

A close-up photograph of a paintbrush with a wooden handle and a metal ferrule, dripping a thick, vibrant yellow pigment. The brush is positioned above a large, bright yellow daisy flower with a dark brown center. The background is a soft, out-of-focus green and blue, suggesting an outdoor setting. The overall lighting is warm and focused on the flower and the dripping paint.

The new Paliotan[®] pigments.

Time to replace lead chromate!

 **BASF**

The Chemical Company

Much more than a lead-free alternative

Paliotan® pigments for industrial coatings



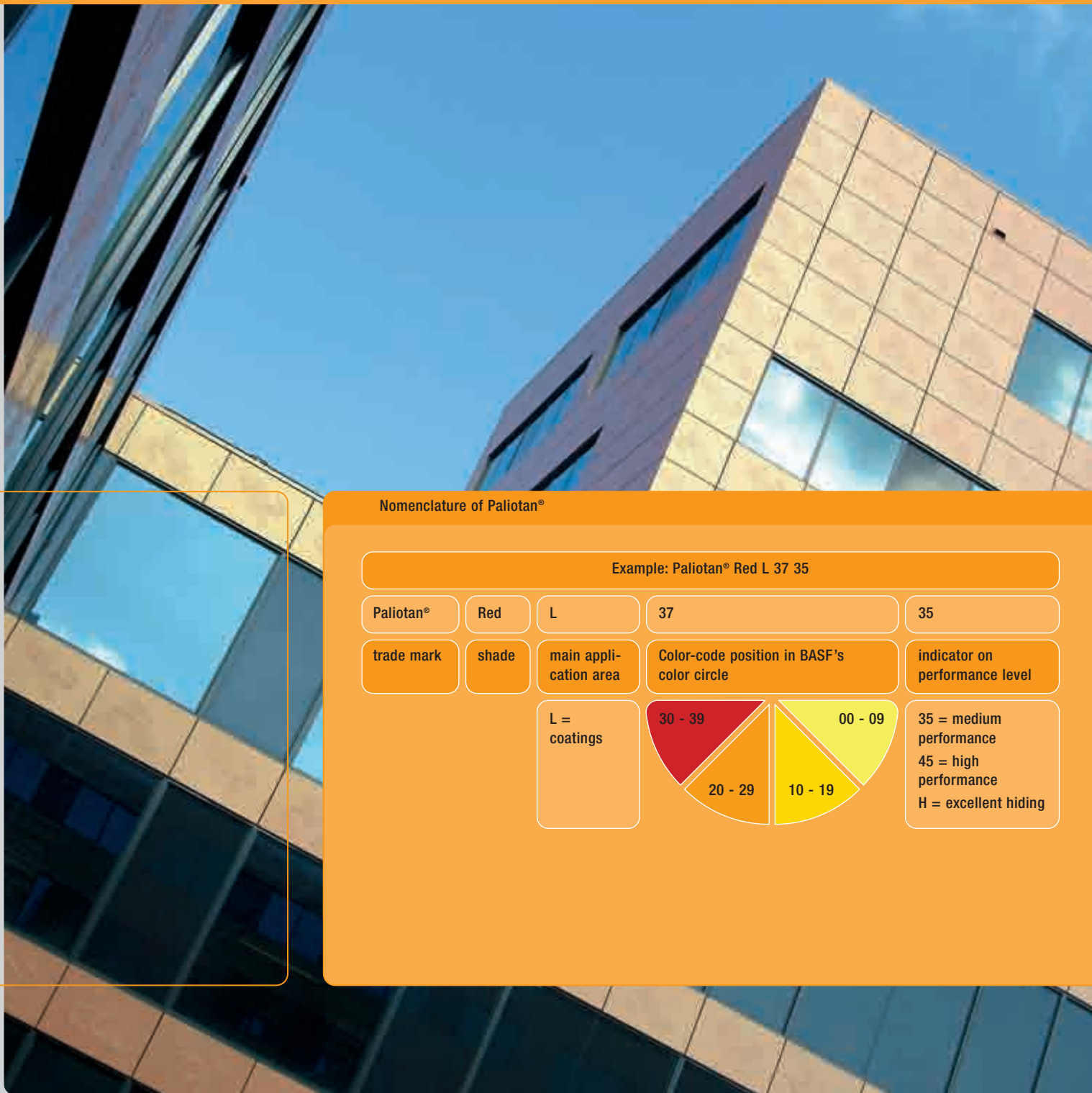
Hiding power, high chroma and economy of use

These are the advantages of the Paliotan® hybrid pigments based on inorganic and organic pigments.

