

Substance for Success.



Product Guide B-G 2

Additives for “Greener” Systems

NAFTA
market only

Greenability

Greenability

There is no broadly accepted, universal “green” standard. Within BYK, “Green” refers to all activities required to support our customers’ goals of achieving any specific environmental standard. For one chemist, it’s lowering VOC or the amount of solvent to meet a regulation. For another, it could be finding ways to add more recycled material to a formulation. For a third, it could be reducing energy consumption. Since regulations vary all over the world, we’ve made the equation simple: Whenever a customer needs to make a “greener” product, their goal becomes our definition of “green.”

“Greenability” is how we define our engagement in environmentally-friendly systems. Greenability is our ability to help our customers to develop greener products.

For decades we have additives for environmentally-friendly systems in our portfolio and today more than 50% of our research and development activities deal with this topic. Our understanding of environmentally-friendly systems includes additives for powder coatings, water-borne systems, high solid and 100% solid systems, VOC-free systems.

We also constantly increase the amount of raw materials derived from renewable resources.

Our experience in the additive business contributes to our green expertise.

Our broad portfolio offers a lot of options to create green solutions. And, our proven products have a long and trusted history of high performance.

To summarize: We help to achieve the green goals of our customers with our knowledge, our choice and our quality.

BYK Additives for “Greener” Products

The following table shows our portfolio of additives, selected for their ability to achieve “greener” end products without sacrificing performance. The decisive criterion being the additive’s VOC content (VOC =Volatile Organic Carbon as defined in the Clean Air Act, 40 CFR 51.100(s)). “Yes” in the “VOC-free” column indicates, that the additive has no VOC. “Yes*”

(with asterisk) indicates that the additive has VOC, but per EPA Method 24 Determination of VOC Content of Coatings/Inks, VOC contribution to the coating would be negligible.

- All listed additives do not contain **phthalates, formaldehyde, or alkylphenol ethoxylates (APEO)** according to the recipe.
- All listed additives are neither **sensitizers** nor are they **highly toxic**.
Highly toxic: LD50 ≤ 50 mg/kg (oral, rat); LD50 ≤ 200 mg/kg (dermal, rabbit); LC50 ≤ 200 ppm (4-hour inhalation rat).

Looking for suitable additives for greener coating systems? Please find our product recommendations at www.byk.com/greenability.

Would you like to talk to a specialist on this topic?
Our Green Experts will be glad to assist you further: GreenExperts.BYK@altana.com.

Looking for information on additives based on renewable raw materials?
We have detailed information for you at www.byk.com/renewable.

Questions & Answers

How does BYK help achieve green goals without compromising performance?

First, knowledge: Your own experience, enhanced by the expertise of our global technical network.

Second, choice: With the broadest portfolio in the business, we offer more options to create solutions.

Third, quality: BYK additives have a long and trusted history of high performance. They're proven products.

What is "sustainability?"

In brief, it's an environmentally sound solution that's good for today and good for tomorrow. Sustainability is a key goal of any "green" solution we develop with customers.

Is BYK making green additives?

We're concentrating on using our additives to help make customers' products "greener."

What does BYK have that's "green?"

First, we have specialists, Greenologists, who help customers meet their own specific environmental challenges. BYK helps customers determine the additives which will result in "greener" finished products.

All the additives on this brochures list have satisfied the stringent regulations of the Environmental Protection Agency, OSHA, and/or California Proposition 65 requirements. They have also met BYK's own Environmental and Safety review, so there are no grey areas.

Additives on this list have satisfied these environmental criteria based on using 100% of each product – so any smaller amount will certainly meet the standards in question.

If it's on this list, it can be used for "greener" products with confidence.

Does BYK have bio-based additives or chemistries formulated from renewable resources?

We use a number of renewable resources as raw materials in our additives, but our focus has always been on delivering high performance products.

Why does BYK offer additives that aren't environmentally friendly?

Our focus is and always has been high performance. What we're discovering is that, while helping customers meet "green" goals, we can use our additives to reinforce performance properties.

What about hazardous air pollutant (HAP) content?

All the products on the list in this brochure have HAP content of less than 1%; most have none.

Why do some products on this list contain VOC?

Some clients have green goals that don't involve lowering VOC, but need to meet other "green" criteria. The list details which additives are free of VOC, APEO and formaldehyde. Per EPA Test Method 24.

