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EDC 0215e

Pigments and additives for powder coatings

Product selection guide

BASF
We create chemistry

Amazing colors and effects – unique, sustainable performance

To give your powder coatings the performance you demand, BASF offers a broad range of raw materials. Our pigments and additives not only enable a variety of colors and effects – they also enhance resistance to corrosion, scratching, or chemical impacts. With our Sustainable Solution Steering method, our pigments have furthermore been systematically evaluated under sustainability criteria. This allows us to assess the sustainability performance of each of our products in its specific application. We create chemistry that makes performance love sustainable solutions.

For industrial coatings, we identified resource efficiency, durability, and improved health and safety to be among the key drivers for more sustainable formulations. Pigments and additives that contribute substantially to these drivers along the value chain have been classified as Sustainability Accelerators.

The detailed analysis of our portfolio and externally assured methodology to assign our products to different categories according to their contribution to sustainability allow us to offer you the solutions you need.

Let's take a joint look at your specific requirements and find out how we can further improve both your, as well as our, sustainability profile!

Learn more about BASF's commitment to driving sustainable solutions at: www.basf.com/sustainability

Yellow

Product	Sustainability Accelerator*	Chemistry	Color index	Density [g/cm³]	Temperature stability			Ease of dispersion	Fastness to weathering (2,000 h Xenotest®[1])						Hiding power	Tinting strength	Amine/ amide resistance
									Inorganic		Organic		Hybrids				
					20 min. 180 °C ΔE	10 min. 210 °C ΔE	10 min. 240 °C ΔE		Full shade	1:1	Full shade	1:10	Full shade	1:3			
Recommended products for powder coatings																	
Paliotol® Yellow L 0962 HD	-	Quinophthalone	P.Y. 138	2.02	< 2	< 2	2–4	Very high	-	-	4–5	3	-	-	Low	Fair	Fair
Sicotan® Yellow L 1010	-	Ni/Sb/Ti oxide	P.Y. 53	4.50	< 2	< 2	< 2	High	5	5	-	-	-	-	Fair	Low	High
Cromophtal® Yellow L 1061 HD	-	Benzimidazolone	P.Y. 151	1.54	< 2	< 2	2–4	Very high	-	-	4–5 d	3	-	-	Fair	Fair	Low
Cromophtal® Yellow L 1084 HD	-	Benzimidazolone	P.Y. 154	1.59	< 2	< 2	2–4	High	-	-	4–5	4	-	-	Low	High	Fair
Sicopal® Yellow L 1120	■	Bismuth vanadate	P.Y. 184	6.50	< 2	< 2	2–4	Very high	5	5	-	-	-	-	High	Low	High
Paliotan® Yellow L 1145	-	Hybrid	-	3.90	< 2	2–4	4–6	Very high	-	-	-	-	4–5	4	High	Fair	Fair
Sicopal® Yellow L 1600	■	Bismuth vanadate	P.Y. 184	5.50	< 2	2–4	4–6	Very high	5	5	-	-	-	-	High	Low	High
Paliotan® Yellow L 1645	-	Hybrid	-	5.70	< 2	2–4	4–6	Very high	-	-	-	-	4–5	4	High	Fair	Low
Paliotan® Yellow L 1945	-	Hybrid	-	5.00	< 2	< 2	4–6	Very high	-	-	-	-	5	5	High	Fair	Low
Paliotan® Yellow L 2045	-	Hybrid	-	3.60	< 2	< 2	4–6	Very high	-	-	-	-	4–5	4	High	Fair	Low
Irgazin® Yellow L 2060	-	Isoindolinone	P.Y. 110	1.78	< 2	< 2	< 2	Very high	-	-	4–5 d	4–5	-	-	Low	High	High
Sicotan® Yellow L 2110	-	Cr/Sb/Ti oxide	P.Br. 24	4.30	< 2	< 2	< 2	High	5	5	-	-	-	-	High	Low	High
Paliotol® Yellow L 2146 HD	-	Isoindoline	P.Y. 139	1.72	< 2	< 2	2–4	Very high	-	-	4–5	3–4	-	-	Fair	Fair	Low