Properties which make Paliotan® pigments ideal for industrial applications such as agriculture/construction/earthmoving, powder and coil coating for bright and hiding shades. Paliotan® pigments

are available for different performance levels in the shade areas yellow, orange and red. This makes it easy to formulate very innovative and environmentally friendly coatings. As you see – Paliotan® is really more than a simple lead chromate replacement.





Nomenclature of Paliotan®

Example: Paliotan® Red L 37 35

Paliotan®	Red	L	37	35
trade mark	shade	main application area	Color-code position in BASF's color circle	indicator on performance level
		L = coatings		35 = medium performance 45 = high performance H = excellent hiding

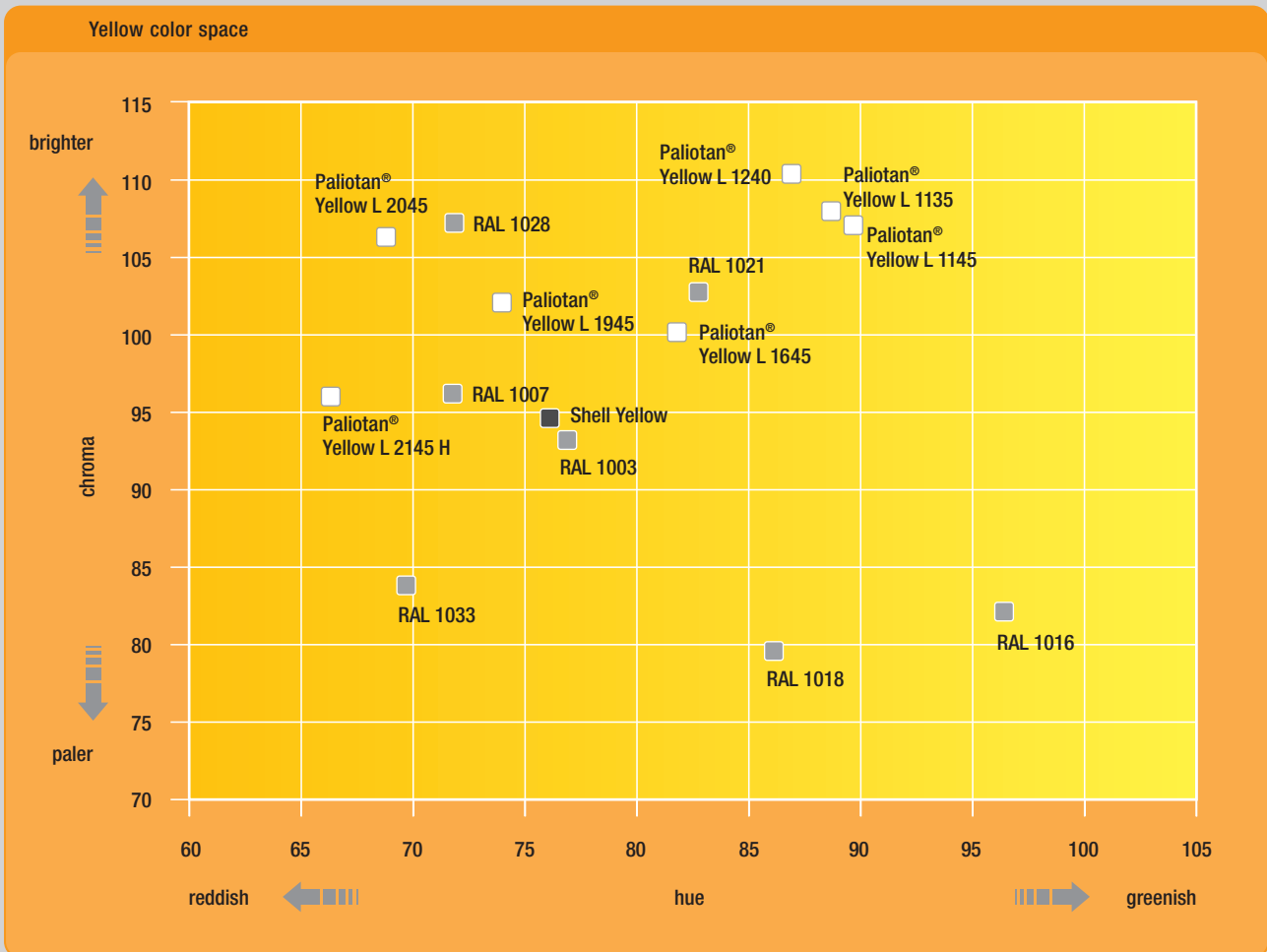
Brighter conditions

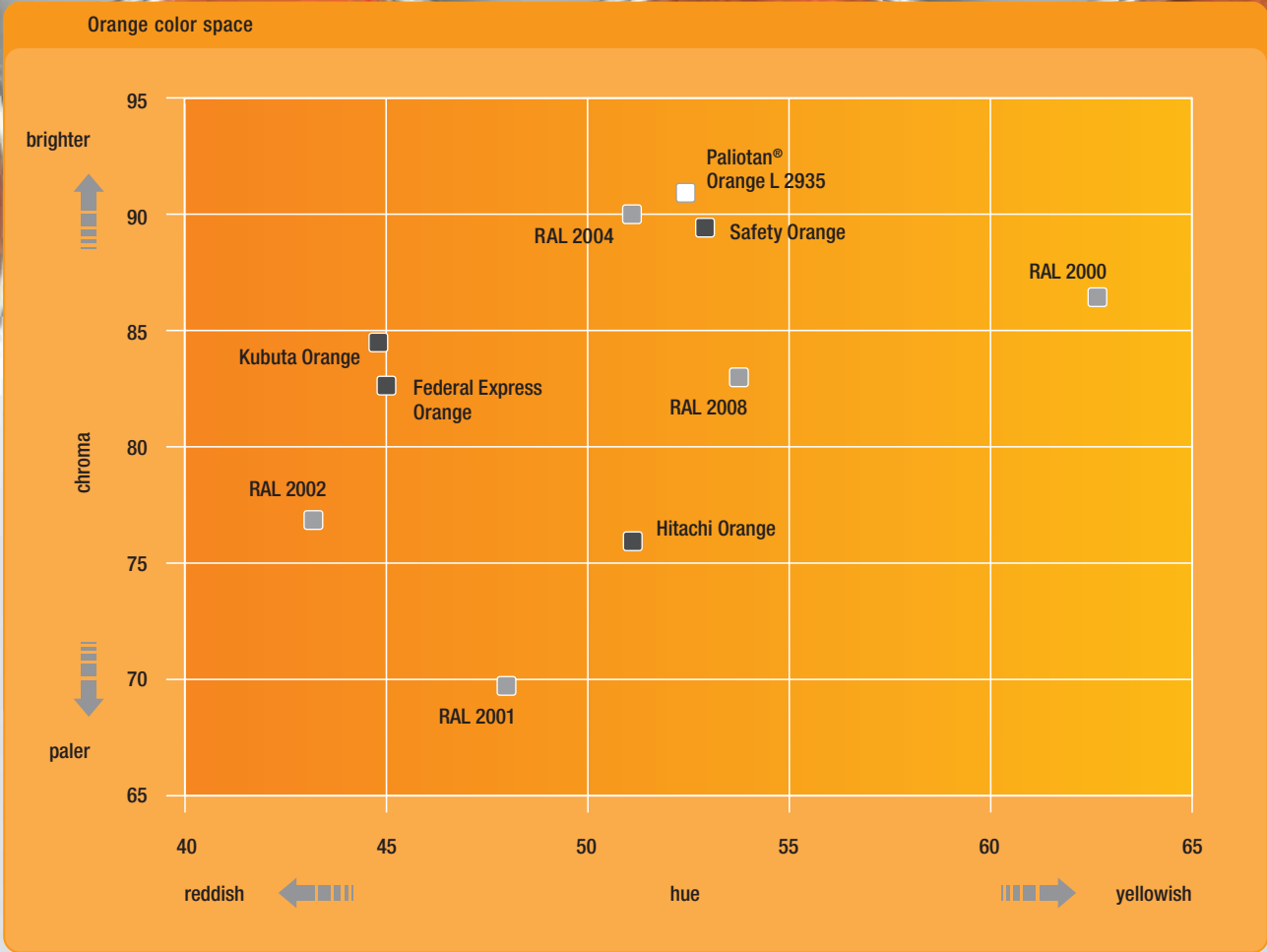
The yellow and orange color space of Paliotan®

Paliotan® pigments are available in a complete shade range of yellow, orange and red. The following graphs indicate the relation of the coloristic properties of Paliotan® pigments and common, bright

standardized colors as corporate colors or RAL shades.

