

# PRODUCT GUIDE **PRINTING INKS**

○ WAX ADDITIVES

○ DEFOAMERS



○ SURFACE ADDITIVES

○ WETTING AND DISPERSING ADDITIVES

○ RHEOLOGY ADDITIVES



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# Introduction

With printing speeds becoming faster and complex graphics in high demand, printing ink formulators are experiencing increasing challenges. BYK additives help overcome these new challenges and optimize printing inks. Whether to improve color strength and transparency, abrasion resistance or the defoaming and wetting behavior of printing inks or overprint varnishes – BYK offers a broad range of additives for aqueous, solvent-borne, and radiation-curing systems.

Many of our additives are also suitable for food contact applications according to specific regulations. BYK is continuously expanding its portfolio of products made from bio-based raw materials.

For additional information on additives from bio-based materials, please refer to brochure B-G 5:  
**Additives from bio-based materials**

For additional information on additives and technical topics, please contact us:  
**[graphicarts.byk@altana.com](mailto:graphicarts.byk@altana.com)**

## Note

To ensure the best appearance and full functionality, please open in Adobe Acrobat.

## Quality

As a leading global supplier of specialty chemicals, our innovative additives and differentiated solutions optimize product and material properties as well as production and application processes. All prototypes undergo numerous tests in chemical analysis, material testing, and application technology. Our customers benefit from fast, effective, and comprehensive solutions as well as tailor-made products. BYK's technical expertise combined with our understanding of market requirements and challenges ensures smooth integration of our additives into their individual applications.

## Worldwide service

BYK provides worldwide service in every aspect, from customer service and regulatory expertise to technical service and more. Our 35 laboratory locations across the globe offer local support, and our production sites located in Germany, the Netherlands, the UK, the USA, and China manufacture our products locally, ensuring reliable product delivery to our largest markets.

## Sustainability

BYK aims for sustained profitable growth through a triad of economic, ecological, and corporate social responsibility. BYK works to develop the most sustainable production processes, conserve natural resources, protect human life, and minimize the burden on the environment. Our products are designed to increase sustainability in our customers' applications.

## Regulatory

BYK's local and global regulatory specialists provide worldwide support with expertise to ensure product safety and compliance. Our customer-focused regulatory service allows us to make our extensive knowledge of regulatory provisions available globally. The information our customers need, whether it be for initial stages of product development, for making final purchasing decisions, or for documenting formulations, is provided quickly and accurately.

## Abbreviations

BG	Butylglycol
DIBK	Diisobutyl ketone
DPGDA	Dipropylene glycol diacrylate
DPM	Dipropylene glycol monomethyl ether
EVA	Ethyl vinyl acetate
GPTA	Propoxylated glyceryl triacrylate
HDPE	High density polyethylene
MEK	Methyl ethyl ketone
OPV	Overprint varnish
PE	Polyethylene
PM	Methoxypropanol
PMA	Methoxypropyl acetate
PNB	Propylene glycol n-butyl ether
PONPGDA	Propoxylated neopentyl glycol diacrylate
PP	Polypropylene
PPG	Polypropylene glycol
PTFE	Polytetrafluoroethylene
SMA	Styrene maleic anhydride
TMPD-MIB	2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate
TPGDA	Tripropylene glycol diacrylate
VOC	Volatile organic compound

## Surface additives

Surface additives provide a range of benefits for aqueous, solvent-borne, and UV-curing systems. These benefits include static and dynamic surface tension reduction, improved wetting, leveling, flow, surface slip/anti-slip, anti-blocking, and scratch and abrasion resistance. They also increase the open time, create easy-to-clean surfaces, and increase the barrier and surface energy of the cured film. BYK's surface additives (e.g., BYK, BYK-DYNWET, BYK-UV) are based on various chemistries such as polysiloxanes and polyacrylates to provide solutions to formulators' challenges and help achieve performance requirements. The BYK-UV series is radiation curable and takes part in the OPV/ink's crosslinked network, eliminating leaching of the additive. BYK's surface additives can be used in all printing processes (flexo, gravure, offset, screen, digital) and several of these additives are compliant with various regulations for direct and indirect food contact application.



## Surface additives for solvent-borne printing inks

Product	Description	Chemistry				Product data		Effect											Dosage	Printing method		Regulatory				
		Silicone	Silicone-free	OH-functional	Acrylic-functional	Solvent/reactive diluent	Active substance (%)	Surface tension reduction												As supplied (%)	Packaging gravure and flexographic inks	Overprint varnishes	VOC-free (< 1500 ppm)	Swiss Ordinance 817.023.2.1, Annex 10	Nestlé Guidance Note on Packaging Inks (Oct. 2018)	
								Strong	Medium	No/low/little	Dynamic	Increase of surface energy	Substrate wetting	Surface slip	Flow/leveling	Anti-crater	Good recoatability	Gloss								No/low foam stabilization
BYK-307*1/BYK-3762	Polyether-modified polydimethylsiloxane	■					100	■					■	■	■	■					0.1–1.0	■	■		●	●
BYK-333	Polyether-modified polydimethylsiloxane	■					>97	■					■	■		■		■			0.05–0.3	■	■		●	●
BYK-354	Solution of a polyacrylate		■			Solvent naphtha/ DIBK 9/1	51			■					■		■	■			0.1–1.5	■	■		●	●
BYK-361 N	Polyacrylate		■				100			■					■		■	■			0.05–0.5	■			●	●
BYK-378*1/BYK-3764	Polyether-modified polydimethylsiloxane	■					100	■					■	■	■	■	■		■		0.01–0.3	■	■		●	●
BYK-3560	Polyether macromer-modified polyacrylate		■				100			■		■			■						0.1–2.0	■	■		●	●
BYK-3565	Silicone and polyether macromer-modified polyacrylate	■					>97			■		■			■						0.1–2.0	■	■		–	–
BYK-3566	Silicone and polyether macromer-modified polyacrylate	■					>97			■		■			■						0.1–2.0	■	■		–	–
BYK-UV 3535	Modified, silicone-free polyether		■	■	■		100			■		■			■		■				0.3–1.0	■	■		●	●

● Refer to food contact sheet    ○ Not evaluated    – No

For detailed information on food regulatory status, please visit [www.byk.com/en/service/regulatory-affairs/food-contact](http://www.byk.com/en/service/regulatory-affairs/food-contact) or contact our BRIEF team.

The active substance content does not necessarily correspond to the non-volatile matter content. Depending on the composition of the product and the analytical method of determination, the non-volatile matter content can be higher or lower.

The active substance content serves as the basis for calculating the dosage.

Unless otherwise stated, all silicone-containing additives have a cyclic siloxane content (D4, D5, D6) of less than 0.1 % each.

\*1 Content of cyclic siloxanes ≥ 0.1 %.

## Surface additives for UV printing inks (solvent-free) (1/2)

Product	Description	Chemistry				Product data		Effect												Dosage	Printing method		Regulatory			
		Silicone	Silicone-free	OH-functional	Acrylic-functional	Solvent/reactive diluent	Active substance (%)	Surface tension reduction												As supplied (%)	Packaging gravure and flexographic inks	Overprint varnishes	VOC-free (< 1500 ppm)	Swiss Ordinance 817.023.2.1, Annex 10	Nestlé Guidance Note on Packaging Inks (Oct. 2018)	
								Strong	Medium	No/low/little	Dynamic	Increase of surface energy	Substrate wetting	Surface slip	Flow/leveling	Anti-crater	Good recoatability	Gloss	No/low foam stabilization							Tape release
BYK-307*2/BYK-3762	Polyether-modified polydimethylsiloxane	■					100	■					■	■	■	■					0.1–1.0	■	■		●	●
BYK-333	Polyether-modified polydimethylsiloxane	■					>97	■					■	■		■		■			0.05–0.3	■	■		●	●
BYK-354	Solution of a polyacrylate		■			Solvent naphtha/ DIBK 9/1	51			■					■		■	■			0.1–1.5	■	■		●	●
BYK-361 N	Polyacrylate		■				100			■					■		■	■			0.05–0.5	■			●	●
BYK-377*2/BYK-3771	Polyether-modified, hydroxy-functional polydimethylsiloxane	■		■			100	■					■	■		■			■		0.05–2.0	■	■		●	●
BYK-378*2/BYK-3764	Polyether-modified polydimethylsiloxane	■					100	■					■	■	■	■	■		■		0.01–0.3	■	■		●	●
BYK-379	Polyether-modified polydimethylsiloxane	■					100	■			■		■	■	■	■					0.1–1.5	■	■	■	●	●
BYK-3480	Polyether-modified polydimethylsiloxane	■					100		■				■		■						0.05–0.5	■	■		●	●
BYK-3481	Polyether-modified polydimethylsiloxane	■					100		■				■		■						0.05–0.5	■	■		●	●
BYK-3560	Polyether macromer-modified polyacrylate		■				100			■	■				■						0.1–2.0	■	■		●	●
BYK-3565	Silicone and polyether macromer-modified polyacrylate	■					>97			■	■				■						0.1–2.0	■	■		–	–
BYK-3566	Silicone and polyether macromer-modified polyacrylate	■					>97			■	■				■						0.1–2.0	■	■		–	–

● Refer to food contact sheet   ○ Not evaluated   — No

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The active substance content serves as the basis for calculating the dosage.