Orange

Product	Sustainability Accelerator*	Chemistry	Color index	Density [g/cm³]	Temperature stability			Ease of dispersion	Fastness to weathering (2,000 h Xenotest®[1])						Hiding power	Tinting strength	Amine/ amide resistance
									Inorganic		Organic		Hybrids				
					20 min. 180 °C ΔE	10 min. 210 °C ΔE	10 min. 240 °C ΔE		Full shade	1:1	Full shade	1:10	Full shade	1:3			
Recommended products for powder coatings																	
Sicopal® Orange L 2430	-	Sn/Zn/Ti oxide	P.O. 82	4.90	< 2	< 2	< 2	Very high	4–5	4–5	-	-	-	-	High	Low	High
Paliotol® Orange L 2930 HD	-	Pyrazolo-quinazolone	P.O. 67	1.77	4	4–6	> 6	Very high	-	-	4	2	-	-	High	Fair	Low
Irgazin® Orange L 2985 HD	■	Diketo-pyrrolo-pyrrole	P.O. 73	1.21	< 2	< 2	2–4	High	-	-	4–5	4	-	-	Low	High	Low

For more technical information, please consult the respective technical data sheet.
* Product that has been evaluated with BASF's Sustainable Solution Steering method and contributes substantially to sustainability in the value chain.

Red

Product	Sustainability Accelerator*	Chemistry	Color index	Density [g/cm³]	Temperature stability			Ease of dispersion	Fastness to weathering (2,000 h Xenotest®[1])						Hiding power	Tinting strength	Amine/ amide resistance
									Inorganic		Organic		Hybrids				
					20 min. 180 °C ΔE	10 min. 210 °C ΔE	10 min. 240 °C ΔE		Full shade	1:1	Full shade	1:10	Full shade	1:3			
Recommended products for powder coatings																	
Irgazin® Scarlet L 3553 HD	■	Diketo-pyrrolo-pyrrole	P.R. 255	1.41	< 2	< 2	2–4	High	-	-	4–5	4	-	-	High	High	Fair
Irgazin® Red L 3670 HD	-	Diketo-pyrrolo-pyrrole	P.R. 254	1.65	< 2	2–4	2–4	Very high	-	-	4–5	3–4	-	-	Low	High	Fair
Cinquasia® Red L 4100	-	Quinacridone	P.V. 19	1.46	< 2	< 2	< 2	High	-	-	4–5	4–5	-	-	Fair	Fair	Fair

Violet and Bordeaux

Product	Sustainability Accelerator*	Chemistry	Color index	Density [g/cm³]	Temperature stability			Ease of dispersion	Fastness to weathering (2,000 h Xenotest®[1])						Hiding power	Tinting strength	Amine/ amide resistance
									Inorganic		Organic		Hybrids				
					20 min. 180 °C ΔE	10 min. 210 °C ΔE	10 min. 240 °C ΔE		Full shade	1:1	Full shade	1:10	Full shade	1:3			
Recommended products for powder coatings																	
Cinquasia® Magenta L 4540	-	Quinacridone	-	1.57	< 2	< 2	< 2	High	-	-	4–5	4–5	-	-	Low	Fair	High
Cinquasia® Violet L 5120	-	Quinacridone	P.V. 19	1.47	< 2	< 2	< 2	Very high	-	-	4–5	4–5	-	-	Low	High	High

For more technical information, please consult the respective technical data sheet.
* Product that has been evaluated with BASF's Sustainable Solution Steering method and contributes substantially to sustainability in the value chain.

