
BondPro SP 5587	Special polyester	75 – 80	1.0 – 3.0	Solvent-borne air-drying and stoving polyurethane systems; stable up to 180°C; NMP-free.
BondPro PU 5548	Isocyanate functional polymer	80	2.5 – 5.0	Solvent-borne and solvent-free polyurethane systems.
BondPro SP 5590	Special modified polyester	100	1.0 – 3.0	Improves adhesion of solvent borne stoving- and polyurethane system, PURSILAN-systems on metals and melamine resin coated chipboards.
BondPro EP 790	Specially mod. epoxy ester	73	5.0 – 15.0	Used as additive for waterborne stoving enamels; humidity- and corrosion resistance, adhesion, chemical resistance, stain resistance, pasteurisation resistance.
BondPro SP 711	Solution of a modified polyester	70	3.0-15.0	Improves adhesion and flexibility of solvent-borne coatings on steel, galvanized steel, aluminium and plastics.
BondPro SP 901	Special modified OH.group containing polyester	90	1.0 – 3.0	Adhesion promoter for coating formulation, solvent based air drying, stoving and 2 component systems. Improves the adhesion of polyurethane systems on metals.



Applications / Overview of Uses of SYNTHORA BondPro

		Curing system				Use						Curing method				Effects			
Product	Reactive	Aqueous	Solvent-borne	Solvent-free	Aroma-free	Decorative	Industrial	Wood/Furniture coatings	Can coatings	Coil coatings	Printing inks	Air	Oven	2-pack	UV	Flexibility/impact resistance	Adhesion to metals	Adhesion to glass/ceramic	Adhesion to melamin coated chipboard
EP 5580	○	●	○	○	○	○	●	○	○	○	○	●	●	●	○	○	●	●	○
EP 5584	○	◐	●	○	○	●	●	●	●	●	○	○	●	●	○	●	●	○	●
SP 5586	○	○	●	○	○	●	●	●	○	●	○	●	●	●	○	●	●	○	●
SP 5587	○	○	●	○	○	●	●	●	○	●	○	●	●	●	○	●	●	○	●
PU 5548	●	○	●	●	○	●	●	○	○	○	○	●	○	●	○	○	●	●	○

● recommended ○ partially suitable ○ not recommended

SYNTHORA BondFlex; Special primers / adhesion promoter

Product	Properties	Non-volatiles [%]	Flash point [°C]	Solvent	Appearance / Use
BondPro PM 8100	Adhesion promoter for flexible substrates; for immediate or subsequent painting, printing, gluing and labeling	4	25	xylene	White pigmented solution; ready for use.
BondPro PM 8300	Adhesion promoter for flexible substrates; for immediate or subsequent painting, printing, gluing and labeling	4	25	xylene	White pigmented solution; ready for use.
BondPro PM 8400	Adhesion promoter for undercoat polyethylene for subsequent coating or printing	5	25	xylene	Yellowing to brown, low viscosity liquid; dilute down to 2.5% solids.
BondPro W 8200	Aqueous adhesion promoter based on specially modified, low-chlorinated polypropylene	30	n.a.	water	Low-viscosity, brownish and turbid liquid; dilute down to 10% solids or incorporate in adhesives, ins and paints.
BondPro PM 8250	Adhesion promoter especially for polypropylene; use on other substrates may be possible (testing)	2.5 or 5	25	xylene	Yellowing, low-viscosity liquid; ready to use (2.5%); dilute down to 2.5%.
BondPro PM 8700	Adhesion promoter for undercoat polypropylene for subsequent painting, printing, best adhesion properties	2.5	25	xylene	Colourless to yellowish, clear liquid, ready to use.
BondPro UV 8800	Adhesion promoter for anodised aluminium surfaces for subsequent printing with UV inks.	2.5	12	propanol	Clear, low-viscosity liquid
BondPro R 8000	Transparent adhesion promoter for use on uncoated plastics. Composition based on chlorinated polyolefine. Gives excellent adhesion on exterior plastic car parts. Uncoated exterior plastic types e.g. AAS, ABS, PBTP, PC, PP/EPDM, PVC, SMC, GFK,	16	25	xylene	Yellowing, low-viscosity liquid; ready to use .



Primer for plastics and coupling agents

In numerous coating and plastics applications, the condition of interfaces is a significant influencing variable for the efficiency in the final applications.

