



Pigments for spin dyeing of polypropylene fibers

Polypropylene (80 dtex/10 f)	Application			Application															
	Indoor textiles	Outdoor textiles	Automotive	Light		Washing		Shampoo		Steam pleating		Rubbing							
				Colorant [%]	Xenon	Carpet (200 h)	Change	Polypropylene	Wool	Change	Polypropylene	Polyamide 66	Change	Polypropylene	Wool	Dry	After steam-set	Wet	Severe bleach
Paliotol® Yellow K 0961 4) C.I. Pigment Yellow 138 Quinophthalone	●	⊗	⊗	0.10	7-8	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Cromophtal® Yellow K 1210 FP C.I. Pigment Yellow 93 Azo condensation	●	⊗	●	0.10	7-8	4-5	-	-	-	-	-	-	-	-	-	-	-	-	-
Cromophtal® Yellow 2GF C.I. Pigment Yellow 155 Disazo	●	⊗	○	0.10	6	2-3	-	-	-	-	-	-	-	-	-	-	-	-	-
Cromophtal® Yellow K 1410 C.I. Pigment Yellow 180 Benzimidazolone	●	⊗	⊗	0.10	7	4-5	-	-	-	-	-	-	-	-	-	-	-	-	-
Cromophtal® Yellow K 1500 FP C.I. Pigment Yellow 95 Azo condensation	●	⊗	○	0.10	3-4	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Paliotol® Yellow K 1700 C.I. Pigment Yellow 183 Monoazo salt	●	⊗	⊗	0.10	7-8	4-5	-	-	-	-	-	-	-	-	-	-	-	-	-
Paliotol® Yellow K 1760 FP C.I. Pigment Yellow 191:1 Monoazo salt	●	⊗	⊗	0.10	3-4	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Paliotol® Yellow K 1800 C.I. Pigment Yellow 183 Monoazo salt	●	⊗	⊗	0.10	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Paliotol® Yellow K 1841 FP C.I. Pigment Yellow 139 Isoindoline	●	⊗	○	0.10	3-4	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Irgazin® Yellow K 2080 C.I. Pigment Yellow 110 Isoindolinone	●	●	●	0.10	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Sicotrans® Red K 2915 C.I. Pigment Red 101 Iron oxide	●	●	●	0.10	7-8	4-5	-	-	-	-	-	-	-	-	-	-	-	-	-
Cromophtal® Scarlet K 3540 C.I. Pigment Red 166 Azo condensation	●	⊗	●	0.10	7-8	4	-	-	-	-	-	-	-	-	-	-	-	-	-

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Paliogen® Red K 3580 C.I. Pigment Red 149 Perylene	●	●	●	0.10	5	4-5	-	-	-	-	-	-	-	-	-	-	-	-	-
Irgazin® Red K 3840 LW C.I. Pigment Red 254 Diketo-pyrrolo-pyrrole	●	⊗	⊗	0.10	7-8	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Cromophtal® Red K 3890 FP C.I. Pigment Red 144 Azo condensation	●	⊗	○	0.10	7-8	5	-	-	-	-	-	-	-	-	-	-	-	-	-
Cromophtal® Red K 3900 FP C.I. Pigment Red 214 Azo condensation	●	⊗	●	0.10	7-8	5	-	-	-	-	-	-	-	-	-	-	-	-	-
Irgalite® Red K 4060 FP C.I. C.I. Pigment Red 48:3 BONA (Sr)	●	⊗	⊗	0.10	5	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Irgazin® Rubine K 4080 Diketo-pyrrolo-pyrrole	●	⊗	●	0.10	7	3-4	-	-	-	-	-	-	-	-	-	-	-	-	-
Irgalite® Red K 4170 FP C.I. Pigment Red 48:2 BONA (Ca)	●	⊗	⊗	0.10	4	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Irgalite® Rubine K 4270 FP C.I. Pigment Red 57:1 BONA (Ca)	●	⊗	⊗	0.10	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Irgalite® Rubine K 4275 FP C.I. Pigment Red 57:1 BONA (Ca)	●	⊗	⊗	0.10	4	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Cinquasia® Pink K 4430 FP C.I. Pigment Red 122 Quinacridone	●	○	○	0.10	7-8	4-5	-	-	-	-	-	-	-	-	-	-	-	-	-
Cinquasia® Magenta K 4535 FP C.I. Pigment Red 202 Quinacridone	●	●	●	0.10	7	4-5	-	-	-	-	-	-	-	-	-	-	-	-	-
Cinquasia® Violet K 5350 FP Pigment Violet 19 Quinacridone	●	●	○	0.10	7	4-5	-	-	-	-	-	-	-	-	-	-	-	-	-