Blue and Green

Product	Sustainability Accelerator*	Chemistry	Color index	Density [g/cm³]	Temperature stability			Ease of dispersion	Fastness to weathering (2,000 h Xenotest®1)						Hiding power	Tinting strength	Amine/ amide resistance
									Inorganic		Organic		Hybrids				
					20 min. 180 °C ΔE	10 min. 210 °C ΔE	10 min. 240 °C ΔE		Full shade	1:1	Full shade	1:10	Full shade	1:3			
Recommended products for powder coatings																	
Heliogen® Blue L 6700 F	■	ε-Phthalocyanine	P.B. 15:6	1.68	< 2	< 2	< 2	High	-	-	4–5	4–5	-	-	Low	High	High
Heliogen® Blue K 6907	-	α-Phthalocyanine	P.B. 15:1	1.60	< 2	< 2	< 2	Very high	-	-	4–5	4–5	-	-	Low	High	High
Heliogen® Blue K 7090	-	β-Phthalocyanine	P.B. 15:3	1.60	< 2	< 2	< 2	Very high	-	-	4–5	4–5	-	-	Low	High	High
Heliogen® Green L 8731	■	Phthalocyanine	P.G. 7	2.14	< 2	< 2	< 2	Very high	-	-	4–5	4–5	-	-	Low	High	High
Heliogen® Green L 9361	-	Phthalocyanine	P.G. 36	2.94	< 2	< 2	< 2	Very high	-	-	4–5	4–5	-	-	Low	High	High

Black

Product	Sustainability Accelerator*	Chemistry	Color index	Density [g/cm³]	Temperature stability			Ease of dispersion	Fastness to weathering (2,000 h Xenotest®1)						Hiding power	Tinting strength	Amine/ amide resistance
									Inorganic		Organic		Hybrids				
					20 min. 180 °C ΔE	10 min. 210 °C ΔE	10 min. 240 °C ΔE		Full shade	1:1	Full shade	1:10	Full shade	1:3			
Recommended products for powder coatings																	
Paliogen® Black L 0086	■	Perylene	P.Bl. 32	1.50	< 2	2–4	> 6	Fair	-	-	4–5	3	-	-	Fair	High	High
Sicopal® Black L 0095	■	Iron chrome oxide	P.Br. 29	5.10	< 2	< 2	< 2	High	5	5	-	-	-	-	High	Low	High

For more technical information, please consult the respective technical data sheet.
* Product that has been evaluated with BASF's Sustainable Solution Steering method and contributes substantially to sustainability in the value chain.

Effect pigments for exterior application

Product	Sustainability Accelerator*	Based on	Particle size** [µm]
Transparent effects			
Magnapearl® Exterior CFS 3103	■	Natural mica	2–10
Mearlin® Exterior CFS Fine Pearl 1303V	■	Natural mica	4–32
Mearlin® Exterior Fine Pearl 139V	■	Natural mica	4–32
Mearlin® Exterior Bright Silver 139Z	■	Natural mica	6–48
Mearlin® Exterior CFS Bright Silver 1303Z	■	Natural mica	10–48
Lumina® Exterior Pearl Radiance 1303D	■	Natural mica	10–48
Mearlin® Exterior Bright White 139X	■	Natural mica	6–48
Mearlin® Exterior Sparkle 139P	■	Natural mica	10–110
Mearlin® Exterior Star Pearl 139S	■	Natural mica	13–120
Mearlin® Exterior CFS Micro Gold 2303M	■	Natural mica	2–10
Mearlin® Exterior CFS Fine Gold 2303V	■	Natural mica	4–32
Lumina® Exterior Gold 2303D	■	Natural mica	10–48
Mearlin® Exterior CFS Super Orange 3303Z	■	Natural mica	6–48
Mearlin® Exterior CFS Micro Red 4303M	■	Natural mica	2–24
Mearlin® Exterior CFS Fine Red 4303V	■	Natural mica	4–32
Lumina® Exterior Red 4303D	■	Natural mica	10–48
Mearlin® Exterior CFS Micro Violet 5303M	■	Natural mica	2–24
Mearlin® Exterior CFS Fine Violet 5303V	■	Natural mica	4–32
Mearlin® Exterior CFS Micro Blue 6303M	■	Natural mica	4–32
Lumina® Exterior Red Blue 6303D	■	Natural mica	10–48
Lumina® Exterior Aqua Blue 7303D	■	Natural mica	10–48
Lumina® Exterior Turquoise T 303D	■	Natural mica	10–48
Mearlin® Exterior CFS Micro Green 8303M	■	Natural mica	2–24
Lumina® Exterior CFS Green 8303D	■	Natural mica	10–48
Lumina® Royal Exterior Blue 6803H	■	Natural mica	6–43
Lumina® Royal Exterior Aqua 7803H	■	Natural mica	6–43
Lumina® Royal Exterior Indigo 5803H	■	Natural mica	6–43
Lumina® Royal Exterior Magenta 4803H	■	Natural mica	6–43
Glacier™ Exterior Frost White S1303D	-	Synthetic mica	10–48
Glacier™ Exterior Sparkle White SP 1303S	-	Synthetic mica	15–150