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\*2 Content of cyclic siloxanes ≥ 0.1 %.



## Surface additives for UV printing inks (solvent-free) (2/2)

Product	Description	Chemistry				Product data		Effect										Dosage	Printing method		Regulatory							
		Silicone	Silicone-free	OH-functional	Acrylic-functional	Solvent/reactive diluent	Active substance (%)	Surface tension reduction															As supplied (%)	Packaging gravure and flexographic inks	Overprint varnishes	VOC-free (< 1500 ppm)	Swiss Ordinance 817.023.21, Annex 10	Nestlé Guidance Note on Packaging Inks (Oct. 2018)
								Strong	Medium	No/low/little	Dynamic	Increase of surface energy	Substrate wetting	Surface slip	Flow/leveling	Anti-crater	Good recoatability	Gloss	No/low foam stabilization	Tape release								
BYK-3760	Polyether-modified polydimethylsiloxane	■					> 99	■					■	■	■				■		0.02–0.5		■		●	●		
BYK-UV 3500*2	Polyether-modified, acrylic-functional polydimethylsiloxane	■			■		100	■						■	■				■		0.2–1.0	■	■		●	●		
BYK-UV 3505	Solution of a multi-acrylic-functional, modified polydimethylsiloxane	■			■	TPGDA	40	■						■	■			■		■	0.3–1.0		■		○	○		
BYK-UV 3510*2/ BYK-UV 3511	Polyether-modified polydimethylsiloxane	■					100	■					■	■		■			■		0.05–1.0	■	■		●	●		
BYK-UV 3535	Modified, silicone-free polyether		■	■	■		100			■		■			■						0.3–1.0	■	■		●	●		
BYK-UV 3590	Polyether-modified radiation-curing polydimethylsiloxane	■			■		100	■						■					■		0.1–10.0	■	■		●	●		
BYK-UV 3595	Polyether-modified radiation-curing polydimethylsiloxane	■			■		100	■						■	■				■		0.1–8.0	■	■		●	●		

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<sup>\*2</sup> Content of cyclic siloxanes ≥ 0.1 %.

## Surface additives for aqueous printing inks (1/2)

Product	Description	Chemistry				Product data		Effect										Dosage	Printing method		Regulatory				
		Silicone	Silicone-free	OH-functional	Acrylic-functional	Solvent/reactive diluent	Active substance (%)	Surface tension reduction				Substrate wetting	Surface slip	Flow/leveling	Anti-crater	Good recoatability	Gloss	No/low foam stabilization	Tape release	As supplied (%)	Packaging gravure and flexographic inks	Overprint varnishes	VOC-free (< 1500 ppm)	Swiss Ordinance 817.023.21, Annex 10	Nestlé Guidance Note on Packaging Inks (Oct. 2018)
								Strong	Medium	No/low/little	Dynamic														
BYK-307*3/BYK-3762	Polyether-modified polydimethylsiloxane	■					100	■				■	■	■	■					0.1–1.0	■	■		●	●
BYK-333	Polyether-modified polydimethylsiloxane	■					100	■				■	■		■		■			0.05–0.3	■	■		●	●
BYK-345	Polyether-modified siloxane	■					100	■				■		■		■		■		0.05–0.5	■	■		●	●
BYK-347	Polyether-modified siloxane	■					100	■				■		■		■				0.1–1.0	■	■		●	●
BYK-348	Polyether-modified siloxane	■					100	■				■		■		■		■		0.05–0.5	■	■		●	●
BYK-349	Polyether-modified siloxane	■					100	■				■		■		■		■		0.05–0.5	■	■		●	●
BYK-381	Solution of a polyacrylate, ionic		■			DPM	52			■				■						0.1–1.0	■	■		○	○
BYK-3400	Aqueous solution of a modified succinic acid and polyether-modified siloxane	■				Water	70	■		■		■		■		■		■		0.5–2.0	■	■		●	●
BYK-3410	Mixture of a modified succinic acid and esters		■				100	■		■		■		■						0.5–2.0	■	■		●	●
BYK-3450	Polyether-modified siloxane	■					100	■				■		■				■		0.1–1.0	■	■		●	●
BYK-3451	Polyether-modified siloxane	■					100	■				■		■				■		0.1–1.0	■	■		●	●
BYK-3455	Polyether-modified polydimethylsiloxane	■					>90	■				■		■				■		0.1–1.0	■	■		○	○
BYK-3456	Polyether-modified polydimethylsiloxane	■					>90	■				■		■				■		0.2–1.0	■	■		●	●

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The active substance content serves as the basis for calculating the dosage.

Unless otherwise stated, all silicone-containing additives have a cyclic siloxane content (D4, D5, D6) of less than 0.1 % each.

\*3 Content of cyclic siloxanes ≥ 0.1 %.

## Surface additives for aqueous printing inks (2/2)

Product	Description	Chemistry				Product data		Effect												Dosage	Printing method		Regulatory		
		Silicone	Silicone-free	OH-functional	Acrylic-functional	Solvent/reactive diluent	Active substance (%)	Surface tension reduction												As supplied (%)	Packaging gravure and flexographic inks	Overprint varnishes	VOC-free (< 1500 ppm)	Swiss Ordinance 817.023.21, Annex 10	Nestlé Guidance Note on Packaging Inks (Oct. 2018)
								Strong	Medium	No/low/little	Dynamic	Increase of surface energy	Substrate wetting	Surface slip	Flow/leveling	Anti-crater	Good recoatability	Gloss	No/low foam stabilization						
BYK-3560	Polyether macromer-modified polyacrylate		■				100			■	■		■							0.1–2.0	■	■		●	●
BYK-3565	Silicone and polyether macromer-modified polyacrylate	■					> 97			■	■		■							0.1–2.0	■	■		–	–
BYK-3566	Silicone and polyether macromer-modified polyacrylate	■					> 97			■	■		■							0.1–2.0	■	■		–	–
BYK-DYNWET 800	Alcohol alkoxylates		■				100	■		■		■	■							0.5–2.0	■	■		●	●
BYK-DYNWET 810	Alcohol alkoxylates		■				100	■		■	■	■	■							0.5–2.0	■	■		●	●

● Refer to food contact sheet    ○ Not evaluated    — No

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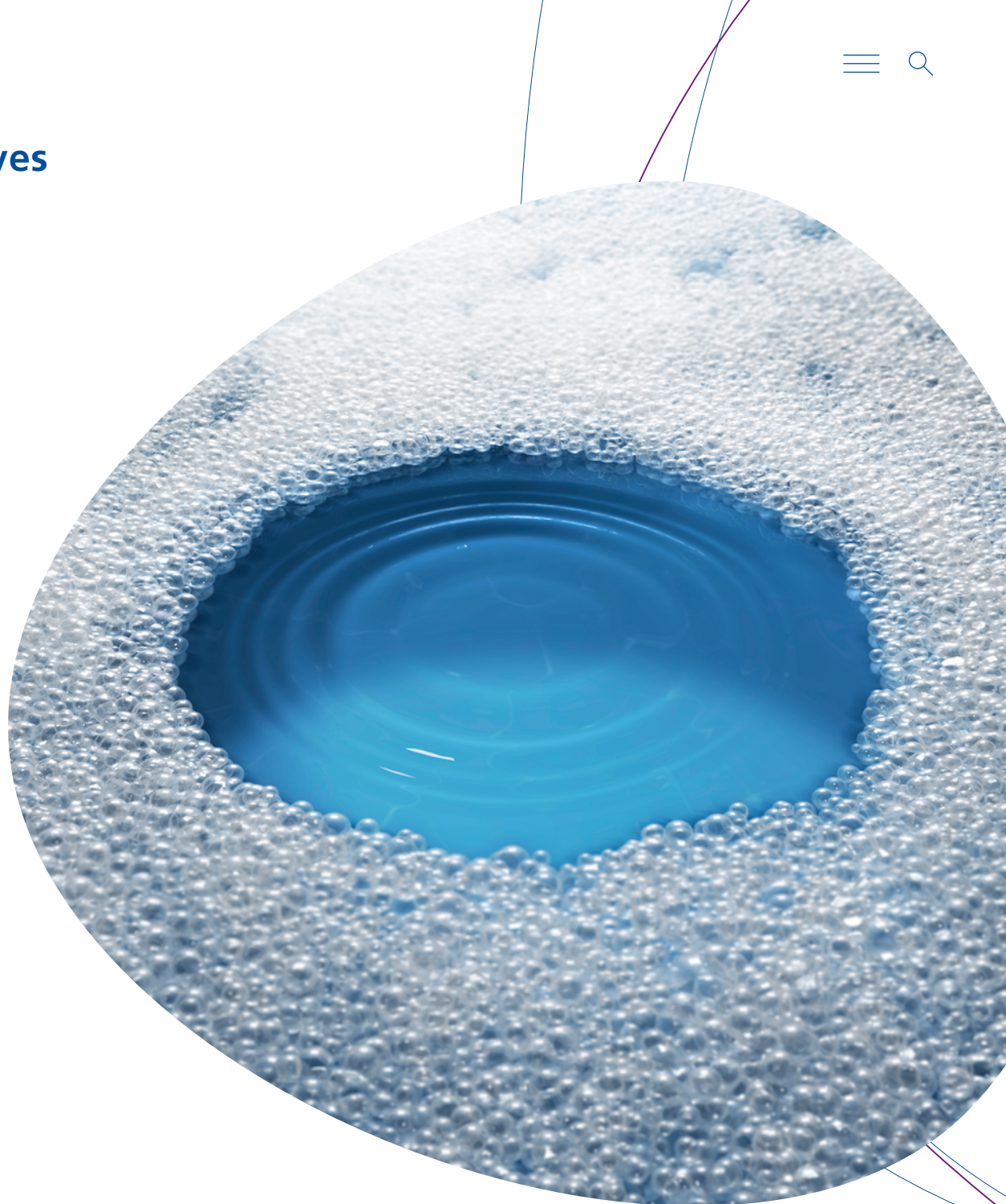
The active substance content serves as the basis for calculating the dosage.