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Cromophtal® Violet K 5800 C.I. Pigment Violet 23 Dioxazine	●	○	○	0.10	6-7	3-4	-	-	-	-	-	-	-	-	-	-	-	-	-
Heliogen® Blue K 6907 C.I. Pigment Blue 15:1 Cu-phthalocyanine (α)	●	●	●	0.10	7-8	4-5	-	-	-	-	-	-	-	-	-	-	-	-	-
Heliogen® Blue K 6912 FP C.I. Pigment Blue 15:1 Cu-phthalocyanine (α)	●	●	●	0.10	7	4-5	-	-	-	-	-	-	-	-	-	-	-	-	-
Heliogen® Blue K 6916 C.I. Pigment Blue 15:1 Cu-phthalocyanine (α non-halogenated)	●	●	●	0.10	7-8	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Heliogen® Blue K 7090 FP C.I. Pigment Blue 15:3 Cu-phthalocyanine (β)	●	●	●	0.10	7-8	5	-	-	-	-	-	-	-	-	-	-	-	-	-
Heliogen® Green K 8730 FP C.I. Pigment Green 7 Cu-phthalocyanine	●	●	●	0.10	7-8	4-5	-	-	-	-	-	-	-	-	-	-	-	-	-

The assessment of the suitability of BASF products is based on the technical data prepared in our BASF technical center and considers BASF market expertise and application know-how.

For further information on other applications or colorants, please contact your local BASF representative.

Description of the symbols:

- Recommended
- Technically suitable, as assessed in our BASF technical center and widely used in practice often as industry workhorse. These products are expected to offer excellent value in use and performance in the recommended applications.
- Limited suitability
- Technically suitable, as assessed in our BASF technical center and regularly used in practice in mentioned applications.

Some restrictions may apply according to processing and/or end-use conditions. In some cases, alternative BASF products, offering better value in use, may be available.

⊗ Not recommended

Product is in principle technically unsuitable for use in mentioned applications as assessed in our BASF technical center. Alternative BASF products offering better value and performance shall be considered.

Europe, Africa, West Asia

BASF SE

Pigments
E-EDC/FK – J550
67056 Ludwigshafen
Germany
Phone +49 621 60-58262

North America

BASF Corporation

24710 West Eleven Mile Road
South Field, MI 48033
USA
Phone +1 800-962-7829

Asia

BASF East Asia

Regional Headquarters Limited
Dispersions and Pigments
45/F Jardine House
No. 1 Connaught Place
Hong Kong
Phone +852 2731-0111

South America

BASF S. A.

Av. das Nacoes Unidas
14.171, 17o. andar
Morumbi
04794-000 Sao Paulo
Brazil
Phone +55 11 2039-3166

Pigments for spin dyeing of polypropylene fibers

Products

BASF offers the fiber-producing industry a wide range of specially selected pigments for mass-coloration or spin dyeing of polypropylene fibers and polyethylene tapes.

This pattern book presents selected pigments from the following ranges:

- High-performance organic pigments:
Cinquasia®, Cromophtal®, Irgazin®, Paliogen®, Paliotol®
- Cu-phthalocyanine pigments:
Heliofen®
- Classical organic pigments:
Irgalite®
- Inorganic (lead-free) pigments:
Sicotrans®

Product usage

All our pigments can be used in combination with each other. For satisfactory performance, the pigments must be thoroughly dispersed into a suitable carrier prior to spinning. The concentrate or masterbatch can be dispensed into the spinning line by any of the commercially available methods, including sidestream injection into the polymer melt.

Quality control

All the pigments described in this pattern card are tested in our quality control labs for coloristic and physical properties. Selected pigments are additionally tested with regard to their dispersion properties.

Illustrations

For fastness tests and windings, the respective pigments were spun into bright fiber with a round cross-section and a titer of 80dtex/10f. Because of hot-light fastness tests, the fiber contained an additional stabilization, details of which are available on request.

Mono concentrates

Many of the powder pigments mentioned in this leaflet are also available in the form of mono-color preparations under the brand name Microlen® MC.