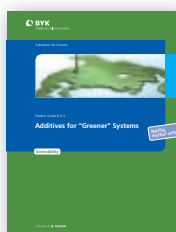
Aren't greener products more expensive?

Only if you just think in terms of dollars per pound. But by improving performance, reducing filler, cutting waste and reducing recalls – solving customer problems – we effectively help customers hold down costs.

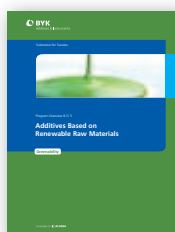
B-1



B-G 2



B-G 5



- **Greenability-Overview B-1:**

We help our customers achieve their "green" goals through our knowledge, service and range of products.

- **Product-Guide B-G 2: Additives for "Greener" Systems**

Summary of BYK additives that can be used for the formulation of "greener" systems.

- **Product-Guide B-G 5: Additives Based on Renewable Raw Materials**

Summary of BYK additives with details regarding the percentage of renewable resources.

Additive Recommendations for “Greener” Systems

Additive	Product group	TSCA	DSL	Non-volatile matter in %	Water content in %	VOC-free	California Proposition 65 Reportable Component
ANTI-TERRA-U 100	Wetting/dispersing	Yes	Yes	99	–	Yes*	–
AQUACER 507	Wax	Yes	Yes	35	60	Yes*	–
AQUACER 515	Wax	Yes	Yes	35	62	Yes*	Ethylene oxide
AQUACER 526	Wax	Yes	Yes	30	65.7	Yes*	–
AQUACER 531	Wax	Yes	Yes	45	55	Yes	Ethylene oxide, 1,4-dioxane
AQUACER 533	Wax	Yes	Yes	40	59	Yes*	–
AQUACER 535	Wax	Yes	Yes	28-32	68-72	Yes*	–
AQUACER 539	Wax	Yes	Yes	35	65	Yes	Ethylene oxide
AQUACER 552	Wax	Yes	Yes	33-37	63-67	Yes	–
AQUACER 560	Wax	Yes	Yes	17-19	81-83	Yes	–
AQUACER 593	Wax	Yes	Yes	30	70	Yes	–
AQUACER 840	Wax	Yes	Yes	30	69	Yes*	Ethylene oxide
AQUACER 1547	Wax	Yes	Yes	35	61	Yes*	–
AQUAMAT 208	Wax	Yes	Yes	35	64	Yes*	Ethylene oxide, 1,4-dioxane
AQUAMAT 270	Wax	Yes	Yes	55	43	Yes*	Benzene, toluene, ethylbenzene, ethylene oxide
AQUATIX 8421	Rheology	Yes	Yes	20	79.5	Yes*	Ethylene oxide
BYK-012	Defoamer	Yes	Yes	96-100	–	Yes*	–
BYK-016	Defoamer	Yes	Yes	96-100	0-1	Yes*	–
BYK-017	Defoamer	Yes	Yes	97.5-100	–	Yes*	–
BYK-018	Defoamer	Yes	Yes	97-100	–	Yes*	Benzene, toluene, ethylbenzene, 1,4-dioxane, acetaldehyde, ethylene oxide, propylene oxide
BYK-021	Defoamer	Yes	Yes	97-100	–	Yes*	1,4-dioxane, acetaldehyde, ethylene oxide, propylene oxide
BYK-022	Defoamer	Yes	Yes	97-100	–	Yes*	Benzene, toluene, ethylbenzene, 1,4-dioxane, acetaldehyde, ethylene oxide, propylene oxide
BYK-023	Defoamer	Yes	Yes	16.5-20.5	81	Yes	Benzene, toluene, ethylbenzene, ethylene oxide, propylene oxide
BYK-024	Defoamer	Yes	Yes	96-100	–	Yes*	–
BYK-028	Defoamer	Yes	Yes	98-100	–	Yes*	–
BYK-031	Defoamer	Yes	Yes	51-55	45-47	Yes*	Benzene, toluene, 1,4-dioxane, acetaldehyde, ethylene oxide
BYK-035	Defoamer	Yes	Yes	97-100	–	Yes*	Benzene, toluene, ethylene oxide
BYK-038	Defoamer	Yes	Yes	96-100	–	Yes*	Benzene, toluene, ethylbenzene, ethylene oxide, propylene oxide
BYK-044	Defoamer	Yes	Yes	54-60	40-46	Yes	1,4-dioxane, acetaldehyde, ethylene oxide
BYK-045	Defoamer	Yes	Yes	7-10	90-92	Yes*	Benzene, toluene, ethylbenzene, ethylene oxide
BYK-085	Defoamer	Yes	Yes	98-100	–	Yes*	–
BYK-093	Defoamer	Yes	No	98-100	–	Yes*	–
BYK-094	Defoamer	Yes	Yes	96-100	–	Yes*	Benzene, toluene, ethylbenzene, N-methylpyrrolidone
BYK-151	Wetting/dispersing	Yes	No	38-42	55-57	Yes*	Benzene, toluene
BYK-155/50	Wetting/dispersing	Yes	Yes	48-52	48-52	Yes	–
BYK-156	Wetting/dispersing	Yes	Yes	49-53	50	Yes	–
BYK-302	Surface	Yes	Yes	95-100	–	Yes*	–
BYK-307	Surface	Yes	Yes	97-100	–	Yes*	–
BYK-322	Surface	Yes	Yes	98-100	–	Yes*	–
BYK-323	Surface	Yes	Yes	96-100	–	Yes*	–