Unless otherwise stated, all silicone-containing additives have a cyclic siloxane content (D4, D5, D6) of less than 0.1 % each.

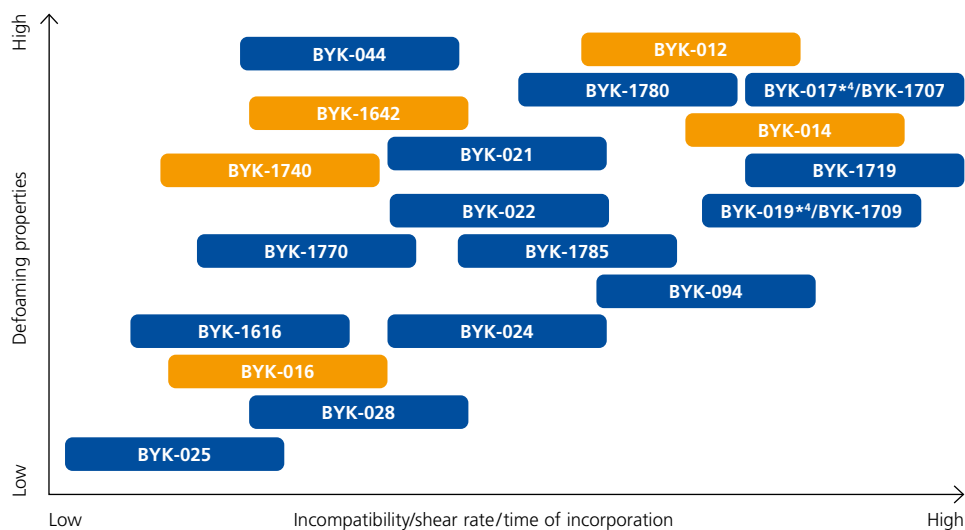
\*<sup>3</sup> Content of cyclic siloxanes ≥ 0.1 %.

## Defoamers and air release additives

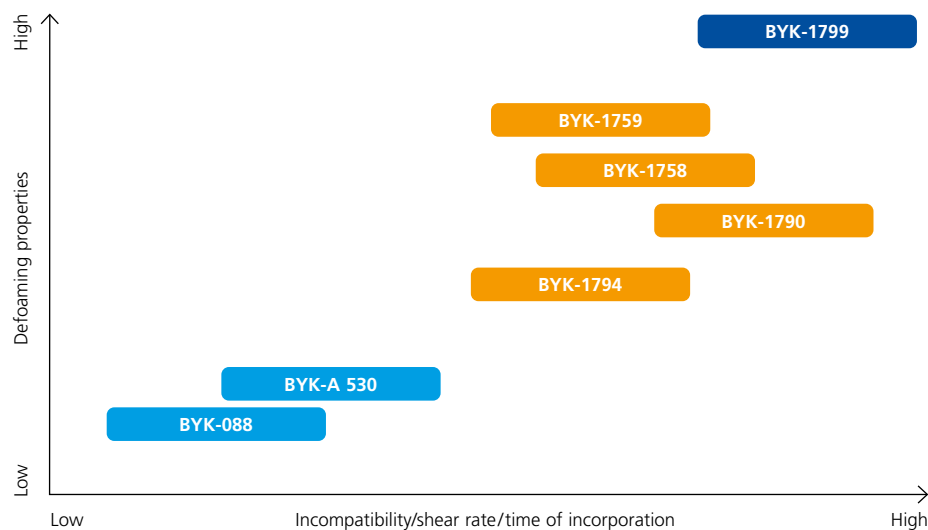
The formation of foam is a common problem in aqueous systems as well as in solvent-borne and UV-curing systems when producing and applying inks and overprint varnishes (OPV). Emulsifiers that are used in aqueous binders, along with wetting and dispersing additives and surface additives, can cause foam formation. Foam can result in delays in the production and application process and has a negative impact on the appearance and mechanical properties of inks, making defoamers essential in the production of these systems. BYK is the market leader in defoamers (e.g., BYK) and air release additives (e.g., BYK-A) and offers products based on chemistries such as silicone, silicone-polymeric, polymeric, and mineral oils. BYK defoamers can be used in a range of shear forces (grind stage, let-down stage, blending, at press side). BYK offers defoamers for aqueous, solvent-borne, and UV-curing systems for all viscosities. A lot of these defoamers are compliant with various regulations for direct and indirect food contact applications.



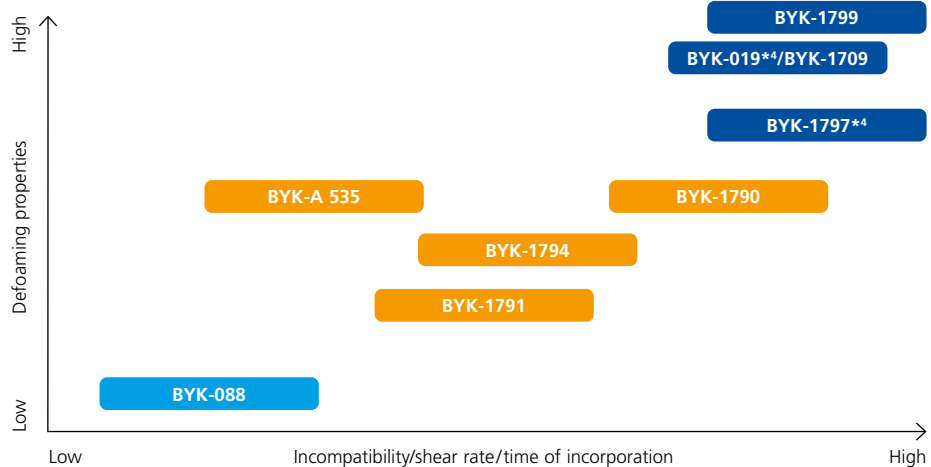
## Defoamers for aqueous printing inks



## Defoamers for solvent-borne printing inks



## Defoamers for UV printing inks (solvent-free)



● Silicone defoamer ● Silicone/polymer defoamer ● Polymer defoamer

Unless otherwise stated, all silicone-containing additives have a cyclic siloxane content (D4, D5, D6) of less than 0.1 % each.

\*\*4 Content of cyclic siloxanes  $\geq 0.1$  %.