This range comprises finely dispersed pigments in a free-flowing and dust-free form. The carrier is compatible with polyolefin and is suitable for a wide range of fiber, tape and other plastic applications.

Product performance

The accompanying data sheets, illustrations and recommendations for the various applications given here are intended as a guideline to facilitate the selection of the appropriate pigments.

Customer-specific formulations and processing conditions can influence the behavior of a product. In particular, attention is drawn to the importance of stabilization of polypropylene fibers.

For further information, please contact your local BASF representative or visit our website at www.dispersions-pigments.basf.com.

Fastness properties

General

Unless otherwise stated, in all the following tests, specimens are assessed against the ISO 105-A02 gray scale and test concentration is always 1 % of pigment.

Xenon light

Color fastness to light in accordance with ISO 105-B02.
Test concentrations: 0.1, 0.5 and 1.0% of pigment.
Assessment against the 1–8 blue wool scale.

Carpet light

Color fastness to light in accordance with AATCC 16E-2004.
Test concentrations: 0.1 and 0.5% of pigment.
Assessment of "change in color".

Washing

Test method ISO 105-C03 at 60 °C (household wash).
Assessment of "change in color" and "bleeding" onto PP and WO.

Shampoo

Test in accordance with IWS-TM-233-08/85.
Assessment of "change in color" and "staining" of PP and PA.

Steam pleating

Test routine "severe" after heat-setting (ISO 105-P02) with steam 20'/130 °C. Assessment of "change in color" and "staining" of PP and WO.

Rubbing

ISO 105-X12. Staining of Cotton.
Test carried out dry, wet and after 20' at 130 °C.

Severe bleach

Test in accordance with ISO 105-N01.
Bleaching agent: hypochlorite.
Assessment of "change in color".

Organic solvent

Test in accordance with ISO 105-X05.
Solvent: perchloroethylene.
Assessment of "change in color".

Chlorinated water

Test conditions in accordance with ISO 105-E03.
Test agent is hypochlorite.
Assessment of "change in color".

Physical properties legend

- Density is determined in a pycnometer, as described in ISO R787-10, and is expressed as g/cm³.
- The bulk volume value serves as an indication of the average spatial requirement. However, in practice the bulk volume of a pigment can be influenced by transport and storage conditions.
- Specific surface is measured by the "BET" nitrogen adsorption method and expressed in m²/g. (ref. Brunauer, Emmert, Teller, "Journal Amer.Chem. Soc." 57, 1954).
- Heat resistance result given as DE, measured on fiber (0.1 % of colorant) spun at 250 °C, 265 °C, 280 °C and 290 °C. The value taken is the highest deviation found between 250 °C and the other temperatures. (DE < 3: +++, DE 3–6: ++, DE > 6: +).
- Internal method (screen 25 µ) in accordance with CEN 13900-5. Result given in bar/g of pigment.
- Heat resistance and coloristic properties of this pigment class may vary significantly according to the processing temperature and the nature of the polymer in which they are used.

Physical properties

	Density ¹⁾	Bulk volume ²⁾	Specific surface ³⁾	Heat resistance ⁴⁾	Filter value certified ⁵⁾
Paliotol® Yellow K 0961	1.9	4.4	32	++	–
Cromophtal® Yellow K 1210 FP	1.6	7.1	83	+++	<1
Cromophtal® Yellow 2GF	1.5	5.0	64	+	<2
Cromophtal® Yellow K 1410	1.4	5.0	30	++	–
Cromophtal® Yellow K 1500 FP	1.5	7.1	57	+++	<1
Paliotol® Yellow K 1700	1.8	3.7	36	+++	–
Paliotol® Yellow K 1760 FP	1.7	5.6	13	+++	<2
Paliotol® Yellow K 1800	2.0	8.3	17	+++	–
Paliotol® Yellow K 1841 FP	1.7	5.0	39	++	<1
Irgazin® Yellow 2080	1.8	3.2	46	+++	–
Sicotrans® Red K 2915	5.4	2.7	22	+++	–
Cromophtal® Scarlet K 3540	1.6	5.3	29	+++	–
Paliogen® Red K 3580	1.5	4.8	66	+++	–
Irgazin® Red K 3840 LW	1.7	5.6	25	+++	–
Cromophtal® Red K 3890 FP	1.6	7.7	33	+++	<1
Cromophtal® Red K 3900 FP	1.7	10.0	40	+++	<1
Irgalite® Red K 4060 FP	1.9	5.0	32	+	<2
Irgazin® Rubine K 4080	1.4	3.3	94	+++	–
Irgalite® Red K 4170 FP ⁶⁾	1.7	5.0	56	++	<2
Irgalite® Rubine K 4270 FP ⁶⁾	1.7	4.6	83	+++	<2
Irgalite® Rubine K 4275 FP ⁶⁾	1.7	4.4	58	++	<2
Cinquasia® Pink K 4430 FP	1.5	6.7	63	+++	<1
Cinquasia® Magenta K 4535 FP	1.8	7.1	72	+++	<1
Cinquasia® Violet K 5350 FP	1.6	5.9	48	+++	<1
Cromophtal® Violet K 5800	1.5	2.5	56	+++	–
Heliofen® Blue K 6907	1.8	6.7	61	+++	–
Heliofen® Blue K 6912 FP	1.7	6.7	64	+++	<2
Heliofen® Blue K 6916	1.7	5.0	71	+++	–
Heliofen® Blue K 7090 FP	1.7	4.8	55	+++	<1
Heliofen® Green K 8730 FP	2.3	4.3	74	+++	<1

