

QUALITY COLORS.



Global Shade Card

Inorganic Pigments for Coloration of Plastics

X COLORTHERM®
Color for Life.

X BAYFERROX®
Color for Life.

QUALITY WORKS.

LANXESS
Energizing Chemistry

INORGANIC PIGMENTS FOR PLASTICS

LANXESS is one of the world's largest manufacturer of synthetic iron oxides and a leading producer of chromium oxide pigments. Our **Colortherm®** and **Bayferrox®** pigments have been setting standards worldwide for many decades and are ideally suited for coloring plastics and master batches.

Inorganic pigments from LANXESS can be used for a wide range of applications including packaging materials, tubes and connecting elements, artificial wood (WPC), automotive interiors, synthetic material as well as artificial turf and sport surfaces. When it comes to coloring plastics, pigments are subject to demanding requirements. As a supplier of choice, we offer our customers significant benefits in product variety, supply reliability, quality and service offering:

- As a true one-stop-shop supplier, LANXESS delivers a complete solution for iron oxide consumers from its production sites all around the world. The **Colortherm®** and **Bayferrox®** portfolio includes red, yellow, black and brown iron oxide pigments. In addition, we offer green shades based on chromium oxide pigments.
- All of our inorganic pigments for plastic applications are milled, which significantly reduces the quantity of agglomerates in the pigment and increases the number of primary particles. Furthermore, the portfolio includes very intensively milled, "micronized" pigments (M-grades) which are easily dispersible even at short dwell times and low shear forces in the plastic matrix.

- LANXESS provides iron oxides with the highest heat stability compared to other market alternatives. All **Colortherm®** Red M-grades are produced by the unique Laux process which includes a calcination step at very high temperature. These pigment types are suitable for all plastic applications and do not show a color shift even at processing temperatures of well above 300°C. **Colortherm®** Yellow 5, 10, 20 and 30 are special pigments developed to ensure the formulation of yellow color shades at processing temperatures of up to 300°C, e.g. for HD-PE, PS, ABS or PA.
- Quality consistency is a key requirement in the coloration of plastics. We ensure the highest product reliability for our customers through a combination of controlled, consistent use of raw materials and permanent quality control procedures according to worldwide standardized test methods.
- Our technical experts provide unparalleled customer support. Specialists investigate inquiries under realistic conditions in our comprehensively equipped laboratories. This includes automated testing of heat stability of our iron oxides in customer-specific plastic applications. In addition, LANXESS provides extensive pigment expertise in the coloration of filaments for 3D printing.

The list of products presented in this brochure is only a selection of the most relevant globally available **Colortherm®** and **Bayferrox®** products. Please get in touch with your local sales contact for further information.



■ **LANXESS Inorganic Pigments** is a world leader in iron oxide and chromium oxide pigments with a strong global production network, headquartered in Germany.

- Synthesis site:
Production of raw pigments
- Blending site:
further value adding by mixing and/or milling; production of special color shades











YELLOW PIGMENTS

	Pigment concentration 1.0 %	Pigment concentration 0.2 % + 1.0 % TiO ₂
Colortherm® Yellow 5 (Iron Oxide)		
Colortherm® Yellow 10 (Iron Oxide)		
Colortherm® Yellow 20 (Iron Oxide)		
Colortherm® Yellow 3950 (Zinc Ferrite)		
Colortherm® Yellow 30 (Zinc Ferrite)		

RED PIGMENTS

	Pigment concentration 1.0%	Pigment concentration 0.2 % + 1.0 % TiO ₂
Colortherm® Red 110 M (Iron Oxide)		
Colortherm® Red 130 M (Iron Oxide)		
Colortherm® Red 140 M (Iron Oxide)		
Colortherm® Red 180 M (Iron Oxide)		
Colortherm® Red 520 (Iron Oxide)		

SPECIALTY PIGMENTS

	Pigment concentration 1.0 %	Pigment concentration 0.2 % + 1.0% TiO ₂
Bayferrox® 645 T (Manganese Ferrite)		
Bayferrox® 303 T (Manganese Ferrite)		
Colortherm® Black 318 M (Iron Oxide)		
Bayferrox® 360 (Iron Oxide)		
Colortherm® Green GN-M (Chromium Oxide)		