## Defoamers and air release additives for solvent-borne printing inks

Product	Description	Chemistry			Product data	Incorporation			Dosage	Printing method			Regulatory		
		Silicone	Polymer	Hydrophobic particles		Pigment grind/mill base	Let-down	Post/press-side addition		As supplied (%)	Packaging gravure and flexographic inks	Overprint varnishes	Screen inks	VOC-free (< 1500 ppm)	Swiss Ordinance 817.023.21, Annex 10
BYK-088	Solution of foam-destroying polymers and polysiloxanes	■			Hydrocarbon mixture (paraffins, naphthenes)	■			0.1 – 1.0	■	■			●	●
BYK-1758	Solution of foam-destroying polymers, silicone- and mineral oil-free		■		Ethyl acetate		■		0.1 – 1.0	■				○	○
BYK-1759	Solution of foam-destroying polymers, silicone- and mineral oil-free		■		Ethyl acetate		■		0.1 – 1.0	■				●	●
BYK-1790	Polyolefin		■			■			0.1 – 0.7	■	■			●	●
BYK-1794	Polyolefin copolymer		■			■	■		0.1 – 1.0	■	■		■	●	●
BYK-1799	Blend of hydrophobic solids and foam-destroying polysiloxanes	■		■		■			0.2 – 0.8	■		■	■	●	●
BYK-A 530	Solution of foam destroying polymers and polysiloxanes	■			Hydrocarbon mixture	■			0.2 – 0.8	■		■		●	●

● Refer to food contact sheet    ○ Not evaluated    — No

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Unless otherwise stated, all silicone-containing additives have a cyclic siloxane content (D4, D5, D6) of less than 0.1 % each.

## Defoamers and air release additives for UV printing inks (solvent-free)

Product	Description	Chemistry			Product data			Incorporation		Dosage	Printing method			Regulatory		
		Silicone	Polymer	Hydrophobic particles	Solvent/reactive diluent	Pigment grind/mill base	Let-down	Post/press-side addition	As supplied (%)		Packaging gravure and flexographic inks	Overprint varnishes	Screen inks	VOC-free (< 1500 ppm)	Swiss Ordinance 817.023.21, Annex 10	Nestlé Guidance Note on Packaging Inks (Oct. 2018)
BYK-019* <sup>5</sup> /BYK-1709	Solution of a polyether-modified polydimethylsiloxane	■			DPM	■			0.1–1.0		■	■			●	●
BYK-088	Solution of foam-destroying polymers and polysiloxanes	■			Hydrocarbon mixture (paraffins, naphthenes)	■			0.1–1.0		■	■			●	●
BYK-1790	Polyolefin		■			■			0.1–0.7		■	■			●	●
BYK-1791	Solution of polyolefin		■		Isoparaffin	■			0.1–1.5		■				●	●
BYK-1794	Polyolefin copolymer		■			■	■		0.1–1.0		■	■		■	●	●
BYK-1797* <sup>5</sup>	Polyether-modified foam-destroying polysiloxanes	■				■			0.02–2.0		■		■		●	●
BYK-1799	Blend of hydrophobic solids and foam-destroying polysiloxanes	■		■		■			0.2–0.8		■		■	■	●	●
BYK-A 535	Solution of foam-destroying polymers, silicone-free		■			■			0.1–1.0				■		○	○

● Refer to food contact sheet   ○ Not evaluated   — No

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Unless otherwise stated, all silicone-containing additives have a cyclic siloxane content (D4, D5, D6) of less than 0.1 % each.

\*<sup>5</sup> Content of cyclic siloxanes ≥ 0.1 %.

## Defoamers and air release additives for aqueous printing inks (1/2)

Product	Description	Chemistry			Product data	Incorporation			Dosage	Printing method			Regulatory		
		Silicone	Polymer	Hydrophobic particles	Solvent/reactive diluent	Pigment grind/mill base	Let-down	Post/press-side addition	As supplied (%)	Packaging gravure and flexographic inks	Overprint varnishes	Screen inks	VOC-free (< 1500 ppm)	Swiss Ordinance 817.023.21, Annex 10	Nestlé Guidance Note on Packaging Inks (Oct. 2018)
BYK-012	Compound of polyether with hydrophobic particles		■	■		■	■		0.1–1.0	■			■	○	○
BYK-014* <sup>6</sup>	Compound of polyether with hydrophobic particles		■	■		■	■		0.1–1.0	■			■	○	○
BYK-016	Compound of foam-destroying polymers and hydrophobic solids		■	■		■	■		1.0–2.0	■	■		■	●	●
BYK-017* <sup>7</sup> /BYK-1707	Compound of foam-destroying polysiloxanes and hydrophobic particles	■		■		■			0.2–0.8	■				●	●
BYK-019* <sup>7</sup> /BYK-1709	Solution of a polyether-modified polydimethylsiloxane	■			DPM	■			0.1–1.0	■	■			●	●
BYK-021	Mixture of foam-destroying polysiloxanes and hydrophobic solids in polyglycol	■		■		■			0.05–0.8	■	■		■	●	●
BYK-022	Mixture of foam-destroying polysiloxanes and hydrophobic solids in polyglycol	■		■		■			0.2–1.0	■	■		■	●	●
BYK-024	Mixture of foam-destroying polysiloxanes and hydrophobic solids in polyglycol	■		■		■	■		0.1–1.0	■			■	●	●
BYK-025	Solution of foam-destroying polysiloxanes	■			DPM		■	■	0.1–1.5	■	■			–	–
BYK-028	Compound of modified polysiloxanes, polyether, and hydrophobic particles	■		■			■	■	0.1–1.0	■	■		■	●	●
BYK-044	Emulsion of hydrophobic solids and polysiloxanes	■		■	Aqueous emulsion	■			0.05–0.5	■			■	●	●
BYK-094	Compound of foam-destroying polysiloxanes and hydrophobic particles	■		■		■	■		0.2–1.0	■	■		■	●	●
BYK-1616	Emulsion of foam-destroying polysiloxanes and hydrophobic solids	■		■	Aqueous emulsion	■	■		0.2–1.0	■	■		■	●	●
BYK-1642	Defoamer formulation made of polyamide particles and highly branched polymers		■	■	Aqueous emulsion	■	■		0.2–1.0	■			■	●	●

● Refer to food contact sheet   ○ Not evaluated   – No

For detailed information on food regulatory status, please visit [www.byk.com/en/service/regulatory-affairs/food-contact](http://www.byk.com/en/service/regulatory-affairs/food-contact) or contact our BRIEF team.

Unless otherwise stated, all silicone-containing additives have a cyclic siloxane content (D4, D5, D6) of less than 0.1 % each.

\*<sup>6</sup> From bio-based raw materials

\*<sup>7</sup> Content of cyclic siloxanes ≥ 0.1 %.



## Defoamers and air release additives for aqueous printing inks (2/2)

Product	Description	Chemistry			Product data		Incorporation		Dosage	Printing method			Regulatory		
		Silicone	Polymer	Hydrophobic particles	Solvent/reactive diluent	Pigment grind/mill base	Let-down	Post/press-side addition	As supplied (%)	Packaging gravure and flexographic inks	Overprint varnishes	Screen inks	VOC-free (< 1500 ppm)	Swiss Ordinance 817.023.21, Annex 10	Nestlé Guidance Note on Packaging Inks (Oct. 2018)
BYK-1719	Blend of foam-destroying polysiloxanes and hydrophobic solids	■		■			■		0.1–0.5		■		■	●	●
BYK-1740 <sup>*6</sup>	Blend of hydrophobic solids and foam-destroying fat derivatives		■	■		■	■		0.1–1.0	■			■	●	●
BYK-1770	Polyether-modified polydimethylsiloxane	■				■	■		0.3–1.0		■			○	○
BYK-1780	Polyether-modified polydimethylsiloxane with hydrophobic solids	■		■		■	■		0.2–1.0		■			●	●
BYK-1785	Emulsion of a polyether-modified polydimethylsiloxane with hydrophobic solids	■		■	Aqueous emulsion	■	■		0.3–1.0		■			○	○

● Refer to food contact sheet   ○ Not evaluated   — No

For detailed information on food regulatory status, please visit [www.byk.com/en/service/regulatory-affairs/food-contact](http://www.byk.com/en/service/regulatory-affairs/food-contact) or contact our BRIEF team.

Unless otherwise stated, all silicone-containing additives have a cyclic siloxane content (D4, D5, D6) of less than 0.1 % each.

<sup>\*6</sup> From bio-based raw materials

<sup>\*7</sup> Content of cyclic siloxanes ≥ 0.1 %.

## Wetting and dispersing additives

It is imperative that pigment particles are stable and suspended uniformly in ink formulations for high-speed and high-resolution printing. BYK's wetting and dispersing additives help formulators improve their pigment dispersion process (wetting, dispersing, and stabilizing pigment particles) by reducing the dispersion time, lowering the viscosity, and helping to increase pigment loading. These additives are based on various chemistries (acid esters, polyurethanes, amines, and acrylates, including controlled polymerization technology for acrylates) to address organic, inorganic, and filler dispersion in aqueous, solvent-borne, and UV-curing systems. ANTI-TERRA, BYK, BYK-SYNERGIST, BYKJET, DISPERBYK, and DISPERPLAST are some of BYK's wetting and dispersing additives available for printing ink applications.