Additive	Product group	TSCA	DSL	Non-volatile matter in %	Water content in %	VOC-free	California Proposition 65 Reportable Component
BYK-331	Surface	Yes	Yes	98-100	–	Yes*	–
BYK-332	Surface	Yes	Yes	97-100	–	Yes*	–
BYK-333	Surface	Yes	Yes	97-100	–	Yes*	–
BYK-348	Surface	Yes	Yes	96-100	–	Yes*	Platinum
BYK-349	Surface	Yes	Yes	94-100	–	Yes*	–
BYK-350	Surface	Yes	Yes	98-100	–	Yes*	–
BYK-356	Surface	Yes	Yes	98-100	–	Yes*	–
BYK-359	Surface	Yes	Yes	99-100	–	Yes*	–
BYK-361N	Surface	Yes	Yes	98-100	0.1	Yes*	–
BYK-368 P	Surface	Yes	Yes	100	–	Yes	–
BYK-377	Surface	Yes	Yes	96-100	–	Yes*	–
BYK-378	Surface	Yes	No	96-100	–	Yes*	–
BYK-425	Rheology	Yes	No	99	–	Yes*	–
BYK-1161	Dispersing medium	Yes	Yes	95-100	–	Yes*	–
BYK-1162	Dispersing medium	Yes	Yes	95-100	–	Yes*	–
BYK-1610	Defoamer	Yes	Yes	15-19	82.5	Yes	Ethylene oxide
BYK-1615	Defoamer	Yes	Yes	10.5-14.5	86	Yes	Ethylene oxide, propylene oxide
BYK-1650	Defoamer	Yes	Yes	26-30	72	Yes	Benzene, toluene, ethylbenzene, ethylene oxide
BYK-1660	Defoamer	Yes	Yes	26-30	72	Yes	–
BYK-1730	Defoamer	Yes	Yes	96-100	–	Yes*	1,4-dioxane, acetaldehyde, benzene, ethylene oxide, propylene oxide
BYK-1770	Defoamer	Yes	Yes	96-100	–	Yes*	–
BYK-1790	Defoamer	Yes	Yes	97.5-100	–	Yes*	–
BYK-3105	Defoamer	Yes	Yes	98-100	–	Yes*	–
BYK-3900 P	Processing	Yes	Yes	1001	–	Yes	–
BYK-3931 P	Processing	Yes	No	100	–	Yes	–
BYK-9076	Wetting/dispersing	Yes	Yes	92-100	–	Yes*	–
BYK-9077	Wetting/dispersing	Yes	No	98-100	–	Yes*	–
BYK-A 535	Defoamer	Yes	Yes	97.5-100	–	Yes*	–
BYK-A 595	Defoamer	Yes	Yes	10-12	87-89	Yes*	Benzene, toluene, ethylbenzene, ethylene oxide, propylene oxide
BYK-P 105	Wetting/dispersing	Yes	Yes	97-100	–	Yes*	–
BYK-P 4100	Processing	Yes	Yes	98-100	0-1	Yes*	–
BYK-P 4101	Processing	Yes	Yes	94-97	3-5	Yes*	–
BYK-P 4102	Processing	Yes	Yes	100	–	Yes	–
BYK-P 4200	Stripping agent	Yes	Yes	34-37	63-65	Yes*	–
BYK-P 9051	Processing	Yes	No	99-100	–	Yes*	–
BYK-P 9060	Processing	Yes	No	96-100	–	Yes*	–
BYK-P 9065	Processing	Yes	No	97-100	–	Yes*	–
BYK-P 9080	Processing	Yes	No	98-100	–	Yes*	–
BYK-R 606	Rheology	Yes	Yes	96-100	–	Yes*	–
BYK-S 732	Defoamer	Yes	Yes	98-100	–	Yes*	–
BYK-S 781	Wax	Yes	Yes	98-100	–	Yes*	–
BYK-S 782	Wax	Yes	Yes	98-100	–	Yes*	–