The Paliotan® pigments offer high chroma enabling you to formulate very bright shades.



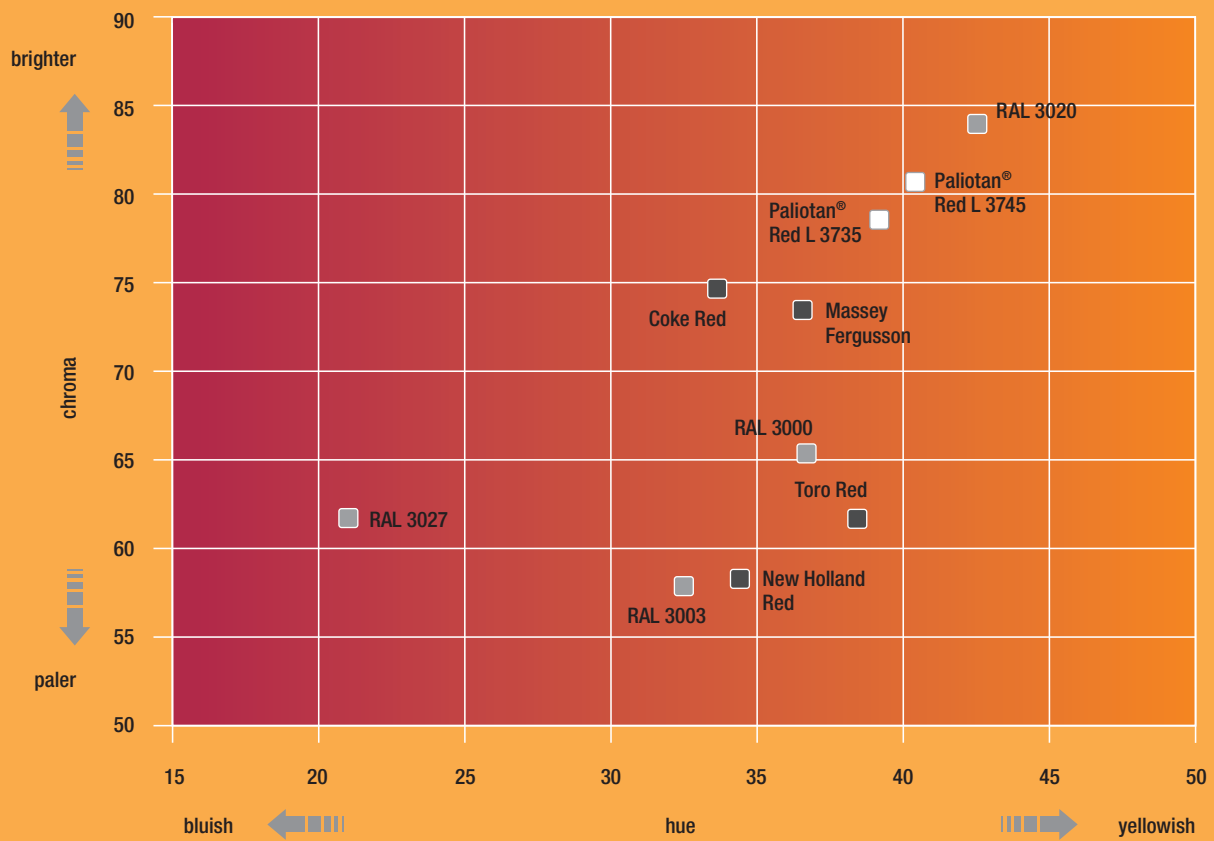


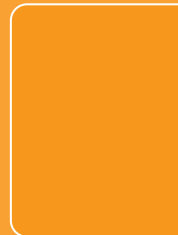
Higher chroma

The red color space / The fastness properties of Paliotan®



Red color space





Fastness properties

Product	Temperature [° C]	Weather full shade	Weather 1:10 white reduction	Overcoating	Acid	Alkali
Paliotan® Yellow L 1135	180	4	not recommended	4	5	5
Paliotan® Yellow L 1145	200	4 - 5	4	5	5	5
Paliotan® Yellow L 1240	150	4	4	3	5	5
Paliotan® Yellow L 1645	200	4 - 5	4	5	5	5
Paliotan® Yellow L 1945	200	4 - 5	4	5	5	5
Paliotan® Yellow L 2045	200	4 - 5	4	5	5	5
Paliotan® Yellow L 2145 H	200	4 - 5	4	5	5	5
Paliotan® Orange L 2935	180	4	3	2 - 3	5	5
Paliotan® Red L 3735	200	3	not recommended	3 - 4	5	5
Paliotan® Red L 3745	200	4 - 5	4 - 5	5	5	5