TECHNICAL DATA

Typical Main Applications for Colortherm® and Bayferrox® Pigments*¹

Application	Polymer Types	Yellow	Black, Red, Brown	Green
Films	PE, PP	+	+	+
Sheets	PVC, PS, ABS	+	+	+
Floorings	PVC, Rubber	+	+	+
Tubes, Pipes	PVC, PE, PP	+	+	+
Profile windows	PVC	o	o	o
Profile blinds	PVC	o	o	o
Containers (bottles, barrels)	PVC, PE, PP	+	+	+
Injection moulding parts	all kinds	+	+	+
Roof equipment	PVC, PE	+	+	+
Artificial leather	PVC, PUR	+	+	o
Artificial turf	PE, PP	+	+	o
Fibres	PES, PA, PAN, PP	o	+	–
Rubber articles	SBR, NBR	+	+	+
Recycling material	all kinds	+	+	+

+ main application o possible with limitation – not recommended

*¹ Only valid for Colortherm® and Bayferrox® pigments indicated in these shadecard

Specific Suitability of Colortherm® and Bayferrox® Pigments for Different Types of Plastics

Color Shade	Product Type	PVC-P	PVC-U	HD-PE	LD-PE	PP	PS	PS-HI	ABS	PMMA	CAB	PA	PC	UP	Rubber / Latex
Yellow	Colortherm® Yellow 5, 10, 20, 3950, 30	+ ²⁾	o ²⁾	+ ¹⁾	+ ¹⁾	+ ¹⁾	+ ¹⁾	+ ¹⁾	+ ¹⁾	+ ¹⁾	+	+ ¹⁾	+ ¹⁾	+	+
Red	Colortherm® Red 110 M, 130 M, 140 M, 180 M, 520	+ ²⁾	o ²⁾	+	+	+	+	+	+	+	+	+	+	+	+
Black	Colortherm® Black 318 M Bayferrox® 303 T, 360	+ ²⁾	o ²⁾	+	+	+	+	+	+ ³⁾	+	+	+	+	+	o ³⁾
Brown	Bayferrox® 645 T	+ ²⁾	o ²⁾	+	+	+	+	+	– ³⁾	+	+	+	+	+	o ³⁾
Green	Colortherm® Green GN-M	+	+	+	+	+	+	+	+	+	+	+	+	+	+

+ main application o possible with limitation – not recommended

1) Limited temperature stability, if necessary use more temperature stable grades

2) Good stabilization of PVC necessary, otherwise danger of burner formation

3) Do not use types containing Mn and Cu

All pigments have excellent migration stability and light fastness.

As with any product, use of the products mentioned in this publication in a given application must be tested (including field testing, etc.) by the user in advance to determine suitability.