## Wetting and dispersing additives for solvent-borne printing inks (1/3)

Product	Description	Chemistry						Product data			System					Pigments			Regulatory			
		Fatty acids	Phosphoric acid ester	Hyperbranched polyamines	Polyurethanes	Polyacrylates/SMA-based	Other	Solvent/reactive diluent	Active substance (%)	Acid value (mg KOH/g)	Amine value (mg KOH/g)	Resin-containing	Resin-free	Non/low polar systems (e.g. toluene, MEK)	Medium polar systems (e.g. ethyl acetate-rich)	High polar systems (e.g. alcohol-rich)	Inorganic pigments (e.g. TiO <sub>2</sub> )	Organic pigments	Pigment concentrates	VOC-free (< 1500 ppm)	Swiss Ordinance 817.023.21, Annex 10	Nestlé Guidance Note on Packaging Inks (Oct. 2018)
ANTI-TERRA-U 100*8	Salt of unsaturated polyamine amides and low-molecular acidic polyesters	■							100	50	35	■		■			■				●	●
BYK-9076	Alkyl ammonium salt of a high molecular weight copolymer			■					100	38	44	■	■		■			■			●	●
BYK-9077	Polyglycol polyester-modified polyalkylene imine			■					100		48	■	■		■			■			●	●
BYKJET-9142	Polymer with pigment-affinic groups		■						100	95		■	■					■	■		○	○
BYK-SYNERGIST 2100*9	Insoluble pigment complex						■		100			■	■					■	■		●	●
BYK-SYNERGIST 2105*9	Insoluble pigment complex						■		100			■	■					■	■		●	●
BYK-W 9011	Copolymer with acidic groups		■						100	65		■					■				●	●
DISPERBYK-108*8	Hydroxy-functional carboxylic acid ester with pigment-affinic groups	■							100		71	■	■	■				■	■		●	●
DISPERBYK-110	Solution of polymeric phosphoric acid ester		■					PMA/ alkylbenzenes 1/1	52	53		■	■				■				●	—

● Refer to food contact sheet    ○ Not evaluated    — No

For detailed information on food regulatory status, please visit [www.byk.com/en/service/regulatory-affairs/food-contact](http://www.byk.com/en/service/regulatory-affairs/food-contact) or contact our BRIEF team.

The active substance content does not necessarily correspond to the non-volatile matter content. Depending on the composition of the product and the analytical method of determination, the non-volatile matter content can be higher or lower.

The active substance content serves as the basis for calculating the dosage.

<sup>\*8</sup> From bio-based raw materials

<sup>\*9</sup> In combination with a wetting and dispersing additive

<sup>\*10</sup> Tin-free version of DISPERBYK-2155

<sup>\*11</sup> Delivery form: pellets

## Wetting and dispersing additives for solvent-borne printing inks (2/3)

Product	Description	Chemistry					Product data			System				Pigments			Regulatory					
		Fatty acids	Phosphoric acid ester	Hyperbranched polyamines	Polyurethanes	Polyacrylates/SMA-based	Other	Solvent/reactive diluent	Active substance (%)	Acid value (mg KOH/g)	Amine value (mg KOH/g)	Resin-containing	Resin-free	Non/low polar systems (e.g. toluene, MEK)	Medium polar systems (e.g. ethyl acetate-rich)	High polar systems (e.g. alcohol-rich)	Inorganic pigments (e.g. TiO <sub>2</sub> )	Organic pigments	Pigment concentrates	VOC-free (< 1500 ppm)	Swiss Ordinance 817.023.21, Annex 10	Nestlé Guidance Note on Packaging Inks (Oct. 2018)
DISPERBYK-111	Phosphoric acid ester		■					100	129		■	■					■				●	●
DISPERBYK-180	Alkylol ammonium salt of a copolymer with acidic groups		■					100	94	94	■						■				●	●
DISPERBYK-2013	Styrene maleic anhydride copolymer					■		>97	8	18	■	■		■	■				■		●	●
DISPERBYK-2023	Solution of a structured copolymer with pigment-affinic groups					■	Ethyl acetate	60	4	7	■	■		■	■			■	■		●	●
DISPERBYK-2096	Polar acidic esters and high molecular weight alcohols	■						100	40		■		■				■			■	○	○
DISPERBYK-2117	Block copolymer with pigment-affinic groups						■	100		24	■				■			■	■		●	—
DISPERBYK-2118	Block copolymer with pigment-affinic groups						■	100		16.5	■				■			■	■		●	●
DISPERBYK-2155	Polyglycol polyester-modified polyalkylene imine			■				100		48	■	■		■				■	■	■	●	●
DISPERBYK-2155 TF* <sup>10</sup>	Polyglycol polyester-modified polyalkylene imine			■				100		48	■	■		■				■	■	■	●	●
DISPERBYK-2157* <sup>8</sup>	Block copolymer with aminic, pigment-affinic groups			■				100	< 7	35	■	■	■					■	■	■	●	●

● Refer to food contact sheet   ○ Not evaluated   — No

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The active substance content does not necessarily correspond to the non-volatile matter content. Depending on the composition of the product and the analytical method of determination, the non-volatile matter content can be higher or lower.

The active substance content serves as the basis for calculating the dosage.

\*<sup>8</sup> From bio-based raw materials

\*<sup>9</sup> In combination with a wetting and dispersing additive

\*<sup>10</sup> Tin-free version of DISPERBYK-2155

\*<sup>11</sup> Delivery form: pellets

## Wetting and dispersing additives for solvent-borne printing inks (3/3)

Product	Description	Chemistry					Product data			System					Pigments		Regulatory						
		Fatty acids	Phosphoric acid ester	Hyperbranched polyamines	Polyurethanes	Polyacrylates/SMA-based	Other	Solvent/reactive diluent	Active substance (%)	Acid value (mg KOH/g)	Amine value (mg KOH/g)	Resin-containing	Resin-free	Non/low polar systems (e.g. toluene, MEK)	Medium polar systems (e.g. ethyl acetate-rich)	High polar systems (e.g. alcohol-rich)	Inorganic pigments (e.g. TiO <sub>2</sub> )	Organic pigments	Pigment concentrates	VOC-free (< 1500 ppm)	Swiss Ordinance 817.023.21, Annex 10	Nestlé Guidance Note on Packaging Inks (Oct. 2018)	
DISPERBYK-2200 <sup>*11</sup>	High molecular weight copolymer with pigment-affinic groups			■					100			■	■	■	■			■				-	-
DISPERBYK-2205 <sup>*11</sup>	High molecular weight copolymer with pigment-affinic groups			■					100	24	27	■	■	■	■			■				●	●
DISPERPLAST-1142	Polar, acidic ester of long-chain alcohols		■						100	85		■	■		■			■	■			●	●
DISPERPLAST-1180	Carboxylic acid derivatives with wetting properties		■						100	32		■	■		■			■	■			●	●

● Refer to food contact sheet    ○ Not evaluated    — No

For detailed information on food regulatory status, please visit [www.byk.com/en/service/regulatory-affairs/food-contact](http://www.byk.com/en/service/regulatory-affairs/food-contact) or contact our BRIEF team.

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The active substance content serves as the basis for calculating the dosage.

<sup>\*8</sup> From bio-based raw materials

<sup>\*9</sup> In combination with a wetting and dispersing additive

<sup>\*10</sup> Tin-free version of DISPERBYK-2155

<sup>\*11</sup> Delivery form: pellets

## Wetting and dispersing additives for UV printing inks (solvent-free) (1/2)

Product	Description	Chemistry					Product data			Pigments		Printing method		Regulatory					
		Fatty acids	Phosphoric acid ester	Hyperbranched polyamines	Polyurethanes	Polyacrylates/SMA-based	Other	Solvent/reactive diluent	Active substance (%)	Acid value (mg KOH/g)	Amine value (mg KOH/g)	Inorganic pigments (e.g. TiO <sub>2</sub> )	Organic pigments	Pigment concentrates	Packaging gravure and flexographic inks	UV-offset	VOC-free (< 1500 ppm)	Swiss Ordinance 817.023.21, Annex 10	Nestlé Guidance Note on Packaging Inks (Oct. 2018)
BYK-9076	Alkyl ammonium salt of a high molecular weight copolymer			■					100	38	44		■		■	■		●	●
BYK-9077	Polyglycol polyester-modified polyalkylene imine			■					100		48		■		■	■		●	●
BYKJET-9152	Copolymer with pigment-affinic groups					■			99	6	19			■	■			–	–
BYK-SYNERGIST 2100* <sup>13</sup>	Insoluble pigment complex						■		100				■	■	■			●	●
BYK-SYNERGIST 2105* <sup>13</sup>	Insoluble pigment complex						■		100				■	■	■			●	●
BYK-W 9011	Copolymer with acidic groups		■						100	65		■			■			●	●
DISPERBYK-110	Solution of polymeric phosphoric acid ester		■					PMA/ alkylbenzenes 1/1	52	53		■			■			●	–
DISPERBYK-111	Phosphoric acid ester		■						100	129		■			■			●	●
DISPERBYK-168	Solution of modified polyurethane				■			Dicarboxylic acid ester	30		10.5		■	■	■	■		●	●
DISPERBYK-168 TF* <sup>14</sup>	Solution of modified polyurethane				■			GPTA	30		10.5		■	■	■	■		●	●

● Refer to food contact sheet    ○ Not evaluated    — No

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The active substance content does not necessarily correspond to the non-volatile matter content. Depending on the composition of the product and the analytical method of determination, the non-volatile matter content can be higher or lower.

