heubach

HEUCODUR® & VANADUR®
INORGANIC COLOR SOLUTIONS FOR THE MOST DEMANDING APPLICATIONS

Introduction

As the quality and performance of industrial products continue to improve, so do the demands on their appearance and durability. Therefore, there is a steadily increasing requirement for more durable pigments to color products such as paints, plastics, building materials and ceramics. As a consequence, the complex inorganic color pigments are of increasing importance to formulators.

They need to satisfy the highest demands for heat stability and chemical inertness as well as weather- and light fastness, while taking account of the ecological aspects of the end product.

To date, complex inorganic color pigments are the most stable class of pigments developed by the color industry.

HEUCODUR® pigments belong to this class. Their unique fastness properties are directly related to high-temperature processing (above 800 °C / 1500 °F), which yields homogeneous crystalline complex inorganic color pigment compounds. This high-temperature-process demands a very precise control over the chemical and technical parameters, which has been made possible by the most up to date state of the art facilities for the production of **HEUCODUR**® pigments.

The result is a very accurate control over particle morphology and particle size distribution, thereby explaining the improved high color strength and hiding power of **HEUCODUR**® as well as the enhanced dispersibility obtainable with these pigments in various formulated systems.

HEUCODUR® Nickel Rutile Pigments

The structure of rutile yellow is based on the rutile crystal modification of titanium dioxide. These types of pigments offer outstanding hiding power, light fastness and resistance to temperature, chemicals (including acid and alkali) and weathering.

Detailed know-how and process control of each of the manufacturing steps is needed to achieve optimised pigment performance. For rutile yellows, different colors can be obtained by variation of the composition and calcination temperature/profile. A higher calcination temperature results in darker grades with higher chroma.

In combination with organic pigments **HEUCODUR® Yellow** can enhance color saturation and light fastness in coatings as well as in plastic applications.

Name	Full Shade	Reduction 1:1	Pigment	Color Index	Median D50 [µm] 1)	Oil Absorption [g/100g] 2)	Heat Resistance [°C] 3)
HEUCODUR® Yellow 9064 (C)			$(Ni,Sb,Ti)O_2$	P.Y. 53	typ. 0.8	typ. 16	600
HEUCODUR® Yellow 152 (C) or (P)			$(Ni,Sb,Ti)O_2$	P.Y. 53	typ. 1.1	typ. 16	600
HEUCODUR® Yellow 156 (C) or (P)			$(Ni,Sb,Ti)O_2$	P.Y. 53	typ. 1.2	typ. 15	600
HEUCODUR® Yellow 8G (C) or (P)			$(Ni,Sb,Ti)O_2$	P.Y. 53	typ. 1.0	typ. 15	600
HEUCODUR® Yellow G 9082 (C) or (P)			$(Ni,Sb,Ti)O_2$	P.Y. 53	typ. 1.3	typ. 14	600
HEUCODUR® Yellow G 9116 (C) or (P)			$(Ni,Cr,Sb,Ti)O_2$	P.Y. 53	typ. 0.6	typ. 20	600

Due to the limitation of printing process, some slight variations between the color as illustrated may be observed.
(C) or/and (P): C = specified for Coatings, P = specified for Plastics

HEUCODUR® Chrome Rutile Pigments

Chrome rutiles are available in a large variety of color shades and can be custom formulated to meet specific applications and requirements.

Excellent dispersibility and less shear sensitive colors are offered with the **HEUCODUR®** chromium and nickel rutile line.

Name	Full Shade	Reduction 1:1	Pigment	Color Index	Median D50 [µm] 1)	Oil Absorption [g/100g] 2)	Heat Resistance [°C] 3)
HEUCODUR® Yellow 3R (C) or (P)			$(Cr,Sb,Ti)O_2$	P.Br. 24	typ. 0.5	typ. 20	600
HEUCODUR® Yellow 253 (C)			$(Cr,Sb,Ti)O_2$	P.Br. 24	typ. 0.8	typ. 18	600
HEUCODUR® Yellow 2530 (P)			$(Cr,Sb,Ti)O_2$	P.Br. 24	typ. 0.7	typ. 18	600
HEUCODUR® Yellow 252 (C) or (P)			$(Cr,Sb,Ti)O_2$	P.Br. 24	typ. 0.9	typ. 19	600
HEUCODUR® Yellow G 9239 (C) or (P)			$(Cr,Sb,Ti)O_2$	P.Br. 24	typ. 0.6	typ. 21	600
HEUCODUR® Yellow 255 (C) or (P)			$(Cr,Sb,Ti)O_2$	P.Br. 24	typ. 0.9	typ. 17	600
HEUCODUR® Yellow 2550 (P)			$(Cr,Sb,Ti)O_2$	P.Br. 24	typ. 1.0	typ. 20	600
HEUCODUR® Yellow 6R (C) or (P)			$(Cr,Sb,Ti)O_2$	P.Br. 24	typ. 1.1	typ. 16	600
HEUCODUR® Yellow 256 (C) or (P)			$(Cr,Sb,Ti)O_2$	P.Br. 24	typ. 1.4	typ. 16	600
HEUCODUR® Yellow 2570 (C) or (P)			$(Cr,Sb,Ti)O_2$	P.Br. 24	typ. 0.9	typ. 20	600
HEUCODUR® Yellow 259 (C) or (P)			$(Cr,Sb,Ti)O_2$	P.Br. 24	typ. 1.5	typ. 15	600
HEUCODUR® Yellow 2590 (C)			$(Cr,Sb,Ti)O_2$	P.Br. 24	typ. 1.3	typ. 18	600
HEUCODUR® Yellow G 9202 (P)			$(Cr,Sb,Ti)O_2$	P.Br. 24	typ. 1.7	typ. 17	600
HEUCODUR® Yellow G 9180 (P)			$(Cr,Sb,Ti)O_2$	P.Br. 24	typ. 1.7	typ. 15	600

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HEUCODUR® (Inverse) Spinel Pigments

Cobalt blue pigments are generated in the typical spinel crystal modification. The color shades range from a red shade blue to a green shade blue by increasing the trivalent chromium content in the crystal structure. The hiding power increases correspondingly with increased chromium content as seen in **HEUCODUR® Blue 5-100.**
HEUCODUR® Blue 550 is a high strength P.Bl. 28 with a strong red shade hue.