* Volatile Organic Carbon (VOC) as defined in the Clean Air Act, 40 CFR 51.100(s). Per EPA Method 24 Determination of VOC Content of Coatings/Inks, VOC contribution to the coating would be negligible. Refer to product MSDS for test method.

Additive Recommendations for “Greener” Systems

Additive	Product group	TSCA	DSL	Non-volatile matter in %	Water content in %	VOC-free	California Proposition 65 Reportable Component
BYK-SILCLEAN 3710	Surface	Yes	No	96-100	–	Yes*	–
BYK-SYNERGIST 2100	Wetting/dispersing	Yes	No	100	–	Yes	–
BYK-SYNERGIST 2105	Wetting/dispersing	Yes	Yes	100	–	Yes	–
BYK-UV 3500	Surface	Yes	No	96-100	–	Yes*	–
BYK-UV 3510	Surface	Yes	Yes	96-100	–	Yes*	Ethylene oxide
BYK-UV 5330	Surface	Yes	No	96-100	–	Yes*	–
BYK-W 9010	Wetting/dispersing	Yes	Yes	95	0-1	Yes*	–
BYK-W 9011	Wetting/dispersing	Yes	No	97	–	Yes*	–
BYKETOL-PC	Surface	Yes	No	90	10	Yes	–
BYKOPLAST-1000	Wetting/dispersing	Yes	Yes	97-100	–	Yes*	–
CERAFLOUR 913	Wax	Yes	Yes	100	–	Yes	–
CERAFLOUR 914	Wax	Yes	Yes	100	–	Yes	–
CERAFLOUR 915	Wax	Yes	Yes	100	–	Yes	–
CERAFLOUR 916	Wax	Yes	Yes	100	–	Yes	–
CERAFLOUR 928	Wax	Yes	Yes	100	–	Yes	–
CERAFLOUR 940	Wax	Yes	Yes	100	–	Yes	–
CERAFLOUR 950	Wax	Yes	Yes	100	–	Yes	–
CERAFLOUR 960	Wax	Yes	Yes	100	–	Yes	–
CERAFLOUR 961	Wax	Yes	Yes	100	–	Yes	–
CERAFLOUR 962	Wax	Yes	Yes	100	–	Yes	–
CERAFLOUR 965	Wax	Yes	Yes	100	–	Yes	–
CERAFLOUR 967	Wax	Yes	Yes	98-100	0-1	Yes*	–
CERAFLOUR 968	Wax	Yes	Yes	100	–	Yes	–
CERAFLOUR 969	Wax	Yes	Yes	100	–	Yes	–
CERAFLOUR 970	Wax	Yes	Yes	100	–	Yes	–
CERAFLOUR 981	Wax	Yes	Yes	100	–	Yes	–
CERAFLOUR 988	Wax	Yes	Yes	100	–	Yes	–
CERAFLOUR 990	Wax	Yes	Yes	100	–	Yes	–
CERAFLOUR 991	Wax	Yes	Yes	100	–	Yes	–
CERAFLOUR 993	Wax	Yes	Yes	100	–	Yes	–
CERAFLOUR 994	Wax	Yes	Yes	100	–	Yes	–
CERAFLOUR 995	Wax	Yes	Yes	100	–	Yes	–
CERAFLOUR 996	Wax	Yes	Yes	100	–	Yes	–
CERAFLOUR 997	Wax	Yes	Yes	100	–	Yes	–
CERAFLOUR 998	Wax	Yes	Yes	100	–	Yes	–
DISPERBYK	Wetting/dispersing	Yes	Yes	48-52	50	Yes	–
DISPERBYK-102	Wetting/dispersing	Yes	Yes	99	–	Yes*	–
DISPERBYK-108	Wetting/dispersing	Yes	Yes	97-100	–	Yes*	–
DISPERBYK-109	Wetting/dispersing	Yes	No	99.5-100	–	Yes*	–
DISPERBYK-111	Wetting/dispersing	Yes	Yes	95	0-1	Yes*	–