The active substance content serves as the basis for calculating the dosage.

\*<sup>12</sup> In combination with a wetting and dispersing additive

\*<sup>13</sup> Tin-free version of DISPERBYK-168

\*<sup>14</sup> Tin-free version of DISPERBYK-2155

\*<sup>15</sup> Delivery form: pellets

## Wetting and dispersing additives for UV printing inks (solvent-free) (2/2)

Product	Description	Chemistry					Product data			Pigments			Printing method		Regulatory				
		Fatty acids	Phosphoric acid ester	Hyperbranched polyamines	Polyurethanes	Polyacrylates/SMA-based	Other	Solvent/reactive diluent	Active substance (%)	Acid value (mg KOH/g)	Amine value (mg KOH/g)	Inorganic pigments (e.g. TiO <sub>2</sub> )	Organic pigments	Pigment concentrates	Packaging gravure and flexographic inks	UV-offset	VOC-free (< 1500 ppm)	Swiss Ordinance 817.023.21, Annex 10	Nestlé Guidance Note on Packaging Inks (Oct. 2018)
DISPERBYK-2008	Solution of a structured acrylate copolymer with pigment-affinic groups					■	PPG	60		66	■			■				●	●
DISPERBYK-2009	Solution of a structured acrylate copolymer					■	PMA/BG 1/1	44		4	■			■				○	○
DISPERBYK-2013	Styrene maleic anhydride copolymer					■		> 97	8	18	■	■	■	■				●	●
DISPERBYK-2030	Solution of a copolymer with pigment-affinic groups					■	PONPGDA	80	5	13	■	■	■	■	■			●	●
DISPERBYK-2155	Polyglycol polyester-modified polyalkylene imine			■				100		48		■	■	■	■	■	■	●	●
DISPERBYK-2155 TF*14	Polyglycol polyester-modified polyalkylene imine			■				100		48		■	■	■	■	■	■	●	●
DISPERBYK-2158	Solution of polyester-modified polyalkylene imine			■			DPGDA	60		13	■			■	■			●	—
DISPERBYK-2200*15	High molecular weight copolymer with pigment-affinic groups			■				100				■	■	■	■			—	—
DISPERBYK-2205*15	High molecular weight copolymer with pigment-affinic groups			■				100	24	27		■	■	■	■			●	●

● Refer to food contact sheet   ○ Not evaluated   — No

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The active substance content does not necessarily correspond to the non-volatile matter content. Depending on the composition of the product and the analytical method of determination, the non-volatile matter content can be higher or lower.

The active substance content serves as the basis for calculating the dosage.

<sup>\*12</sup> In combination with a wetting and dispersing additive

<sup>\*13</sup> Tin-free version of DISPERBYK-168

<sup>\*14</sup> Tin-free version of DISPERBYK-2155

<sup>\*15</sup> Delivery form: pellets

## Wetting and dispersing additives for aqueous printing inks

Product	Description	Chemistry						Product data			System		Pigments			Regulatory			
		Fatty acids	Phosphoric acid ester	Hyperbranched polyamines	Polyurethanes	Polyacrylates/SMA-based	Other	Solvent/reactive diluent	Active substance (%)	Acid value (mg KOH/g)	Amine value (mg KOH/g)	Resin-containing	Resin-free	Inorganic pigments (e.g. TiO <sub>2</sub> )	Organic pigments	Pigment concentrates	VOC-free (< 1500 ppm)	Swiss Ordinance 817.023.21, Annex 10	Nestlé Guidance Note on Packaging Inks (Oct. 2018)
DISPERBYK-180	Alkylol ammonium salt of a copolymer with acidic groups		■						100	94	94	■		■	■			●	●
DISPERBYK-190	Aqueous solution of a polyether-modified styrene maleic anhydride copolymer					■		Water	40	10			■	■	■	■	■	●	●
DISPERBYK-192* <sup>16</sup>	Modified polyether	■							100				■		■	■	■	●	●
DISPERBYK-193	Solution of a polyether						■	Water	40			■			■	■		●	●
DISPERBYK-2012	Solution of modified styrene maleic acid copolymer					■		Water	40	4	7	■	■		■	■		●	●
DISPERBYK-2013	Styrene maleic anhydride copolymer					■			> 97	8	18	■	■		■	■		●	●
DISPERBYK-2014	Copolymer with pigment-affinic groups						■		100		19	■	■		■	■	■	●	●
DISPERBYK-2015	Aqueous solution of modified styrene maleic anhydride copolymer					■		Water	40	10			■	■	■	■	■	●	●
DISPERBYK-2018	Solution of a copolymer with pigment-affinic groups					■		Water	52		26	■	■	■			■	●	●
DISPERBYK-2019	Solution of a copolymer with pigment-affinic groups					■		Water	52		22	■	■	■			■	●	●

● Refer to food contact sheet   ○ Not evaluated   — No

For detailed information on food regulatory status, please visit [www.byk.com/en/service/regulatory-affairs/food-contact](http://www.byk.com/en/service/regulatory-affairs/food-contact) or contact our BRIEF team.

The active substance content does not necessarily correspond to the non-volatile matter content. Depending on the composition of the product and the analytical method of determination, the non-volatile matter content can be higher or lower.

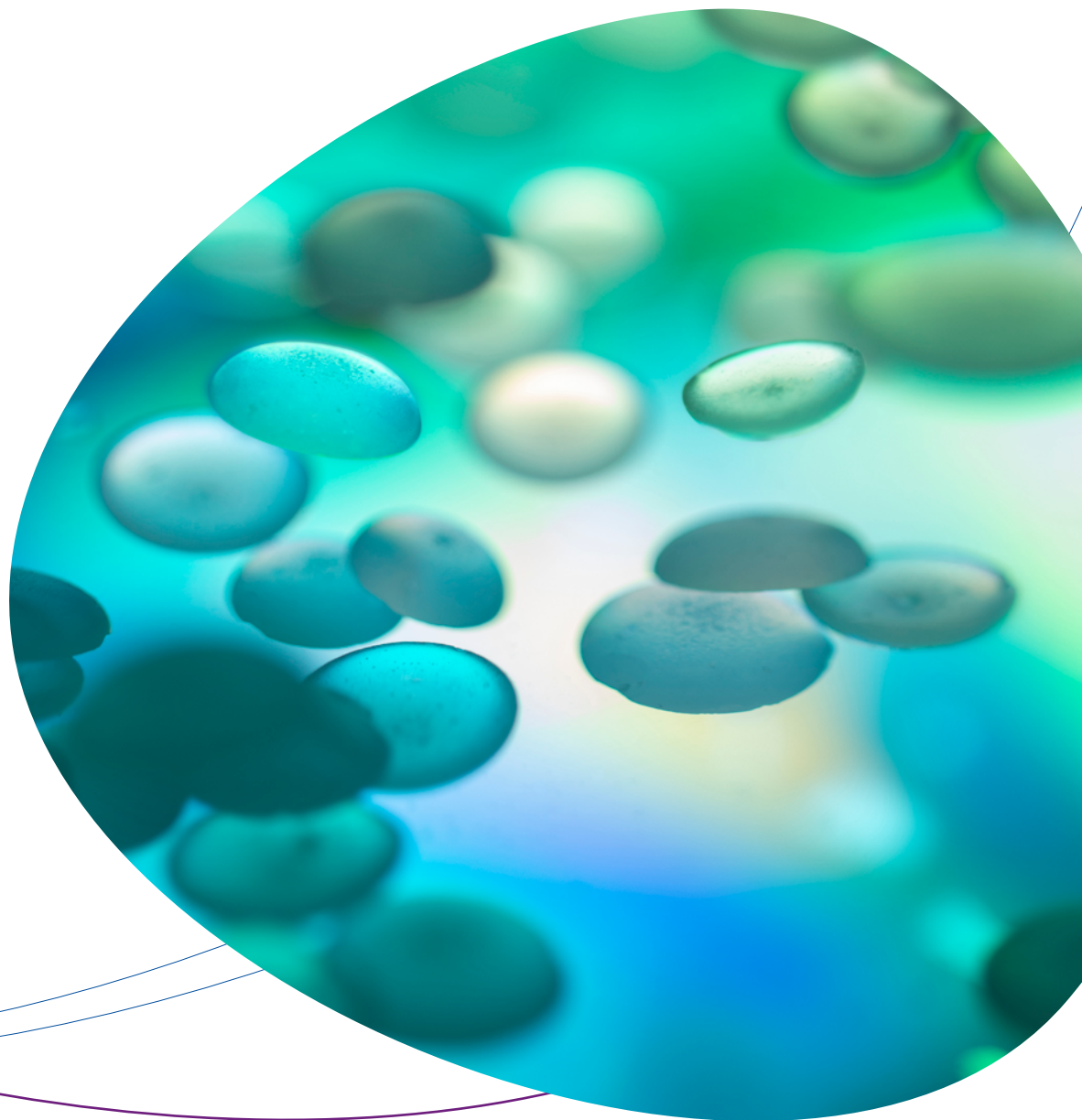
The active substance content serves as the basis for calculating the dosage.