Weather fastness: Xenotest[®], 2000 h; all other tests according to their respective BASF test method

A combination of advantages

The solvent fastness / The application fields of Paliotan®



Solvent fastness

Product	Ethanol	Butyl acetate	Methyl ethyl ketone	Xylene	Mineral spirit	Solvenon® PM
Paliotan® Yellow L 1135	4 - 5	4 - 5	4 - 5	5	5	4
Paliotan® Yellow L 1145	5	5	4	4	5	4 - 5
Paliotan® Yellow L 1240	4	3	3	3	4	2 - 3
Paliotan® Yellow L 1645	5	5	5	5	5	5
Paliotan® Yellow L 1945	5	5	5	5	5	5
Paliotan® Yellow L 2045	5	5	5	5	5	5
Paliotan® Yellow L 2145 H	5	5	5	5	5	5
Paliotan® Orange L 2935	5	3	2	2	4	2
Paliotan® Red L 3735	4	4	4	4	5	4
Paliotan® Red L 3745	4 - 5	4 - 5	4 - 5	4 - 5	4 - 5	4 - 5



Application fields

Product	Baking systems	Water-borne systems	Acrylic-/isocyanate systems	Acid-curing systems	Amine-curing systems	Air-drying systems	Coil coatings	Powder coatings
Paliotan® Yellow L 1135	☐☐	☐☐	☐☐	☐☐	☐	☐☐	☐	☐☐ ¹
Paliotan® Yellow L 1145	☐☐	☐☐	☐☐	☐	☐	☐☐	☐☐	☐☐
Paliotan® Yellow L 1240	☐☐ ³	☐☐	☐☐	☐☐	☐	☐☐	☐	☐ ²
Paliotan® Yellow L 1645	☐☐	☐☐	☐☐	☐	☐☐	☐☐	☐☐	☐☐
Paliotan® Yellow L 1945	☐☐	☐☐	☐☐	☐	☐☐	☐☐	☐☐	☐☐
Paliotan® Yellow L 2045	☐☐	☐☐	☐☐	☐	☐☐	☐☐	☐☐	☐☐
Paliotan® Yellow L 2145 H	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐
Paliotan® Orange L 2935	☐☐	☐☐	☐☐	☐☐	☐	☐☐	☐	☐☐ ¹
Paliotan® Red L 3735	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐	☐☐
Paliotan® Red L 3745	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐

1 = for hybrids (epoxy-polyester)

2 = limited recommendation

3 = < 140 °C

recommended ☐☐
 suitable ☐
 not recommended ☐

More than suitable

Paliotan® for coil coatings and powder coatings



Coil coatings

Coil coating of steel and aluminum sheet has developed into an important application process because of its environmentally sound technology. The application fields for coil coating are architecture, appliances and transportation.

Hiding power and weather fastness are key issues for this thin-film application. These, combined with high brilliance, are the properties

of Paliotan® pigments. Paliotan® Yellow L 1145, Paliotan® Yellow L 1645, Paliotan® Yellow L 1945 and Paliotan® Yellow L 2045 offer a complete shade range of yellow and the right properties for coil coatings. In addition we have enhanced the color range with Paliotan® Red L 3745 for bright, hiding red shades.





Powder coatings

Powder coatings are solid coatings without any solvent content, which are used as primer or topcoat. The application fields for powder coating are architecture, transportation and ACE. Properties like hiding power and chroma make Paliotan® pigments suitable for powder coatings. With the innovative development of Paliotan® Yellow L 1135, it is possible to formulate bright hiding shades (as example RAL 1021 or RAL 1028) in an economical and

ecological way. Paliotan® Yellow L 1135 is a very bright greenish yellow. Like Paliotan® Orange L 2935 and Paliotan® Red L 3735 it is suitable for hybrids (epoxy-polyester) and polyester systems for industrial applications. As with any powder system, overbaking characteristics should be checked in the individual system. Our new development of Paliotan® Red L 3745 enhances the performance level of the Paliotan® range for red shades.