Applications / Overview of Uses of SYNTHORA BondFlex PM

Product	Aerosol-compatible	Application method					Substrate									
		Spraying (airless, air)	Aerosol can	Dipping	Floating	Printing	Rigid	Flexible	Foil	Thermoplastic rubber	Thermoplastic PUR	Polyethylene	Polypropylene	Polyolifine blends	EPDM	Aluminium
BondPro PM 8100	●	●	●	●	●	●	○	●	●	●	●	●	●	●	●	○
BondPro PM 8300	○	●	○	●	●	●	○	●	●	●	●	●	●	●	●	○
BondPro PM 8400	○	●	○	●	○	●	●	●	○	○	○	●	○	○	○	○
BondPro PM 8200 W	○	●	○	●	●	●	●	●	●	○	○	●	●	●	○	○
BondPro PM 8250	○	●	○	●	○	●	●	●	●	●	●	●	●	●	●	○
BondPro PM 8550	○	●	○	●	○	●	●	●	●	○	○	○	●	○	○	●
BondPro PM 7560	○	●	○	●	○	●	●	●	●	○	○	○	●	○	○	●
BondPro PM 8700	○	●	○	●	○	●	●	●	●	●	●	●	●	●	●	○

● recommended ● partially suitable ○ not recommended



SYNTHORA RheoPlus; Thickeners and rheology-control agents

Product	Chemical characteristic	Active substance [%]	Use level [%] (on total formulation)	Highlighted application / Effect
RheoPlus RC 53 L	White liquid (emulsion)	approx. 30	1,0 – 5,0	Highly effective rheology-control thickeners for a wide range of water-based coatings, anti-settling & anti-sagging agent.
RheoPlus RC 54 L	White liquid (emulsion)	approx. 30	1,0 – 5,0	Highly effective rheology-control thickeners for water-based systems, especial automotive OEM.

By using rheology additives, the application properties of the most varied of systems can be significantly improved.