\*<sup>16</sup> In resin-free grinds especially for PY13, PY14 and effect pigments; from bio-based raw materials



## Wax additives

Wax additives, often referred to as surface modifiers, have a significant impact on many ink formulations, printing processes, and end applications. BYK's wax additives are based on chemistries that provide essential property benefits for inks and overprint varnishes (OPV), such as slip and lubricity, abrasion resistance, anti-blocking, gloss or matting, water repellency, and tactile finish. With a high number of product lines, BYK offers a wax additive for every ink system, including aqueous (AQUACER, AQUAMAT, HORDAMER) and UV-curing (CERAFLOUR) systems. BYK's ISO-certified plants develop these wax additives to meet customers' high performance and quality demands and deliver them in liquid form, such as emulsions and dispersions, or in micronized fine powder forms. These wax additives can be used in flexographic, gravure, digital, screen, and commercial printing processes as they meet or exceed ever-changing regulatory requirements. BYK also offers waxes with a bio-based organic carbon content of > 97 % that are fully biodegradable.



## Micronized wax additives for solvent-borne printing inks

Product	Wax base	Product data			Effect						Dosage	Printing method			Regulatory			
		Particle size distribution (µm)			Melting point (°C)							As supplied (%)	Packaging gravure and flexographic inks	Overprint varnishes	Offset inks	VOC-free (< 1500 ppm)	Swiss Ordinance 817.023.21, Annex 10	Nestlé Guidance Note on Packaging Inks (Oct. 2018)
		D50	D90															
CERAFLOUR 929 N	Modified PE wax	8	15	115	■			■	■		0.1–6.0	■	■			○	○	
CERAFLOUR 940	Fischer-Tropsch wax	6	12	115	■	■					1.0–5.0	■	■			○	○	
CERAFLOUR 950	Modified HDPE wax	9	15	135	■			■	■		0.1–0.3	■	■			●	●	
CERAFLOUR 970	PP wax	9	14	160			■		■		0.5–4.0	■	■			○	○	
CERAFLOUR 981 R	PTFE	3	6		■	■					0.1–0.3	■		■		○	○	
CERAFLOUR 991	PE wax	5	9	115	■	■		■	■		1.0–5.0	■	■	■		●	●	
CERAFLOUR 996 R	PTFE-modified PE wax	6	11	115	■	■			■		0.3–2.0	■				○	○	
CERAFLOUR 999	PTFE-modified PE wax	4	9	115	■	■					1.0–5.0	■	■			●	●	
CERAFLOUR 1000*17	Biopolymer	5	11	175				■	■		1.0–5.0	■	■		■	●	●	
CERAFLOUR 1001*17	Biopolymer	3	7	175				■	■		1.0–5.0	■	■		■	●	●	
CERAFLOUR 1002*17	Biopolymer	6	31	175			■	■	■		1.0–5.0	■	■		■	●	●	

● Refer to food contact sheet   ○ Not evaluated   — No

For detailed information on food regulatory status, please visit [www.byk.com/en/service/regulatory-affairs/food-contact](http://www.byk.com/en/service/regulatory-affairs/food-contact) or contact our BRIEF team.

<sup>\*17</sup> From bio-based raw materials

## Micronized wax additives for UV printing inks (solvent-free)

Product	Wax base	Product data			Effect						Dosage	Printing method			Regulatory		
		Particle size distribution (µm)															
		D50	D90	Melting point (°C)	Mechanical resistance	Surface slip	Anti-slip	Soft-feel effect	Gloss reduction	Structure/texture	As supplied (%)	Packaging gravure and flexographic inks	Overprint varnishes	Offset inks	VOC-free (< 1500 ppm)	Swiss Ordinance 817.023.21, Annex 10	Nestlé Guidance Note on Packaging Inks (Oct. 2018)
CERAFLOUR 940	Fischer-Tropsch wax	6	12	115	■	■					1.0–5.0	■	■			○	○
CERAFLOUR 950	Modified HDPE wax	9	15	135	■			■	■		0.1–0.3	■	■			●	●
CERAFLOUR 970	PP wax	9	14	160			■		■		0.5–4.0	■	■			○	○
CERAFLOUR 988	Amide-modified PE wax	6	13	140	■				■		1.0–3.0		■			○	○
CERAFLOUR 991	PE wax	5	9	115	■	■		■	■		1.0–5.0	■	■	■		●	●
CERAFLOUR 994	Amide wax	5	10	145					■		0.5–2.0	■	■			○	○
CERAFLOUR 996 R	PTFE-modified PE wax	6	11	115	■	■			■		0.3–2.0	■				○	○
CERAFLOUR 999	PTFE-modified PE wax	4	9	115	■	■					1.0–5.0	■	■			●	●
CERAFLOUR 1000*18	Biopolymer	5	11	175				■	■		1.0–5.0	■	■		■	●	●
CERAFLOUR 1001*18	Biopolymer	3	7	175				■	■		1.0–5.0	■	■		■	●	●
CERAFLOUR 1002*18	Biopolymer	6	31	175			■	■	■		1.0–5.0	■	■		■	●	●

● Refer to food contact sheet   ○ Not evaluated   — No

For detailed information on food regulatory status, please visit [www.byk.com/en/service/regulatory-affairs/food-contact](http://www.byk.com/en/service/regulatory-affairs/food-contact) or contact our BRIEF team.

\*<sup>18</sup> From bio-based raw materials

## Micronized wax additives for aqueous printing inks

Product	Wax base	Product data			Effect						Dosage	Printing method			Regulatory			
		Particle size distribution (µm)			Melting point (°C)	Mechanical resistance		Anti-slip	Soft-feel effect	Gloss reduction	Structure/texture	As supplied (%)	Packaging gravure and flexographic inks	Overprint varnishes	Offset inks	VOC-free (< 1500 ppm)	Swiss Ordinance 817.023.21, Annex 10	Nestlé Guidance Note on Packaging Inks (Oct. 2018)
D50	D90		Surface slip															
CERAFLOUR 914	PP wax	24	36	160				■		■	2.0–10.0		■				○	○
CERAFLOUR 929 N	Modified PE wax	8	15	115	■			■	■		0.1–6.0	■	■				○	○
CERAFLOUR 999	PTFE-modified PE wax	4	9	115	■	■					1.0–5.0	■	■				●	●
CERAFLOUR 1000*19	Biopolymer	5	11	175				■	■		1.0–5.0	■	■		■	●	●	●
CERAFLOUR 1001*19	Biopolymer	3	7	175				■	■		1.0–5.0	■	■		■	●	●	●
CERAFLOUR 1002*19	Biopolymer	6	31	175			■	■	■		1.0–5.0	■	■		■	●	●	●

● Refer to food contact sheet   ○ Not evaluated   — No

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<sup>\*19</sup> From bio-based raw materials