Product Information

Product Type	Color Index	Heat stability [°C/°F] DIN EN 12 877 part 2 approx.	Loss on ignition 1000 °C, 1/2 h [%] DIN 55913-2	Oil absorption DIN ISO 787-5 approx.	Sieve residue 45 µm [%] DIN ISO EN 787-7	pH value DIN ISO 787-9	Density [g/cm³] DIN ISO 787-10 approx.	Predominant particle size [µm]	Particle shape
Colortherm® Yellow pigments									
Colortherm® Yellow 5 ²	P.Y. 42 / C.I. 77492	240/464	max. 16	50	max. 0.04	5.0 - 8.0	4.0	0.1 x 0.6	acicular
Colortherm® Yellow 10	P.Y. 42 / C.I. 77492	260/500	max. 16	50	max. 0.05	3.5 - 7.5	4.0	0.1 x 0.7	acicular
Colortherm® Yellow 20	P.Y. 42 / C.I. 77492	260/500	max. 16	45	max. 0.003	4.0 - 8.0	4.0	0.1 x 0.7	acicular
Colortherm® Yellow 3950	P.Y. 119 / C.I. 77496	220/428	max. 0.5	16	max. 0.005	6 - 10	5.2	0.15 x 0.5	elongated
Colortherm® Yellow 30	P.Y. 119 / C.I. 77496	300/572	max. 0.5	14	max. 0.005	6 - 10	5.2	0.15 x 0.5	elongated
Colortherm® Red pigments									
Colortherm® Red 110 M	P.R. 101 / C.I. 77491	>300/572	max. 0.6	25	max. 0.002	4 - 6	5.0	0.09	spherical
Colortherm® Red 120 NM	P.R. 101 / C.I. 77491	>300/572	max. 0.6	28	max. 0.002	5 - 8	5.0	0.11	spherical
Colortherm® Red 120 M	P.R. 101 / C.I. 77491	>300/572	max. 0.6	28	max. 0.002	5 - 8	5.0	0.12	spherical
Colortherm® Red 130 M	P.R. 101 / C.I. 77491	>300/572	max. 0.6	26	max. 0.002	5 - 8	5.0	0.17	spherical
Colortherm® Red 140 M	P.R. 101 / C.I. 77491	>300/572	max. 0.5	24	max. 0.002	5 - 8	5.0	0.30	spherical
Colortherm® Red 160 M	P.R. 101 / C.I. 77491	>300/572	max. 0.5	22	max. 0.002	5 - 8	5.0	0.40	spherical
Colortherm® Red 180 M	P.R. 101 / C.I. 77491	>300/572	max. 0.3	18	max. 0.002	5 - 8	5.0	0.70	spherical
Colortherm® Red 520 ²	P.R. 101 / C.I. 77491	260/500	< 4.0	~ 26	max. 0.05	5 - 8	5.0	0.20	spherical
Colortherm® and Bayferrox® Brown/Black pigments									
Colortherm® Black 318 M	P.Bk. 11 / C.I. 77499	>300/572	max. 2.0	19	max. 0.005	7 - 10	4.6	0.6	spherical
Bayferrox® 360	P.Bk. 11 / C.I. 77499	>300/572	max. 1.0	14	max. 0.1	4 - 8	4.6	0.3	spherical
Bayferrox® 303 T	P.Bk. 33 / C.I. 77537	>300/572	max. 0.5	16	max. 0.005	7 - 10	4.6	0.6	spherical
Bayferrox® 645 T ²	P.Br. 43 / C.I. 77536	>300/572	max. 0.5	28	max. 0.1	5.5 - 8.5	4.5	0.3	spherical
Colortherm® Green pigments									
Colortherm® Green GN-M	P.G. 17 / C.I. 77288	>300/572	max. 0.4	11	max. 0.005	5 - 7	5.2	0.30	spherical
Colortherm® Green GN ²	P.G. 17 / C.I. 77288	>300/572	max. 0.4	11	max. 0.06	5 - 7	5.2	0.30	spherical
Colortherm® Green GX ²	P.G. 17 / C.I. 77288	>300/572	max. 0.4	11	max. 0.1	5 - 7	5.2	0.35	spherical

² not micronized



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Health and Safety Information

Appropriate literature has been assembled which provides information concerning the health and safety precautions that must be observed when handling the LANXESS products mentioned in this publication. For materials mentioned which are not LANXESS products, appropriate industrial hygiene and other safety precautions recommended by their manufacturers should be followed. Before working with any of these products, you must read and become familiar with the available information on their hazards, proper use and handling. This cannot be overemphasized. Information is available in several forms, e.g. safety data sheets, product information and product labels. Consult your LANXESS representative in Germany or contact the Health, Safety, Environment and Quality Department (HSEQ) of LANXESS Germany or - for business in the USA - your LANXESS Corporation representative or contact the Product Safety and Regulatory Affairs Department in Pittsburgh, PA.

Regulatory Compliance Information

Some of the end uses of the products described in this publication must comply with applicable regulations, such as the FDA, BfR, NSF, USDA, and CPSC. If you have any questions on the regulatory status of these products, contact – for business in the USA - the LANXESS Corporation Regulatory Affairs and Product Safety Department in Pittsburgh, PA, USA or for business outside US the Health, Safety, Environmental and Quality Department of LANXESS Deutschland GmbH in Germany.

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