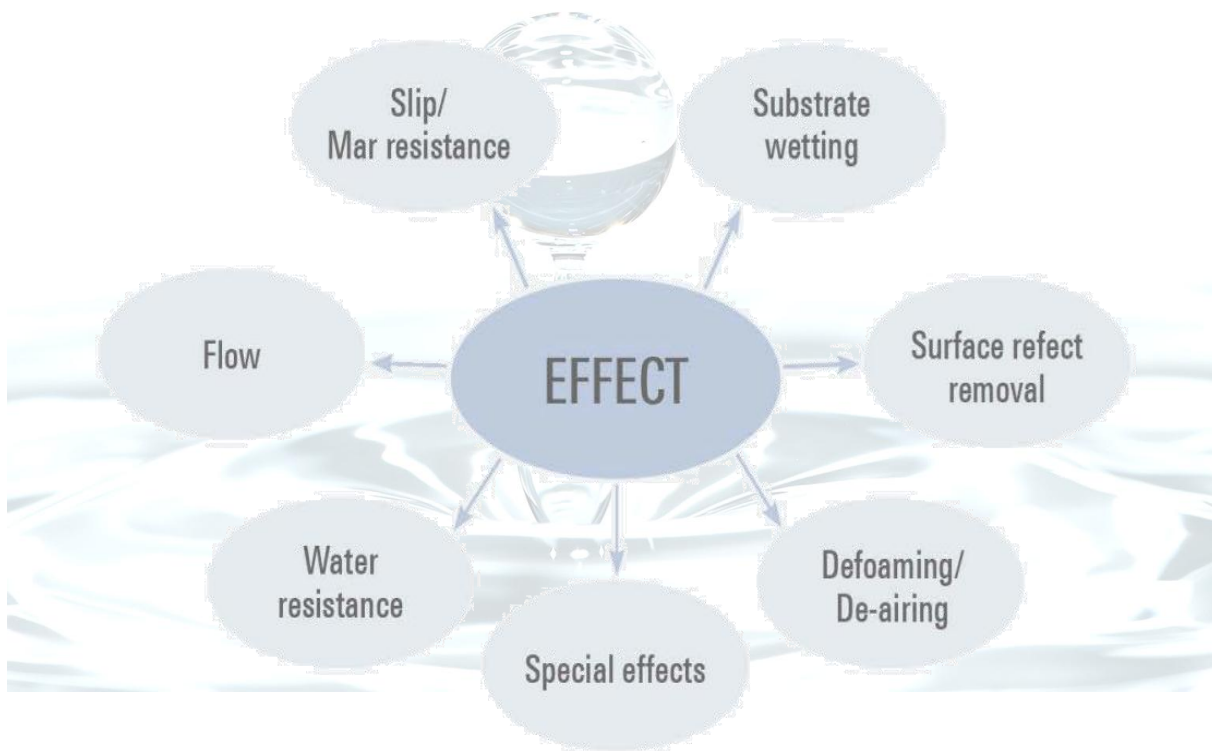
Silicone surface additives

Silicones are a very flexible source for the formulation of additives. The basis is in almost all cases polydimethylsiloxane (PDMS) which can be modified in many ways.

PDMS has a very low surface tension and surfactant properties. Depending on both the molecular weight and chemical modification, PDMS additions can provide specific properties to aqueous and non-aqueous coating systems.

Silicone-based additives generally have a strong effect on the surface tension of the coating which on the one hand makes them very effective, but on the other hand may negatively influence the recoatability of the dried coating film.

VARENA provide a number of silicone-based additives **SYNTHORA SlipSil**. The tables on pages 19 show a choice from the portfolio.



SYNTHORA SlipSil

Silicone surface additive for solvent-borne, solvent-free and aqueous coating systems with a strong reduction in the surface tension.

Excellent substrate wetting, prevents cratering and increases surface slip.

Additives from this product class can also influence the surface slip and increase the cleanability.

SYNTHORA SlipSil; Silicone surface additives

Product	Chemical characteristic	Active substance [%]	Use level [%] (on total formulation)	Highlighted application / Effect
SlipSil 511	Polyethermod. PDMS	10 / 30	0.1 – 1.0	For solvent-borne air- and UV-drying systems; multifunctional additive to improve leveling and scratch resistance; presents pigment floating.
SlipSil 512	Polyethermod. PDMS	10	0.1 – 1.0	Especially for aroma-free decorative and DIY coatings.
SlipSil 515	Polyethermod. PDMS	10	0.1 – 1.0	Silicone paint additive to improve surface slip, mar resistance, substrate wetting, flow and leveling and gloss; particularly for clear-coat formulations.
SlipSil 527	Polyethermod. PDMS	20	0.1 – 1.5	For solvent-based, air-drying coatings; provides high mar resistance by increasing the surface slip
SlipSil 528	Polyethermod. PDMS	100	0.2 – 1.0	For 2 K PUR and UV curing varnishes and printing inks; highly effective at low concentrations.
SlipSil 530	Mod. PDMS	10	0.3 – 0.5	For water-thinnable systems; improves the overspray absorption in wet-in-wet applications; reduces/avoids edge pulling.
SlipSil 540	Special modified silicone polyether	100	0.1-1.0	Greatly improves the wetting of water borne coatings and inks on difficult substrates.
SlipSil 551	Turbid, creamy silicon modified liquid	70	0.1-1.0	High molecular silicon additive for outstanding slip, mar resistance and antiblockings.
SlipSil 552	Turbid, creamy silicon modified liquid	70	0.1-1.0	High molecular silicon additive for outstanding slip, mar resistance and anti-blockings.
SlipSil 573	Org. mod. PDMS	3	0.2 – 1.0	For alkyd-based decorative paints and DIY lacquers for brush and roll application; multi-functional.
SlipSil 556	Solution of a polyester-modified polydimethylsiloxane.	30	0.2 – 1.0	For solvent-based paints and coatings incl. curtain coatings; stable to 200°C. It is recommended for decorative paints, stoving enamels metallic car paints.
SlipSil 529	Org. mod. PDMS	10	0.2 – 1.0	For solvent-borne matted systems; supports the rising and orientation of silica-based matting agents and improves matting.
SlipSil 555	High molecular PDMS	78	0.3 – 1.0	For 2 K PUR systems; improves scratch resistance of water-thinnable lacquers and printing inks as well as satin gloss to glossy systems; significantly reduces blocking.
SlipSil 553	High molecular PDMS	70	0.1 – 1.0	For water-thinnable and alcohol-based paint, printing inks and overprint varnishes
SlipSil 580	Org. mod. PDMS	30	0.2 – 1.0	For solvent-based paints and coatings incl. curtain coatings; stable to 200°C.
SlipSil 545	Hydroxylborne-polyethermod. PDMS	100	0.01 – 0.5	For solvent- and water-based paints and lacquers, printing inks, overprint varnishes and UV-hardening systems; improves leveling and scratch resistance; prevents pigment floating and surface defects.
SlipSil 585	Polyethermod. PDMS	100	0.01 – 0.5	For solvent- and water-based paints and lacquers, printing inks, overprint varnishes and UV-hardening systems; improves leveling and scratch resistance; prevents pigment floating and surface defects.
SlipSil 510	High molecular PDMS in xylene	15	0.1 – 0.5	Hammerstone additive for preparation of effect lacquers for solvent borne coatings.
SlipSil 560	Dioctylsulfosuccinate / PDMS	70	0.3 – 1.5	For water borne coatings, by reducing the surface tension causes. The penetration in porous substrates such as wood or paper is improved. Surface defects as craters, orange peel and edge pulling are significantly reduced.



