PIGMENT WETTING

DEFOAMING

PRODUCT GUIDE

ADDITIVES FOR RADIATION CURING SYSTEMS

MATTING

ANTI-SETTLING

SCRATCH RESISTANT

Contents

Additives for radiation curing systems

Radiation curing systems (UV and EB curing) have found wide usage in several industrial sectors where high-quality surface coatings are of interest. The main areas of application are wood and furniture coatings, industrial coatings, can coatings, printing inks (including overprint varnishes), inkjet inks, and powder coatings. This brochure summarizes our additive recommendations for these applications.

Solvent-free additives are naturally preferred for solvent-free formulations; however, solvent-borne additives may also be used (except in powder coatings), as long as they contribute only small amounts of solvent to the final formulation.

Several products were specifically developed for radiation curing formulations: these are acrylated additives that can participate in crosslinking reactions. They are specially marked in the following tables.

Details about all the additives mentioned can be found in the corresponding Technical Data Sheets that are also available at our website **www.byk.com**.

Note

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Industrial coatings

Application	Solvent-borne and solvent-free systems	Aqueous systems
Pigment wetting and stabilization	DISPERBYK-110 DISPERBYK-111 DISPERBYK-180 DISPERBYK-2013 DISPERBYK-2055 DISPERBYK-2155 TF*1	DISPERBYK-180 DISPERBYK-190 BF*2 DISPERBYK-2010 DISPERBYK-2012
Stabilization of matting agents	DISPERBYK-103 DISPERBYK-2008 DISPERBYK-2158	DISPERBYK-190 DISPERBYK-2012
Silicone-based defoamers	BYK-088 BYK-1799 BYK-1816	BYK-024 BYK-093 BYK-1786
Silicone-free defoamers	BYK-1788 BYK-1790	BYK-011 BYK-014 BYK-1710
Substrate wetting, anti-crater properties	BYK-333 BYK-379 BYK-3760 BYK-3764 BYK-3765 BYK-UV 3505*3	BYK-348 BYK-349 BYK-3451 BYK-3455 BYK-3480
Surface slip	BYK-333 BYK-379 BYK-3760 BYK-3764 BYK-3765 BYK-UV 3505*3	BYK-333 BYK-3760 BYK-3762 BYK-3764
Scratch resistance	BYK-UV 3518*3 BYK-UV 3519*3 CERAFLOUR 929 N CERAFLOUR 950 CERAFLOUR 991 NANOBYK-3611 NANOBYK-3652	AQUACER 507 AQUACER 531 AQUAMAT 272 N CERAFLOUR 929 N

Application	Solvent-borne and solvent-free systems	Aqueous systems
Leveling	BYK-361 N BYK-399 BYK-3550 BYK-3558 BYK-UV 3535*3	BYK-381 BYK-3480 BYK-3560 BYK-3565
Matting	CERAFLOUR 1000 CERAFLOUR 1001 CERAFLOUR 1004 CERAFLOUR 1010	AQUAMAT 272 N CERAFLOUR 929 N CERAFLOUR 1000 CERAFLOUR 1010
Anti-settling/anti-sagging	CLAYTONE-AF RHEOBYK-D 410	RHEOBYK-7650 RHEOBYK-7670 RHEOBYK-7690 RHEOBYK-D 420 RHEOBYK-H 7625 VF RHEOBYK-L 1400 VF

Unless otherwise stated, all silicone-containing additives have a cyclic siloxane content (D4, D5, D6) of less than 0.1 % each. T. 01

*1 (Organo) Tin-free version: Future-oriented variant of the original product. Originals are still available.

*2 Biocide-free version: Future-oriented variant of the original product. Originals are still available.

*3 Contains functional group.