Product	Sustainability Accelerator*	Based on	Particle size** [µm]
Semi-opaque effects			
Mearlin® Exterior CFS Fine Brass 2323V	■	Natural mica	4–32
Mearlin® Exterior CFS Super Brass 2323Z	■	Natural mica	6–48
Lumina® Exterior Brass 2323D	■	Natural mica	10–48
Mearlin® Exterior CFS Super Bright Orange 3333Z	■	Natural mica	6–48
Mearlin® Exterior CFS Fine Bronze 2503V	■	Natural mica	4–32
Mearlin® Exterior CFS Super Bronze 2503Z	■	Natural mica	6–48
Mearlin® Exterior CFS Micro Copper 3503M	■	Natural mica	2–24
Mearlin® Exterior CFS Fine Copper 3503V	■	Natural mica	4–32
Mearlin® Exterior CFS Super Copper 3503Z	■	Natural mica	6–48
Lumina® Exterior Copper 3503D	■	Natural mica	10–48
Lumina® Royal Exterior Copper 3903H	■	Natural mica	6–43
Mearlin® Exterior CFS Micro Russet 4503M	■	Natural mica	2–24
Mearlin® Exterior CFS Fine Russet 4503V	■	Natural mica	4–32
Mearlin® Exterior CFS Super Russet 4503Z	■	Natural mica	4–32
Lumina® Exterior Russet 4503D	■	Natural mica	10–48
Mearlin® Exterior CFS Blue Russet 6503Z	■	Natural mica	6–48
Mearlin® Exterior Blue Green 7289Z	■	Natural mica	6–48

For more technical information, please consult the respective technical data sheet.
* Product that has been evaluated with BASF's Sustainable Solution Steering method and contributes substantially to sustainability in the value chain.
** Measured with Mastersizer 3000, Malvern Instruments Ltd.