Additive	Product group	TSCA	DSL	Non-volatile matter in %	Water content in %	VOC-free	California Proposition 65 Reportable Component
DISPERBYK-116	Wetting/dispersing	Yes	Yes	97-100	–	Yes*	–
DISPERBYK-145	Wetting/dispersing	Yes	Yes	95-100	–	Yes*	–
DISPERBYK-185	Wetting/dispersing	Yes	No	90-100	–	Yes*	Ethylene oxide, acetaldehyde, 1,4-dioxane, ethylene glycol monomethyl ether
DISPERBYK-190	Wetting/dispersing	Yes	Yes	38-42	60	Yes	–
DISPERBYK-191	Wetting/dispersing	Yes	Yes	96-100	–	Yes*	Ethylene oxide, acetaldehyde, 1,4-dioxane, ethylene glycol monomethyl ether
DISPERBYK-192	Wetting/dispersing	Yes	Yes	97-100	0.02	Yes*	Toluene
DISPERBYK-2015	Wetting/dispersing	Yes	No	40	60	Yes	–
DISPERBYK-2090	Wetting/dispersing	Yes	No	78-82	18-22	Yes	–
DISPERBYK-2091	Wetting/dispersing	Yes	No	53-57	43-47	Yes	–
DISPERBYK-2095	Wetting/dispersing	Yes	Yes	98-100	0-1	Yes*	Toluene
DISPERBYK-2096	Wetting/dispersing	Yes	Yes	96-100	–	Yes*	–
DISPERBYK-2155	Wetting/dispersing	Yes	No	99	–	Yes*	–
DISPERPLAST-1010	Wetting/dispersing	Yes	No	98-100	0-1	Yes*	–
DISPERPLAST-1018	Wetting/dispersing	Yes	Yes	99-100	–	Yes*	–
DISPERPLAST-1142	Wetting/dispersing	Yes	Yes	96-100	–	Yes*	–
DISPERPLAST-1148	Wetting/dispersing	Yes	Yes	98-100	–	Yes*	–
DISPERPLAST-1150	Wetting/dispersing	Yes	Yes	99-100	–	Yes*	–
MINERPOL 221	Wax	Yes	Yes	98-100	–	Yes*	–
NANOBYK-3600	Surface	Yes	Yes	55	45	Yes	Toluene
NANOBYK-3810	UV absorber	Yes	Yes	77-79.5	20.5-23	Yes	–
NANOBYK-3820	UV absorber	Yes	Yes	55	45	Yes	–
NANOBYK-3840	UV absorber	Yes	Yes	44	55	Yes*	–
NANOBYK-3860	UV absorber	Yes	No	55	43	Yes*	–
VISCOBYK-5025	Viscosity depressant	Yes	Yes	95-100	0-1	Yes*	–
VISCOBYK-5100	Viscosity depressant	Yes	No	94-100	–	Yes*	–
VISCOBYK-5120	Viscosity depressant	Yes	Yes	90-100	–	Yes*	–
VISCOBYK-5125	Viscosity depressant	Yes	Yes	92-95	–	Yes*	–

* Volatile Organic Carbon (VOC) as defined in the Clean Air Act, 40 CFR 51.100(s). Per EPA Method 24 Determination of VOC Content of Coatings/Inks, VOC contribution to the coating would be negligible. Refer to product MSDS for test method.

Products and Applications

BYK Additives

Product Range Additives:

- Additives to improve surface slip, leveling and substrate wetting
- Adhesion promoters
- Defoamers and air release agents
- Foam stabilizers
- Processing additives
- Rheological additives
- UV-absorbers
- Viscosity depressants
- Waxes
- Wetting and dispersing additives for pigments and extenders

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This issue replaces all previous versions – printed in the USA.