Silicone surface

Silicone surface additive for solvent-borne, solvent-free and aqueous coating systems with a strong reduction in the surface tension. Excellent substrate wetting, prevents cratering and increases surface slip.

Applications / Overview of Uses of SYNTHORA SlipSil

Product	Use						Application			Curing method				Effects										
	Decorative	Industrial	Automotive	Wood/Furniture	High solids	Printing inks	Brush/Roll	Spray	Dipping	Air	Oven	2-pack	UV	Defoaming	De-aring	Substrate wetting	Flow and leveling	Mar resistance	Surface slip	Surface defects	Gloss	Pigment flooding	Orientation of matting	Anti-blocking
SlipSil 511	●	●	●	●	●	○	●	●	●	●	○	●	●	○	○	●	●	●	●	●	●	●	○	○
SlipSil 512	●	○	○	○	●	○	●	●	○	●	○	●	●	○	○	●	●	●	●	●	●	●	○	○
SlipSil 515	●	●	●	●	●	○	●	●	○	●	○	●	○	○	○	●	●	●	●	●	○	●	○	○
SlipSil 527	●	●	●	●	●	○	●	●	●	●	○	●	○	○	○	●	●	●	●	●	●	●	○	○
SlipSil 528	●	●	●	●	●	○	●	●	○	●	○	●	○	○	○	●	●	●	●	●	●	○	○	○
SlipSil 530	○	●	○	○	○	○	○	●	○	○	●	○	○	○	○	●	●	○	○	●	●	○	○	○
SlipSil 573	●	○	○	●	●	●	●	●	○	●	○	○	○	●	●	●	●	●	●	●	○	●	○	○
SlipSil 529	●	○	○	●	●	○	●	○	○	●	○	●	●	●	●	●	●	●	●	○	○	○	●	○
SlipSil 555	●	●	●	●	○	○	●	●	●	●	○	●	○	○	○	○	●	●	●	○	○	○	○	●
SlipSil 553	●	●	●	●	○	●	●	●	●	●	○	●	○	○	○	○	○	●	●	●	○	○	○	●
SlipSil 580	●	●	●	●	●	●	●	●	●	●	●	●	●	○	●	●	●	●	●	●	○	●	○	●
SlipSil 585	●	●	●	●	●	●	●	●	●	●	○	●	●	○	○	●	●	●	●	●	●	●	○	●

● recommended ○ partially suitable ○ not recommended



SYNTHORA BondTec; PVC adhesion promoter

Product	Supply Form [%]	Viscosity [mPa.s/23°C]	AMV [mg KOH/g]	Main uses and characteristics	1K
BondTec 600	100%	7000-10000 at 25°C	270 – 310	DOP free adhesion promoter for PVC plastisols mainly used in the automotive industry as underbody coating and bodysealer.	X
BondTec 601	100%	1500-2500 at 25°C	360 – 390	BondTec 601 is an DOP free adhesion promoter for PVC plastisols mainly used in the automotive industry as underbody coating and bodysealer.	X
BondTec 605	100%	1000-1500 at 75°C	370 – 400	An DOP free adhesion promoter for PVC plastisols mainly used in the automotive industry as underbody coating and bodysealer.	X
BondTec 608	100%	1000-2000 at 75°C	380 – 410	BondTec 608 is an DOP free adhesion promoter for PVC plastisols mainly used in the automotive industry as underbody coating and bodysealer.	X
BondTec 610	100%	400-800 at 75°C	270 – 300	An DOP free adhesion promoter for PVC plastisols mainly used in the automotive industry as underbody coating and bodysealer.	X
BondTec 614	100%	300-800 at 75°C	220 – 260	BondTec 614 is an DOP free adhesion promoter for PVC plastisols mainly used in the automotive industry as underbody coating and bodysealer.	X
BondTec 640	100%	5000-6000 at 25°C	440 – 550	BondTec 640 is an DOP free adhesion promoter for PVC plastisols mainly used in the automotive industry as underbody coating and bodysealer.	X