More than suitable

Paliotan® for baking systems and 2K systems



Baking systems

Baking systems are one-component systems, which are cured at elevated temperatures. High hardness and scratch resistance with good flexibility are the main properties of baking systems. Furthermore they offer excellent chemical and solvent fastness. Paliotan® pigments are suitable for solvent-borne and water-borne baking systems. Care should be taken with regard to the solvent package by consulting the fastness-to-solvent properties.

With Paliotan® Yellow L 1135, Paliotan® Yellow L 1240, Paliotan® Orange L 2935, Paliotan® Red L 3735 and Paliotan® Red L 3745 we have enhanced the range in terms of color and performance level. These products as well as Paliotan® Yellow L 1145, L 1645, L 1945, L 2045 and L 2145 H combine hiding and brightness with economy of use and ecology.





2K systems

2K systems consist of a base component and a hardener, which are mixed before applying the coating. After mixing these components react chemically and a build-up of a three-dimensional network occurs. 2K systems can only be applied during a certain time, the pot-life. 2K PUR systems exceed in weather fastness, 2K epoxy systems in chemical resistance.

Solvent-borne or water-borne systems. Paliotan® pigments are suitable for both of them.

But we cannot exclude the possibility of darkening in amine-curing systems. Therefore, we advise always to do a suitability test in the respective system.



More than suitable








Color shades with Paliotan® pigments



Yellow shades for powder coatings; Paliotan® Yellow L 1135 [hiding at 20 % pigmentation]






Color	Product	Formulation	Color	Product	Formulation
	Signal Yellow, RAL 1003	73.5 parts Paliotan® Yellow L 1135 5.2 parts Paliotan® Yellow L 2045 21.3 parts Sicotan® Yellow L 1910		Melon Yellow, RAL 1028	80.4 parts Paliotan® Yellow L 1135 19.6 parts Paliotol® Yellow L 2140 HD
	Daffodil Yellow, RAL 1007	41.3 parts Paliotan® Yellow L 1135 23.4 parts Paliotan® Yellow L 2045 35.3 parts Sicotan® Yellow L 2110		Shell Yellow	62.8 parts Paliotan® Yellow L 1135 7.2 parts Paliotol® Yellow L 1970 30.0 parts TiO ₂ Kronos ^{sz} 2310
	Rape Yellow, RAL 1021	98.0 parts Paliotan® Yellow L 1135 2.0 parts Paliotan® Yellow L 2045			

Yellow shades





Color	Product	Formulation	Color	Product	Formulation
	Signal Yellow, RAL 1003	81.0 parts Paliotan® Yellow L 1145 7.7 parts Paliotan® Yellow L 2045 11.3 parts TiO ₂ Kronos ^{sz} 2310 Trace Carbon Black FR 101		Rape Yellow, RAL 1021	93.5 parts Paliotan® Yellow L 1145 6.5 parts Paliotan® Yellow L 2045 Trace Carbon Black FR 101
	Daffodil Yellow, RAL 1007	71.3 parts Paliotan® Yellow L 1145 28.6 parts Paliotol® Yellow L 2140 HD 0.1 parts Carbon Black FR 101		Melon Yellow, RAL 1028	38.0 parts Paliotan® Yellow L 1145 62.0 parts Paliotan® Yellow L 2045
	Sulfur Yellow, RAL 1016	40.2 parts Paliotan® Yellow L 1145 59.8 parts TiO ₂ Kronos ^{sz} 2310 Trace Heliogen® Green L 8730		Dahlia Yellow, RAL 1033	58.5 parts Paliotan® Yellow L 1145 10.2 parts Paliotol® Yellow L 2140 HD 30.8 parts TiO ₂ Kronos ^{sz} 2310 0.5 parts Carbon Black FR 101
	Zinc Yellow, RAL 1018	42.6 parts Paliotan® Yellow L 1145 56.1 parts TiO ₂ Kronos ^{sz} 2310 1.3 parts Paliotol® Yellow L 2140 HD Trace Heliogen® Green L 8730			