Effect pigments for interior applications

Product	Sustainability Accelerator*	Based on	Particle size** [µm]
Transparent effects			
Magnapearl® 3000	■	Natural mica	2–10
Magnapearl® 3100	■	Natural mica	2–10
Magnapearl® 2000	■	Natural mica	5–25
Magnapearl® 2100	■	Natural mica	5–25
Magnapearl® 1000	■	Natural mica	6–48
Magnapearl® 1100	■	Natural mica	6–48
Magnapearl® 5000	■	Natural mica	15–95
Magnapearl® 4000	■	Natural mica	15–150
Mearlin® Micro Gold 9260M	■	Natural mica	2–10
Lumina® Gold 9Y30D	■	Natural mica	10–48
Mearlin® Sparkle Gold 9220J	■	Natural mica	10–130
Mearlin® Super Orange 9330Z	■	Natural mica	6–48
Mearlin® Sparkle Orange 9320J	■	Natural mica	10–130
Lumina® Red 9R30D	■	Natural mica	10–48
Mearlin® Sparkle Red 9420J	■	Natural mica	10–130
Mearlin® Super Violet 9530Z	■	Natural mica	6–48
Mearlin® Micro Blue 9630M	■	Natural mica	2–10
Lumina® Red Blue 9830D	■	Natural mica	10–48
Lumina® Aqua Blue 9A30D	■	Natural mica	10–48
Mearlin® Sparkle Blue 9620J	■	Natural mica	10–130
Lumina® Turquoise 9T30D	■	Natural mica	10–48
Mearlin® Micro Green 9830M	■	Natural mica	2–10
Lumina® Green 9G30D	■	Natural mica	10–48
Mearlin® Sparkle Green 9820J	■	Natural mica	10–130
Firemist® Pearl 9G130L	-	Glass flakes	52–188
Firemist® Gold 9G230L	-	Glass flakes	52–188
Firemist® Red 9G430L	-	Glass flakes	52–188
Firemist® Violet 9G530L	-	Glass flakes	52–188
Firemist® Blue 9G630L	-	Glass flakes	52–188
Firemist® Turquoise 9G730L	-	Glass flakes	52–188

Product	Sustainability Accelerator*	Based on	Particle size** [µm]
Transparent effects			
Firemist® Green 9G830L	-	Glass flakes	52–188
Firemist® Green 9G830L	-	Glass flakes	25–125
Firemist® Green 9G830L	-	Glass flakes	25–125
Lumina® Royal Blue 9680H	■	Natural mica	6–48
Lumina® Royal Aqua 9780H	■	Natural mica	6–48
Lumina® Royal Indigo 9580H	■	Natural mica	6–48
Lumina® Royal Magenta 9480H	■	Natural mica	6–48
Glacier™ Frost White 9S130D	-	Synthetic mica	10–48
Glacier™ Sparkle White 9SP130S	-	Synthetic mica	15–150
Semi-opaque effects			
Mearlin® Micro Brass 9262M	■	Natural mica	2–10
Mearlin® Super Brass 9232Z	■	Natural mica	6–48
Lumina® Brass 9232D	■	Natural mica	10–48
Mearlin® Sparkle Brass 9222J	■	Natural mica	10–130
Mearlin® Micro Bronze 9250M	■	Natural mica	2–10
Mearlin® Super Bronze 9250Z	■	Natural mica	6–48
Mearlin® Sparkle Bronze 9250J	■	Natural mica	10–130
Mearlin® Micro Copper 9350M	■	Natural mica	2–10
Mearlin® Super Copper 9350Z	■	Natural mica	6–48
Lumina® Copper 9350D	■	Natural mica	10–48
Lumina® Royal Copper 9390H	■	Natural mica	10–48
Mearlin® Sparkle Copper 9350J	■	Natural mica	10–130
Mearlin® Micro Russet 9450M	■	Natural mica	2–10
Mearlin® Super Russet 9450Z	■	Natural mica	10–48
Mearlin® Super Blue Russet 9650Z	■	Natural mica	6–48
Mearlin® Sparkle Russet 9650J	■	Natural mica	10–130

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** Measured with Mastersizer 3000, Malvern Instruments Ltd.