## Wax additives for aqueous printing inks

Product	Wax base	Emulsifier system		Product data		Effect								Dosage	Printing method			Regulatory			
		Anionic	Non-ionic	Carrier	Active substance (%)	Melting point (°C)	Mechanical resistance	Surface slip	Anti-slip	Anti-blocking, water repellency	Anti-settling	Soft-feel effect	Gloss reduction	Orientation effect pigments	As supplied (%)	Packaging gravure and flexographic inks	Overprint varnishes	Offset inks	VOC-free (< 1500 ppm)	Swiss Ordinance 817.023.21, Annex 10	Nestlé Guidance Note on Packaging Inks (Oct. 2018)
AQUACER 497	Paraffin wax		■	Water	50	60		■		■					2.0–5.0	■	■			●	●
AQUACER 513	Oxidized HDPE wax		■	Water	35	135	■								3.0–14.0	■	■		■	●	●
AQUACER 527	Modified EVA copolymer wax		■	Water	35	105			■					■	5.0–9.0	■				○	○
AQUACER 530	Oxidized HDPE wax		■	Water	32	130	■	■							2.0–11.0		■			●	●
AQUACER 531	Modified HDPE wax		■	Water	45	130	■			■					2.0–5.0	■	■			●	●
AQUACER 532	Modified HDPE wax		■	Water	40	130	■	■							2.0–5.0	■				●	●
AQUACER 537	Modified paraffin wax	■		Water	30	110		■		■					1.5–5.0	■				○	○
AQUACER 539	Modified paraffin wax		■	Water	35	90		■		■					1.0–3.0	■	■			○	○
AQUACER 593	Modified PP wax		■	Water	30	160			■						3.0–4.0	■	■			●	●
AQUACER 1075	Oxidized HDPE wax		■	Water	35	130	■		■	■					2.0–5.0	■	■			○	○
AQUAMAT 208	Oxidized HDPE wax			Water	35	135	■					■	■		1.0–4.0	■		■	■	●	●
AQUAMAT 263	Oxidized HDPE wax			Water/PNB 12/1	35	130	■			■			■		3.0–6.0	■	■			○	○
AQUAMAT 272 N	Modified PE wax			Water	55	125	■			■			■		1.0–2.0	■	■			○	○
HORDAMER PE 03	Primary PE	■	■	Water	40	95	■								1.0–5.0	■				●	●
HORDAMER PE 35	Primary PE	■	■	Water	37.5	125	■	■							4.0–13.0	■	■			●	●

● Refer to food contact sheet   ○ Not evaluated   — No

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The active substance content does not necessarily correspond to the non-volatile matter content. Depending on the composition of the product and the analytical method of determination, the non-volatile matter content can be higher or lower.

The active substance content serves as the basis for calculating the dosage.

## Rheology additives

Rheology additives are complex materials that control flow behavior, shelf stability, and optimize performance when added to ink and overprint varnish (OPV) formulations. BYK's broad range of rheology additives are based on inorganic and organic chemistries that can be used in aqueous, solvent-borne, and UV-curing inks/OPV systems. With ever-increasing printing speeds, improving the flow properties of the ink/OPV will improve transfer, dot gain, sharpness, and reduce misting, resulting in better print image quality. Rheology properties can be adjusted to become more Newtonian, dilatant, pseudoplastic, or thixotropic. BYK has several product lines (e.g., CLAYTONE, RHEOBYK) for use in liquid inks (flexographic, gravure, digital, screen) and in paste inks (offset, cold-set, heat-set, UV/EB). Depending on the rheology additive's properties and the customer's performance needs, the additives are added either to the mill base or to the let-down.



## Rheology additives for solvent-borne printing inks

Product	Description	Chemistry			Product data		Dosage	Printing method			Regulatory		
		Urea base	Synergist	Organoclay	Solvent/reactive diluent	Active substance (%)	As supplied (%)	Packaging gravure and flexographic inks	Overprint varnishes	Offset inks	VOC-free (< 1500 ppm)	Swiss Ordinance 817.023.21, Annex 10	Nestlé Guidance Note on Packaging Inks (Oct. 2018)
CLAYTONE-40	Organophilic phyllosilicate			■		100	0.3–2.0			■		●	●
CLAYTONE-AF	Organophilic phyllosilicate			■		100	0.3–2.0			■		●	●
CLAYTONE-HY	Organophilic phyllosilicate			■		100	0.3–2.0			■		●	●
RHEOBYK-7410 ET	Solution of a modified urea	■			Amide ether	40	0.2–1.0	■	■			●	●
RHEOBYK-R 606 * <sup>20</sup>	Polyhydroxy carboxylic acid ester		■			100	5.0–15.0* <sup>21</sup>	■				○	○
RHEOBYK-R 607 * <sup>20</sup>	Solution of amine functional oligoamides		■		Benzyl alcohol/ solvent naphtha	77	5.0–15.0* <sup>21</sup>	■				○	○

● Refer to food contact sheet    ○ Not evaluated    — No

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The active substance content serves as the basis for calculating the dosage.

\*<sup>20</sup> In combination with fumed silica    \*<sup>21</sup> Based on fumed silica



## Rheology additives for UV printing inks (solvent-free)

Product	Description	Chemistry			Product data		Dosage	Printing method			Regulatory		
		Urea base	Synergist	Organoclay	Solvent/reactive diluent	Active substance (%)	As supplied (%)	Packaging gravure and flexographic inks	Overprint varnishes	Offset inks	VOC-free (< 1500 ppm)	Swiss Ordinance 817.023.21, Annex 10	Nestlé Guidance Note on Packaging Inks (Oct. 2018)
CLAYTONE-40	Organophilic phyllosilicate			■		100	0.3–2.0			■		●	●
CLAYTONE-AF	Organophilic phyllosilicate			■		100	0.3–2.0			■		●	●
CLAYTONE-HY	Organophilic phyllosilicate			■		100	0.3–2.0			■		●	●
RHEOBYK-7410 ET	Solution of a modified urea	■			Amide ether	40	0.2–1.0	■	■			●	●
RHEOBYK-R 606 <sup>*22</sup>	Polyhydroxy carboxylic acid ester		■			100	5.0–15.0 <sup>*23</sup>	■				○	○
RHEOBYK-R 607 <sup>*22</sup>	Solution of amine functional oligoamides		■		Benzyl alcohol/ solvent naphtha	77	5.0–15.0 <sup>*23</sup>	■				○	○

● Refer to food contact sheet   ○ Not evaluated   — No

For detailed information on food regulatory status, please visit [www.byk.com/en/service/regulatory-affairs/food-contact](http://www.byk.com/en/service/regulatory-affairs/food-contact) or contact our BRIEF team.

The active substance content does not necessarily correspond to the non-volatile matter content. Depending on the composition of the product and the analytical method of determination, the non-volatile matter content can be higher or lower.

The active substance content serves as the basis for calculating the dosage.

<sup>\*22</sup> In combination with fumed silica   <sup>\*23</sup> Based on fumed silica



## Rheology additives for aqueous printing inks

Product	Description	Chemistry			Product data	Dosage	Printing method			Regulatory		
		Urea base	Synergist	Organoclay			Packaging gravure and flexographic inks	Overprint varnishes	Offset inks	VOC-free (< 1500 ppm)	Swiss Ordinance 817.023.21, Annex 10	Nestlé Guidance Note on Packaging Inks (Oct. 2018)
<b>RHEOBYK-425</b>	Solution of a urea-modified polyurethane	■	—	—	Polypropylene glycol	50	0.1–2.0	■	■	—	○	○
<b>RHEOBYK-7420 ET</b>	Solution of a modified urea	■	—	—	Amide ether	42	0.3–1.5	■	■	—	○	○

● Refer to food contact sheet
 ○ Not evaluated
 — No

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The active substance content serves as the basis for calculating the dosage.

## Specialties



## Adhesion promoters for solvent-borne printing inks

Product	Description	Solvent/reactive diluent	VOC-free (< 1500 ppm)	Swiss Ordinance 817.023.21, Annex 10	Guidance Note on Packaging Inks (Oct. 2018)
BYK-4510	Solution of a hydroxy-functional copolymer with acidic groups	PM		●	●
BYK-4511	Solution of a copolymer with functional groups	PMA		○	○
BYK-4512	Solution of amino-functional polyether	PMA		○	○

● Refer to food contact sheet   ○ Not evaluated   — No

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## Adhesion promoters for aqueous printing inks

Product	Description	Solvent/reactive diluent	VOC-free (< 1500 ppm)	Swiss Ordinance 817.023.21, Annex 10	Guidance Note on Packaging Inks (Oct. 2018)
BYK-4500	Solution of modified alkylene copolymer	TMPD-MIB		○	○
BYK-4509	Solution of polyester alkyl ammonium salt	PM		○	○
BYK-4513	Solution of a polymer with functional groups	DPM		○	○

● Refer to food contact sheet   ○ Not evaluated   — No

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## Conductivity additive for solvent-borne, electrostatically sprayed coating systems for increasing electrical conductivity

Product	Description	Solvent/reactive diluent	Dosage (%) as supplied	VOC-free (< 1500 ppm)	Swiss Ordinance 817.023.21, Annex 10	Guidance Note on Packaging Inks (Oct. 2018)
BYK-ES 80	Solution of an alkylol ammonium salt of an unsaturated carboxylic acid ester	Isobutanol	0.2–2.0		●	●

● Refer to food contact sheet   ○ Not evaluated   — No

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