SYNTHORA BondTec adhesion promoters are highly efficient additives for adhesion improvement of PVC plastisol coatings to different substrates especially to electrodeposited-coated and uncoated metals.

SYNTHORA BondTec adhesion promoters are medium to high molecular weight polyamidoamines which result from the reaction of dimerized fatty acids and polyamines. Several **SYNTHORA BondTec** adhesion promoters are pre-formulated in order to modify or adapt performances and/or processing capabilities.

One of the main applications of **SYNTHORA BondTec** adhesion promoters is found in the automotive industry where PVC plastisols are mainly used as stone chip underbody coatings and sealants for seams and hem flanges. Processing of **BondTec** adhesion promoters is easy as they present low to medium viscosity at room temperature and are compatible and easily mixed into the PVC plastisol.

Adhesion promoters for PVC plastisols

SYNTHORA AddiCat; Catalyst

Product	Appearance	Non-volatiles [%]	Use level [%] (on total formulation)	Use level [%] (on total formulation)
AddiCat 3000	Clear to slightly hazy low viscous liquid	approx. 20	0.5 – 1.2	Catalyst for solvent-based and aqueous isocyanate crosslinking systems.
AddiCat 3030	Clear, amber coloured, low viscous liquid	approx. 28	0.4 – 2.0	Catalyst for solvent and water-based stoving finishes, improves water, salt spray and detergent resistance.
AddiCat 3700	Clear, brownish, liquid	approx.. 12	0.5 – 2.0	Cobalt-free catalyst to support the oxidative drying of aqueous systems, metal complex.
AddiCat 3560	Brownish liquid	approx. 12	1.5 – 3.0	Cobalt-free drier for alkyd systems; free from 2-ethyl hexanoic acid.
AddiCat 3050	Clear liquid	approx. 30	0.3 – 0.8	Tinn-free organometallic catalyst for use in 2K PU-Systems.
AddiCat 3937	White powder	approx.. 95	0.2 – 1.0	Catalyst designed to produce wrinkle and textured finishes in weatherable powder coatings.

Powder coating

Powder coatings are at the forefront of innovation from the standpoint of sustainability. Having little to no VOC's and being virtually 100% recyclable, these types of coatings are well-suited for green solutions.

Our additives enhance coatings performance with the properties they impart while improving production processes.

VARENA offers a wide range of additives for powder coatings that improve leveling, prevent craters and enhance degassing and pigment wetting.