Additives

Product	Sustainability Accelerator*	Chemistry	Mw [g/mol]	Mp [°C]	Application/remarks
Hindered amine light stabilizers (HALS)					
Tinuvin® 622 SF	-	Oligomeric N-alkyl HALS	3,100–4,000	57–61	Oligomeric, non-basic HALS with low volatility and migration tendency, antioxidant properties
Tinuvin® 111 FDL	-				HALS blend with triboelectric charging activity
Tinuvin® 152	■	N-OR HALS	757	72–76	Non-migrating, reactive low basic HALS for coatings over plastic substrates (e.g., polycarbonate, ABS substrates). Reactive primary hydroxyl group
Tinuvin® 770 DF	-	N-H HALS	480	81–85	Basic HALS
UV absorbers (UVA)					
Tinuvin® 900	-	BTZ	448	138–142	Multipurpose UVA for medium-quality application
Tinuvin® 928	■	BTZ	442	109–113	UVA for medium to high durability requirements
Tinuvin® Carboprotect®	-	BTZ	560	132–136	Very red-shifted UVA for protection of aromatic epoxy systems, especially recommended for carbon or glass fiber reinforced composites; allows < 1% transmittance up to 420 nm
Tinuvin® 405	■	HPT	584	73–77	UVA for high durability requirements, excellent photo and thermal permanence, no interaction with amines or any metal catalyst, alkali resistant, pronounced absorbance in UV-B range; further improved spectral coverage in combination with Tinuvin® 479
Tinuvin® 479	■	HPT	678	39–43	UVA for highest durability requirements; best photo and thermal permanence, no interaction with amines or any metal catalyst, alkali resistant, specifically suited for thin film applications, highest extinction
Tinuvin® 460	■	HPT	630	97–101	Red shifted UVA with extremely high extinction coefficient, allows <1% transmittance up to 370 nm; high photo and thermal stability
Photoinitiators					
Irgacure® 819	■	Bis-(2-, 4-, 6-trimethyl-benzoyl-) phenylphosphine oxide	418.5	127–133	Irgacure® 819 exhibits at low concentrations an outstanding curing performance in highly opaque white and colored coatings and affords minimum yellowing after exposure to sufficient amounts of UV radiation. The outstanding absorption properties allow the curing of thick sections. Due to its photo sensitivity at longer wavelengths it can easily be used in combinations with UV absorbers, e.g., Tinuvin® 400. For improved color and cost performance a combination 3:1 parts with Irgacure® 2959 is recommended.
Irgacure® 2959	■	1-[4-(2-Hydroxy ethoxy)-phenyl]-2-hydroxy-2-methyl-1-propane-1-one	224.3	86.5–89.5	Irgacure® 2959 is a highly efficient non-yellowing radical photoinitiator for acrylate or unsaturated polyester resins. It is recommended for clear coats and applications where low odor is required. The active hydroxyl group can be reacted with suitable crosslinkers.

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Product	Sustainability Accelerator*	Chemistry	Mw [g/mol]	Mp [°C]	Application/remarks
Antioxidants (AO)					
Hindered phenolic (primary AO) deactivate free radicals formed during thermal oxidation					
Irganox® 1010	-	Phenol	1,178	110–125	Multipurpose AO for a broad temperature range, mostly used to increase the long-term thermal stability; not to be used for direct gas-fired ovens
Irganox® 1076	-	Phenol	531	50–55	Multipurpose AO with low melting range, excellent compatibility and low color impact, for clear coats and low temperature curing systems, e.g., for GMA acrylics
Irganox® 245	-	Phenol	587	76–79	Reduced sterically hindered AO for fast activation, lower temperature, or for combination with fully sterically hindered AO
Phosphite (secondary AO) decompose peroxides formed during the autooxidation process, extend the performance of primary AO (synergistic effect)					
Irgafos® 126	-	Phosphite	-	-	AO for heat stabilization during synthesis, processing, mixing, extrusion, curing, and for coatings that are baked or cured at relatively high temperatures; prevents yellowing in direct gas-fired ovens
Irgafos® 168	-	Phosphite	-	-	AO for heat stabilization during synthesis, processing, mixing, extrusion, curing, and for coatings that are baked or cured at relatively high temperatures; prevents yellowing in direct gas-fired ovens
Antioxidant (AO) blends					
Irganox® B900	-	Phenol/phosphite	-	59–61	Synergistic blend of primary and secondary AO
Optical brightener (OB)					
Tinopal® OB CO	-	Benzoxazole	431	196–203	OB for white, pastel-tone paints and clear coats
Leveling agent					
Efka® FL 3930	-	Acrylate copolymer on silica	-	-	Silicon-free flow and leveling agent