Orange RAL shades

Color	Product	Formulation	Color	Product	Formulation
	Yellow Orange, RAL 2000	13.9 parts Paliotan® Orange L 2935 84.0 parts Paliotan® Yellow L 2045 2.1 parts Bayferrox® Red 180M		Pure Orange, RAL 2004	100.0 parts Paliotan® Orange L 2935
	Red Orange, RAL 2001	79.3 parts Paliotan® Orange L 2935 18.9 parts TiO ₂ Kronos® 2310 1.3 parts Irgazin® Red 2030 0.4 parts Carbon Black FR 101		Bright Red, Orange RAL 2008	31.0 parts Paliotan® Orange L 2935 14.9 parts Paliotan® Yellow L 1145 54.1 parts Sicotan® Yellow L 1012 Trace Carbon Black FR 101
	Vermilion, RAL 2002	78.9 parts Paliotan® Orange L 2935 7.7 parts TiO ₂ Kronos® 2310 9.3 parts Irgazin® Red 2030 4.1 parts Bayferrox® Red 105M			

Orange corporate colors

Color	Product	Formulation	Color	Product	Formulation
	Federal Express Orange	76.1 parts Paliotan® Orange L 2935 22.4 parts TiO ₂ Kronos® 2310 1.5 parts Irgazin Red® 2030		Hitachi Orange	50.0 parts Paliotan® Orange L 2935 48.7 parts Sicotan® Yellow L 1012 1.2 parts Bayferrox® Red 105M 0.1 parts Carbon Black FR 101
	Kubuta Orange	86.2 parts Paliotan® Orange L 2935 10.3 parts TiO ₂ Kronos® 2310 3.5 parts Irgazin® Red 2030		Safety Orange	40.4 parts Paliotan® Orange L 2935 19.2 parts Sicotan® Yellow L 1012 40.4 parts Sicopal® Yellow L 1100



Red RAL shades with Paliotan® Red L 3735

Color	Product	Formulation
	Flame Red, RAL 3000	49.4 parts Paliotan® Red L 3735 49.9 parts Sicotan® Yellow L 1910 0.4 parts TiO ₂ Kronos ^{®2} 2310 0.3 parts Carbon Black FR 101
	Ruby Red, RAL 3003	53.8 parts Paliotan® Red L 3735 42.7 parts Hostaperm ^{®55} Pink E 3.3 parts TiO ₂ Kronos ^{®2} 2310 0.3 parts Carbon Black FR 101
	Traffic Red, RAL 3020	100.0 parts Paliotan® Red L 3735
	Raspberry Red, RAL 3027	27.8 parts Paliotan® Red L 3735 36.0 parts TiO ₂ Kronos ^{®2} 2310 30.1 parts Hostaperm ^{®55} Red E2B 6.0 parts Hostaperm ^{®55} Pink E

Red RAL shades with Paliotan® Red L 3745

Color	Product	Formulation
	Flame Red, RAL 3000	56.6 parts Paliotan® Red L 3745 35.6 parts Sicotan® Yellow L 1910 7.3 parts TiO ₂ Kronos ^{®2} 2310 0.5 parts Carbon Black FR 101
	Ruby Red, RAL 3003	59.6 parts Paliotan® Red L 3745 40.2 parts Hostaperm ^{®55} Pink E Trace TiO ₂ Kronos ^{®2} 2310 0.2 parts Carbon Black FR 101
	Traffic Red, RAL 3020	100.0 parts Paliotan® Red L 3745
	Raspberry Red, RAL 3027	26.0 parts Paliotan® Red L 3745 35.9 parts TiO ₂ Kronos ^{®2} 2310 28.4 parts Hostaperm ^{®55} Red E2B 9.7 parts Hostaperm ^{®55} Pink E

Red corporate colors with Paliotan® Red L 3735

Color	Product	Formulation
	Coke Red	53.4 parts Paliotan® Red L 3735 29.4 parts TiO ₂ Kronos ^{®2} 2310 17.1 parts Paliotol® Orange L 2930 HD 0.1 parts Carbon Black FR 101
	New Holland Red	69.3 parts Paliotan® Red L 3735 14.4 parts TiO ₂ Kronos ^{®2} 2310 15.9 parts Bayferrox ^{®33} Red 180M 0.5 parts Carbon Black FR 101
	Massey Fergusson Red	71.6 parts Paliotan® Red L 3735 7.0 parts TiO ₂ Kronos ^{®2} 2310 16.3 parts Bayferrox ^{®33} Yellow 3920 5.2 parts Sicotan® Yellow L 1010
	Toro Red	73.2 parts Paliotan® Red L 3735 4.5 parts TiO ₂ Kronos ^{®2} 2310 22.4 parts Bayferrox ^{®33} Red 180M