Pigment concentration conversion factors (f)

A 3-dtex fiber contains 2 % colorant. How much pigment must be used to obtain the same depth of color in a 5.0 dtex fiber?
The table below gives the conversion factor f = 0.82. The required colorant concentration is therefore 2 % x 0.82 = 1.64 % for the new titer of 5.0 dtex.

	New titer																			
	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	12.0	14.0	16.0	18.0	20.0					
1.0	1.00	0.76	0.64	0.57	0.53	0.49	0.46	0.44	0.42	0.40	0.37	0.35	0.33	0.31	0.30					
2.0	1.32	1.00	0.85	0.76	0.69	0.64	0.61	0.57	0.55	0.53	0.49	0.46	0.44	0.42	0.40					
3.0	1.55	1.18	1.00	0.89	0.82	0.76	0.71	0.68	0.64	0.62	0.57	0.54	0.51	0.49	0.47					
4.0	1.74	1.32	1.12	1.00	0.91	0.85	0.80	0.76	0.72	0.69	0.64	0.61	0.57	0.55	0.53					
5.0	1.90	1.44	1.23	1.09	1.00	0.93	0.87	0.83	0.79	0.76	0.70	0.66	0.63	0.60	0.57					
6.0	2.05	1.55	1.32	1.18	1.08	1.00	0.94	0.89	0.85	0.82	0.76	0.71	0.68	0.64	0.62					
7.0	2.18	1.65	1.40	1.25	1.14	1.06	1.00	0.95	0.90	0.87	0.81	0.76	0.72	0.69	0.66					
8.0	2.30	1.74	1.48	1.32	1.21	1.12	1.05	1.00	0.95	0.91	0.85	0.80	0.76	0.72	0.69					
9.0	2.41	1.83	1.55	1.38	1.27	1.18	1.11	1.05	1.00	0.96	0.89	0.84	0.79	0.76	0.73					
10.0	2.51	1.90	1.62	1.44	1.32	1.23	1.15	1.09	1.04	1.00	0.93	0.87	0.83	0.79	0.76					
12.0	2.70	2.05	1.74	1.55	1.42	1.32	1.24	1.18	1.12	1.08	1.00	0.94	0.89	0.85	0.82					
14.0	2.87	2.18	1.85	1.65	1.51	1.40	1.32	1.25	1.19	1.14	1.06	1.00	0.95	0.90	0.87					
16.0	3.03	2.30	1.95	1.74	1.59	1.48	1.39	1.32	1.26	1.21	1.12	1.05	1.00	0.95	0.91					
18.0	3.18	2.41	2.05	1.83	1.67	1.55	1.46	1.38	1.32	1.27	1.18	1.11	1.05	1.00	0.96					
20.0	3.31	2.51	2.14	1.90	1.74	1.62	1.52	1.44	1.38	1.32	1.23	1.15	1.09	1.04	1.00					

Information about our products is updated regularly. For actual data on products and other available product forms, please visit our internet page www.dispersions-pigments.basf.com or contact your local BASF representatives.
For details regarding the regulatory and compliance status, please refer to the respective product regulatory information sheets and food contact certificates.
They are available upon request at ed-psr@basf.com.

Note

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