Wood and furniture coatings

Application	Aqueous systems	Solvent-free systems
Wetting and stabilization of matting agents	DISPERBYK-2012 ●	DISPERBYK-2009 R ● DISPERBYK-2158 ● DISPERBYK-2159 ○
Wetting and stabilization of pigments	DISPERBYK-2013 ● DISPERBYK-2015 BF*4 ● DISPERBYK-190 BF*4 ○ DISPERBYK-199 BF*4 ○	DISPERBYK-111 ● DISPERBYK-2013 ● DISPERBYK-2155 TF*5 ●
Anti-settling	BYK-AQUAGEL 7100 ● LAPONITE-S 482 ● LAPONITE-RDS ○ OPTIGEL-WX ○	GARAMITE-1958 ● GARAMITE-7303 ● RHEOBYK-D 410 ● RHEOBYK-7410 ET ○
Viscosity adjustment	RHEOBYK-7650*6 ● RHEOBYK-7670*6 ● RHEOBYK-7690*6 ● RHEOBYK-H 7500 VF ● RHEOBYK-L 1400 VF ○	
Silicone-based defoamers	BYK-092 ● BYK-093 ● BYK-094 ● BYK-1781 ● BYK-1786 ● BYK-024 ○ BYK-028 ○	BYK-1799 ● BYK-1816 ● BYK-088 ○ BYK-1818 ○ BYK-A 530 ○
Silicone-free defoamers		BYK-1788 ● BYK-1791 ● BYK-1794 ● BYK-1790 ○
Substrate wetting	BYK-3455 ● BYK-3456 ● BYK-346 ○ BYK-348 ○ BYK-349 ○	BYK-3760 ● BYK-UV 3500*7, 8 ● BYK-UV 3505*8 ● BYK-379 ○
Leveling (silicone-based additives)	BYK-3455 ● BYK-3456 ● BYK-349 ○	BYK-3455 ● BYK-3456 ● BYK-333 ○
Leveling (silicone-free additives)	BYK-DYNWET 800 ● BYK-DYNWET 810 ● BYKETOL-AQ ○	BYK-361 N ● BYK-UV 3535*8 ●
Surface slip	AQUACER 539 ● BYK-333 ● BYK-3760 ● BYK-379 ○	BYK-333 ● BYK-379 ● BYK-3760 ● BYK-UV 3500*7, 8 ● BYK-UV 3505*8 ● CERAFLOUR 988 ●

Application	Aqueous systems	Solvent-free systems
Anti-slip	AQUACER 593 ●	BYK-UV 3535*8 ● CERAFLOUR 970 ●
Tape release	BYK-333 ● BYK-SILCLEAN 3720 ● BYK-379 ○	BYK-379 ● BYK-UV 3500*7, 8 ● BYK-UV 3505*8 ● BYK-377*7, 8/BYK-3771*8 ○ BYK-3760 ○
Easy-to-clean	BYK-UV 3500*7, 8 ●	BYK-UV 3500*7, 8 ●
Mechanical resistance	CERAFLOUR 927 N ● CERAFLOUR 929 N ● CERAFLOUR 1010 ● NANOBYK-3603*9 ● AQUAMAT 272 N ○ NANOBYK-3620*9 ○	BYK-UV 3519*8 ● CERAFLOUR 929 N ● CERAFLOUR 988 ● CERAFLOUR 1010 ● NANOBYK-3605*8, 9 ● BYK-UV 3518*8 ○
Matting	AQUAMAT 208 ● CERAFLOUR 1000 ● CERAFLOUR 1010 ● AQUAMAT 272 N ○ CERAFLOUR 927 N ○ CERAFLOUR 929 N ○ CERAFLOUR 1001 ○ CERAFLOUR 1002 ○	CERAFLOUR 1000 ● CERAFLOUR 1010 ● CERAFLOUR 929 N ○ CERAFLOUR 950 ○ CERAFLOUR 988 ○ CERAFLOUR 1001 ○ CERAFLOUR 1002 ○
Orientation of silica matting agents	BYK-333 ● BYK-3760 ● BYK-379 ○	BYK-3760 ● BYK-UV 3500*7, 8 ● BYK-UV 3505*8 ● BYK-379 ○
Curtain stability	BYK-307*7/BYK-3762 ●	BYK-307*7/BYK-3762 ●
Anti-blocking	AQUACER 539 ● CERAFLOUR 927 N ● CERAFLOUR 929 N ● AQUAMAT 272 N ○	
Haptic effects	CERAFLOUR 994 ● CERAFLOUR 1000 ● CERAFLOUR 1001 ● AQUAMAT 208 ○	CERAFLOUR 994 ● CERAFLOUR 1000 ● CERAFLOUR 1001 ●

● First recommendation ○ Second recommendation T. 02

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

*4 Biocide-free version: Future-oriented variant of the original product. Originals are still available.