SYNTHORA PowderFlow; Additives for powder coatings

Product	Appearance	Active substance [%]	Highlighted application / Effect
PowderFlow PC 60	Flated solid	0.5 – 2.0	Low molecular weight, hydroxyl functional polymeric silicon additive for better mar resistance, slip and flow.
PowderFlow PC 90	White powder	0.5 – 1.5	For reducing the melt viscosity, thus improving dealing and degassing, best results in combination with very low amounts of benzoine (0.1-0.2%), especially suitable for non-yellowing powder coatings, for instance when cured in gas fired ovens.
PowderFlow PC 94	White powder	0.5 – 4.0	For reducing the melt viscosity, thus improving dealing and degassing, best results in combination with very low amounts of benzoine (0.1-0.2%).
PowderFlow PC 95	White powder	1.5 – 2.5	Catalyst for better mechanical properties of GMA acrylic powder systems based e.g. on Isocryl EP 570.
PowderFlow PC 120	White powder	0.3 – 6.0	Micronized synthetic wax improving and mar resistance of powder coatings, excellent deairing effect, at higher concentrations is may also function as a flatting agent.
PowderFlow PC ST-70	White powder	0.1 – 0.5	Stannous octoate catalyst for PU-powder coatings.
PowderFlow PC 77	White powder	0.7 – 1.5	Silicon-free powder anti-crating agent, also suitable for powder clear and UV systems.
PowderFlow PC 67	White powder	0.7 – 1.5	Silicon-free powder flow control agent with good allround properties.
PowderFlow PC 55	White powder	0.5 – 1.5	Silicon-free powder flow control agent for powder coatings of all types, very free flowing and yellowing resistant.
PowderFlow PC 88	White powder	0.5 – 1.5	As flowing PowderFlow PC 55, but on another silicate carrier.
PowderFlow PC 82	White powder	0.5 – 1.5	Anti-cratering agent with running properties in powder coatings of different composition applies.
PowderFlow PC 246	White powder	0.5 – 1.5	PowderFlow PC 246 is used in epoxy, hybrid, polyester, polyurethane, acrylic and other powder coating systems. PowderFlow PC 246 improves the course and may include air pockets, orange peel skin, pinholes, craters and others reduce surface defects.
PowderFlow PC 200 P	White powder	0.5 – 1.5	Silicone-free powder additive used for the production of structure powder coatings. PowderFlow PC 200 P is recommended for epoxy, hybrid, polyester, acrylic and other powder coating systems.
PowderFlow PC 18	White powder	0.5 – 2.0	Specifically developed as a flow and levelling agent to correct surface imperfections in powder coatings based on different resins.
PowderFlow PC 120 P	White powder	0.5 – 1.5	Used in epoxy-, hybrid-, polyester-, acrylic and other powder coating systems. PowderFlow PC 120 P improves leveling and eliminates air entrapment, orange peel, pinholes, craters and other surface defects.
PowderFlow PC 29	White powder	0.2 – 1.0	Catalyst designed to produce wrinkle and textured finishes in weatherable powder coatings.



Powder coatings

Powder coatings are a type of coating that is applied as a free-flowing, dry powder. The coating is typically applied electrostatically and cured under heat to allow it to flow and form a polymeric film. Powder coatings are mainly used to coat metals (such as household appliances), aluminum extrusions, drum hardware, and automobile and bicycle parts.

A special range of additives is used to improve processing conditions and other types provide structured or textured surfaces.

SYNTHORA CureAdd UV; Special additive for UV-curing systems; solvent free

Product	Properties	Non-volatiles [%]	Colour / Gardner	Viscosity [mPa.s]/23°C	Appearance / Use
CureAdd 2084	Increase surface hardness	100	max. 2	max. 700	Modified solvent-free acrylic resin for UV-curable paints and coatings.
CureAdd 2251	RAD 2251 improves adhesion especially on metals and on glass.	80	max. 2	30.000 – 60.000	Special modified epoxy ester. The optimum addition amount is about 1% calculated on the binder.
CureAdd 2328	Surface slip & mar resistance, for non-aqueous formulations.	100	max. 2	-	Hydroxyl content silicon additive for 2 K-PUR, UV-curing lacquers and printing inks as well as other systems.
CureAdd 2400	A silicone based special paint additive.	100	max. 2	270 – 640	For water thinnable air drying and stoving coatings and UV-lacquers and printing inks. Add 1400 is effective at very low concentrations for improving flow out, levelling and gloss, deairing and degassing, reducing cratering and orange peel, improving mar resistance and slip.
CureAdd 2010	Non-silicone flow levelling and wetting additive.	100	max. 2	High viscos liquid	Used in coatings and inks. Promotes flow, levelling and substrate wetting.
CureAdd 2450	Based on polydimethyl siloxane	100	max. 2	60 – 90	Additive for the reduction of surface tension in water dilutable and radiation curing paint systems. Improves substrate wetting of liquid paint systems even on difficult surfaces.

UV LED curing is the safe and eco-friendly alternative

UV LED curing technology is an innovative and emerging method of cure for many industrial markets.

With the right additives and resins, you can easily get the most out of your curing process with UV LED lamps.

- ✓ Shorter production cycles – complete and fast surface cure make faster production possible
- ✓ High compatibility – easy to incorporate with most acrylate monomers and oligomers
- ✓ Tough, hard and durable – final coatings are scratch and chemically resistant
- ✓ Eco-friendly curing – low temperature curing, low/zero VOC emissions, BPA-free structure and improved labeling



Adding value to your products



A little makes a big splash!



INNOVATIVE TECHNOLOGIES FOR RESINS & ADDITIVES
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