Red corporate colors with Paliotan® Red L 3745

Color	Product	Formulation
	Coke Red	72.8 parts Paliotan® Red L 3745 27.2 parts TiO ₂ Kronos ^{®2} 2310
	New Holland Red	19.8 parts Paliotan® Red L 3745 0.1 parts Carbon Black FR 101 72.5 parts Sicopal® Yellow L 1120 4.6 parts Hostaperm ^{®55} Pink E 3.1 parts Hostaperm ^{®55} Red Violet ER02
	Massey Fergusson Red	50.6 parts Paliotan® Red L 3745 5.4 parts TiO ₂ Kronos ^{®2} 2310 13.6 parts Sicotan® Yellow L 2110 30.4 parts Hostaperm ^{®55} Red E2B
	Toro Red	56.9 parts Paliotan® Red L 3745 0.8 parts Carbon Black FR 101 42.3 parts Hostaperm ^{®55} Red E2B



Cost comparison for Pure Orange, RAL 2004

Pigment	Colour Index	Lead containing	Medium performance	Palioatan®	High performance
Lead chromate	P.Y. 34	59.1 parts			
Lead chromate/ molybdate	P.R.104	35.6 parts			
Chromium titanate	P.Br. 24		44.2 parts		
Bismuth vanadate	P.Y. 184				49.9 parts
Pyrazolochinazolone	P.O. 67		35.7 parts		
Diketo-pyrrolo-pyrrole	P.O. 73				46.6 parts
Isoindoline	P.Y. 139		10.7 parts		
Palioatan®				100.0 parts	
Titanium dioxide	P.W. 6	5.3 parts	9.4 parts		3.5 parts
Carbon black	P.BI. 7				trace
Pigmentation to achieve same hiding as lead containing formulation		19.8 %	41.3 %	27.2 %	44.2 %
Relative cost in comparison to lead containing		1:1	1:12	1:9	1:38

The table indicates the much better hiding performance of the Palioatan® formulation in comparison with the conventional lead chromate free formulations. Since RAL 2004 is the most chromatic orange RAL shade,

the need of organic pigment is evident. This is also apparent in the relative cost, where again the Palioatan® formulation is first choice.

Contact worldwide

Asia

BASF Colorants & Chemicals Co., Ltd
300 Jiangxinsha Road, Pudong
200137 Shanghai
China
Tel.: +86 21 58611828-2470
Fax: +86 21 58611828-2735

Europe

BASF Aktiengesellschaft
Performance Chemicals for
Coatings, Plastics and Specialties
G-EVP/MA – J 550
67056 Ludwigshafen
Germany
Tel.: +49 621 60-71910
Fax: +49 621 60-72869

North America

BASF Corporation
1609 Biddle Avenue
Wyandotte, MI 48192
USA
Tel.: +1-734-324-5278
Fax: +1-734-324-5185

Eastern Europe, Africa, West Asia

BASF Aktiengesellschaft
Regional Business Management
Performance Chemicals
EUM/SE – Benckiserplatz 1
67056 Ludwigshafen
Germany
Tel.: +49 621 60-76429
Fax: +49 621 60-6676429

South America

BASF S.A.
Estrada Samuel Aizemberg
1707-Bloco C-3°
09851-550 São Bernardo do Campo - SP
Brazil
Tel.: +55 11 4343-3680
Fax: +55 11 4343-3134

The data contained in this publication are based on our current knowledge and experience. In view of the many factors that may affect processing and application of our product, these data do not relieve processors from carrying out their own investigations and tests; neither do these data imply any guarantee of certain properties, nor the suitability of the product for a specific purpose. Any descriptions, drawings, photographs, data, proportions, weights etc. given herein may change without prior information and do not constitute the agreed contractual quality of the product. It is the responsibility of the recipient of our products to ensure that any proprietary rights and existing laws and legislation are observed. When handling these products, advice and information given in the safety data sheet must be complied with. Further, protective and workplace hygiene measures adequate for handling chemicals must be observed.

® = registered trademark of BASF Aktiengesellschaft

®1 = registered trademark of Xenotest Gesellschaft für die Herstellung von Materialprüfgeräten mbH

®2 = registered trademark of Kronos Worldwide Inc

®3 = registered trademark of Bayer AG

®4 = registered trademark of Ciba Specialty Chemicals Holding Ltd.

®5 = registered trademark of Clariant International Ltd.

www.basf.com/pigment

BASF Aktiengesellschaft
Performance Chemicals for
Coatings, Plastics and Specialties
67056 Ludwigshafen
Germany