*5 (Organo) Tin-free version: Future-oriented variant of the original product. Originals are still available.

*6 Solid, non-dusting, and biocide-free rheology additive. *7 Content of cyclic siloxanes ≥ 0.1 %.

*8 Contains functional groups. *9 To be combined with a polysiloxane additive such as BYK-UV 3500.

Can coatings

Application	Solvent-borne and solvent-free systems
Pigment wetting and stabilization	DISPERBYK-111 DISPERBYK-2013 DISPERBYK-2155 TF*10
Silicone-based defoamers	BYK-088
Silicone-free defoamers	BYK-054 BYK-1790 BYK-1795
Substrate wetting	BYK-314 BYK-379 BYK-3760 BYK-3762
Scratch resistance	BYK-3760 BYK-3762 CERAFLOUR 925 N CERAFLOUR 991 CERAFLOUR 1050 CERAFLOUR 1051 CERAFLOUR 1052
Leveling	BYK-350 BYK-397 BYK-3760 BYK-3762
Surface slip	BYK-3760 BYK-3762 CERAFLOUR 925 N CERAFLOUR 991

Unless otherwise stated, all silicone-containing additives have a cyclic siloxane content (D4, D5, D6) of less than 0.1 % each. **T. 03**

*10 (Organo) Tin-free version: Future-oriented variant of the original product. Originals are still available.

Coil coatings

Application	Solvent-borne and solvent-free systems
Pigment wetting and stabilization	DISPERBYK-111 DISPERBYK-168 TF*[11] DISPERBYK-180 DISPERBYK-2013 DISPERBYK-2155 TF*[11]
Stabilization of matting agents	DISPERBYK-2008 DISPERBYK-2009 R DISPERBYK-2158 DISPERBYK-2159
Silicone-free defoamers	BYK-054 T BYK-1790 BYK-1795
Leveling	BYK-350 BYK-361 N BYK-399
Surface slip	CERAFLOUR 929 N CERAFLOUR 991 CERAFLOUR 1050 CERAFLOUR 1051 CERAFLOUR 1052
Scratch resistance/abrasion resistance	CERAFLOUR 925 N CERAFLOUR 929 N CERAFLOUR 988 CERAFLOUR 1050 CERAFLOUR 1051 CERAFLOUR 1052
Matting	CERAFLOUR 913 CERAFLOUR 929 N CERAFLOUR 950 CERAFLOUR 988 CERAFLOUR 1000 CERAFLOUR 1001 CERAFLOUR 1004
Structure	CERAFLOUR 913 CERAFLOUR 914 CERAFLOUR 915 CERAFLOUR 916 CERAFLOUR 917

Unless otherwise stated, all silicone-containing additives have a cyclic siloxane content (D4, D5, D6), of less than 0.1 % each. **T. 04**

*[11] (Organo) Tin-free version: Future-oriented variant of the original product. Originals are still available.

Powder coatings

Application	Pigmented coatings	Clear coatings
Leveling	BYK-368 P ● BYK-3902 P ○	BYK-361 N ●
Matting	CERAFLOUR 950 ● BYK-3938 P ○	CERAFLOUR 970 ● CERAFLOUR 991 ● BYK-3938 P ○
Scratch resistance	CERAFLOUR 950 ●	CERAFLOUR 981 R ●
Texture	CERAFLOUR 959 ● CERAFLOUR 966 ●	
Scar effect	CERAFLOUR 960 ● CERAFLOUR 994 ●	

● First recommendation ○ Second recommendation T. 05

Printing inks and overprint varnishes

Application	Packaging gravure and flexographic inks UV 100 %	Overprint varnishes	
		UV aqueous	UV 100 %
Pigment wetting and stabilization	DISPERBYK-111 ● DISPERBYK-168 ● DISPERBYK-168 TF*12 ● DISPERBYK-2008 ● DISPERBYK-2009 ● DISPERBYK-2013 ● DISPERBYK-2030*13 ● BYK-9076 ○ BYK-9077 ○ DISPERBYK-2155 ○ DISPERBYK-2155 TF*12 ○ DISPERBYK-2158 ○		
Defoaming	BYK-088 ● BYK-1790 ● BYK-1791 ● BYK-1794 ○ BYK-1797 ○ BYK-1799 ○ BYK-A 530 ○	BYK-019*14/BYK-1709 ● BYK-1719 ● BYK-094 ○	BYK-019*14/BYK-1709 ● BYK-1790 ● BYK-1794 ● BYK-088 ○
Substrate wetting	BYK-377*13, 14/BYK-3771*13 ● BYK-3760 ● BYK-UV 3500*13 ● BYK-333 ○ BYK-378*14/BYK-3764 ○ BYK-379 ○	BYK-3455 ● BYK-DYNWET 800 ● BYK-DYNWET 810 ●	BYK-377*13, 14/BYK-3771*13 ● BYK-379 ● BYK-UV 3500*13, 14 ● BYK-UV 3510*14/ BYK-UV 3511 ● BYK-381 ○ BYK-UV 3505*13 ○
Increase of surface energy	BYK-3560 ● BYK-3565 ● BYK-3566 ●		
Surface slip	BYK-307*14/BYK-3762 ● BYK-377*13, 14/BYK-3771*13 ● BYK-UV 3590*13 ● BYK-UV 3595*13 ● CERAFLOUR 950 ● BYK-3760 ○ CERAFLOUR 991 ○	AQUACER 539 ● BYK-307*14/BYK-3762 ● BYK-333 ● BYK-378*14/BYK-3764 ○ HORDAMER PE 35 ○	BYK-377*13, 14/BYK-3771*13 ● BYK-379 ● BYK-3760 ● BYK-UV 3590*13 ● BYK-UV 3595*13 ● CERAFLOUR 950 ● CERAFLOUR 991 ● BYK-307*14/BYK-3762 ○ BYK-UV 3500*13, 14 ○ BYK-UV 3505*13 ○
Tape release	BYK-UV 3590*13 ● BYK-UV 3595*13 ●		BYK-UV 3590*13 ● BYK-UV 3595*13 ●

Application	Packaging gravure and flexographic inks UV 100 %	Overprint varnishes	
		UV aqueous	UV 100 %
Abrasion resistance	BYK-377*13, 14/BYK-3771*13 ● BYK-UV 3510*14/ BYK-UV 3511 ● CERAFLOUR 950 ● CERAFLOUR 991 ○	AQUACER 532 ● BYK-333 ● BYK-UV 3500*13, 14 ● BYK-378*14/BYK-3764 ○	BYK-377*13, 14/BYK-3771*13 ● BYK-UV 3510*14/ BYK-UV 3511 ● CERAFLOUR 950 ● CERAFLOUR 991 ○
Leveling	BYK-307*14/BYK-3762 ● BYK-361 N ● BYK-381 ● BYK-3760 ● BYK-333 ○ BYK-378*14/BYK-3764 ○ BYK-3455 ○	BYK-345 ● BYK-381 ●	BYK-377*13, 14/BYK-3771*13 ● BYK-3455 ● BYK-345 ○ BYK-354 ○ BYK-381 ○ BYK-UV 3505*13 ○
Matting	CERAFLOUR 1000 ● CERAFLOUR 1001 ● CERAFLOUR 1002 ●	CERAFLOUR 1000 ● CERAFLOUR 1001 ● CERAFLOUR 1002 ●	CERAFLOUR 1000 ● CERAFLOUR 1001 ● CERAFLOUR 1002 ●
Water repellency		AQUACER 497 ● AQUACER 539 ○	
Anti-slip	CERAFLOUR 970 ●	AQUACER 593 ●	CERAFLOUR 970 ●
Rheology control	RHEOBYK-R 606*15 ○ RHEOBYK-R 607*15 ○	RHEOBYK-425 ● RHEOBYK-7420 ES ●	RHEOBYK-7410 ET ●

● First recommendation ○ Second recommendation T. 06

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

*12 (Organo) Tin-free version: Future-oriented variant of the original product. Originals are still available.

*13 Contains functional groups. *14 Content of cyclic siloxanes ≥ 0.1 %.

*15 In combination with silica or phyllosilicates.

For information regarding the regulatory status according to food contact regulation please visit www.byk.com/en/service/regulatory-affairs/food-contact or contact our BRIEF Team.

Inkjet inks

Application	Solvent-free systems
Pigment wetting and stabilization	Cyan: (PB 15:3/PB 15:4) BYKJET-9151 ● BYKJET-9152 ● DISPERBYK-2030*16 ● BYKJET-9150*16 ○ DISPERBYK-168 ○ DISPERBYK-168 TF*17 ○ Magenta: (PV 19/PR 122) BYKJET-9151 ● BYKJET-9152 ● DISPERBYK-2030*16 ● BYKJET-9150*16 ○ DISPERBYK-168 ○ DISPERBYK-168 TF*17 ○ Yellow: (PY 139/PY 151/PY 155) BYKJET-9151 ● BYKJET-9152 ● DISPERBYK-2030*16 ● BYKJET-9150*16 ○ DISPERBYK-168 ○ DISPERBYK-168 TF*17 ○ Yellow: (PY 150) DISPERBYK-168 ● DISPERBYK-168 TF*17 ● Black: (PBk 7) BYKJET-9151 ● DISPERBYK-168 ● DISPERBYK-168 TF*17 ● DISPERBYK-2030*16 ● BYKJET-9150*16 ○ BYKJET-9152 ○ White: (PW 6) DISPERBYK-111 ● DISPERBYK-2152 ● DISPERBYK-2205 ○
Leveling	BYK-361 N ● BYK-3455 ○ BYK-3456 ○ BYK-UV 3530*16 ○

Application	Solvent-free systems
Substrate wetting	BYK-UV 3530*16 ● BYK-UV 3575*16, 18 ● BYK-3760 ○ BYK-UV 3500*16, 18 ○ BYK-UV 3505*16 ○
Surface slip	BYK-378*18/BYK-3764 ● BYK-379 ● BYK-UV 3500*16, 18 ● BYK-UV 3505*16 ● BYK-UV 3575*16, 18 ○ BYK-3760 ○
Scratch resistance	NANOBYK-3605 ●
Defoaming	BYK-1790 ● BYK-1791 ○ BYK-1794 ○ BYK-A 535 ○

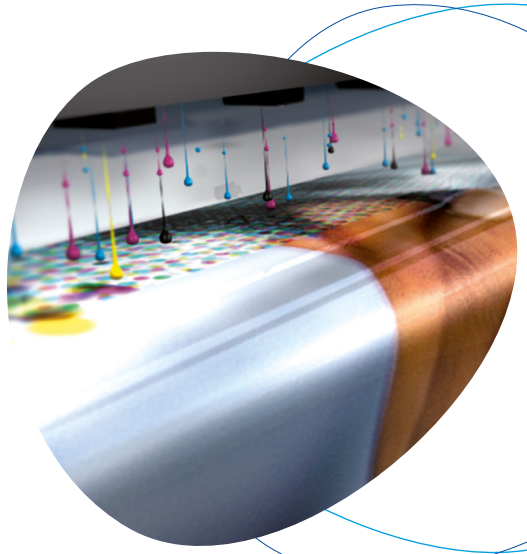
● First recommendation ○ Second recommendation **T. 07**

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

*16 Contains functional groups.

*17 (Organo) Tin-free version: Future-oriented variant of the original product. Originals are still available.

*18 Content of cyclic siloxanes ≥ 0.1 %.



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