Cobalt titanium green pigments have a structure typical of an inverse spinel. Cobalt blue and green pigments prevent warpage in polyolefins.

Name	Full Shade	Reduction 1:3	Pigment	Color Index	Median D50 [µm] 1)	Oil Absorption [g/100g] 2)	Heat Resistance [°C] 3)
HEUCODUR® Blue 550 (C) and (P)			$CoAl_2O_4$	P.Bl. 28	typ. 0.9	typ. 28	600
HEUCODUR® Blue 551 (C) and (P)			$CoAl_2O_4$	P.Bl. 28	typ. 0.9	typ. 25	600
HEUCODUR® Blue 552 (C) and (P)			$CoAl_2O_4$	P.Bl. 28	typ. 0.9	typ. 27	600
HEUCODUR® Blue 2R (C) and (P)			$CoAl_2O_4$	P.Bl. 28	typ. 1.1	typ. 39	600
HEUCODUR® Blue 555 (C) and (P)			$Co(Al,Cr)_2O_4$	P.Bl. 36	typ. 0.7	typ. 15	600
HEUCODUR® Blue 5-100 (C) and (P)			$Co(Al,Cr)_2O_4$	P.Bl. 36	typ. 0.9	typ. 16	600
HEUCODUR® Blue 4G (C) and (P)			$Co(Al,Cr)_2O_4$	P.Bl. 36	typ. 0.2	typ. 14	600
HEUCODUR® Green 5G (C) or (P) *)			$(Co,Ni,Zn)_2(Ti,Al)O_4$	P.G. 50	typ. 1.0	typ. 16	600

*) In accordance with CLP Regulation No. 1272/2008 this product is classified as dangerous substances with Hazard Classes and Category Codes: Skin Sens. 1; H317 / Carc. 1A; H350i / STOT RE 2; H373

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HEUCODUR® Brown

Iron chromite brown pigments are the ideal pigment choice for e.g. coloring PVC applications without affecting the stability of the PVC.

HEUCODUR® Black

HEUCODUR® Black 953-1, HEUCODUR® Black 9-100 and **HEUCODUR® Black 955** are black spinel pigments based on copper and cobalt, respectively.

Name	Full Shade	Reduction 1:5	Pigment	Color Index	Median D50 [µm] 1)	Oil Absorption [g/100g] 2)	Heat Resistance [°C] 3)
HEUCODUR® Brown 869 (C) and (P)			$(Fe,Cr)O_3$	P.Br. 29	typ. 0.6	typ. 23	600
HEUCODUR® Black 953-1 (C) and (P)			$Cu(Cr,Fe)_2O_4$	P.Bk. 28	typ. 1.2	typ. 15	600
HEUCODUR® Black 9-100 (C) or (P)			$Cu(Cr,Fe)_2O_4$	P.Bk. 28	typ. 0.9	typ. 16	600
HEUCODUR® Black 955 (C)			$Co(Cr,Fe)_2O_4$	P.Bk. 27	typ. 1.4	typ. 17	600

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VANADUR® (Encapsulated) Bismuth Vanadate Pigments

VANADUR® 1010 and VANADUR® 2108 are green shade bismuth vanadate pigments with outstanding application properties like improved opacity, high gloss, excellent weather and light fastness and good tinting strength. They are quite easily dispersible and can be used in solventbased as well as in waterborne systems including aqueous dispersions.

VANADUR® 2108 is based on a zinc-free technology and features an extraordinary high tinting strength.

VANADUR® PLUS 9010 is a Silica encapsulated green shade bismuth vanadate pigment. For some applications stability properties of standard bismuth vanadate regarding heat, SO_2 or alkali resistance are not sufficient.

Especially plastic applications require a stable color shade even at very high temperatures.

To fulfill these requirements Heubach developed this highly stabilized bismuth vanadate pigment. Due to the encapsulation, this pigment shows improved application properties like extreme heat resistance and improved acid, alkali and SO_2 resistance, Light- and UV-resistance.

Name	Full Shade	Reduction 1:1	Color Index	Median D50 [µm] 1)	Oil Absorption [g/100g] 2)	Heat Resistance [°C] 4)	Alkali Resistance 6)
VANADUR® 2108 (C) zinc-free			P.Y. 184	typ. 0.7	typ. 19	200	5
VANADUR® 1010 (C)			P.Y. 184	typ. 0.7	typ. 27	200	5

Name	Full Shade	Reduction 1:1	Color Index	Median D50 [µm] 1)	Oil Absorption [g/100g] 2)	Heat Res. in HDPE [°C] 5)	Alkali Resistance 6)
VANADUR® PLUS 9010 (C) or (P)			P.Y. 184	typ. 0.7	typ. 29	300	5

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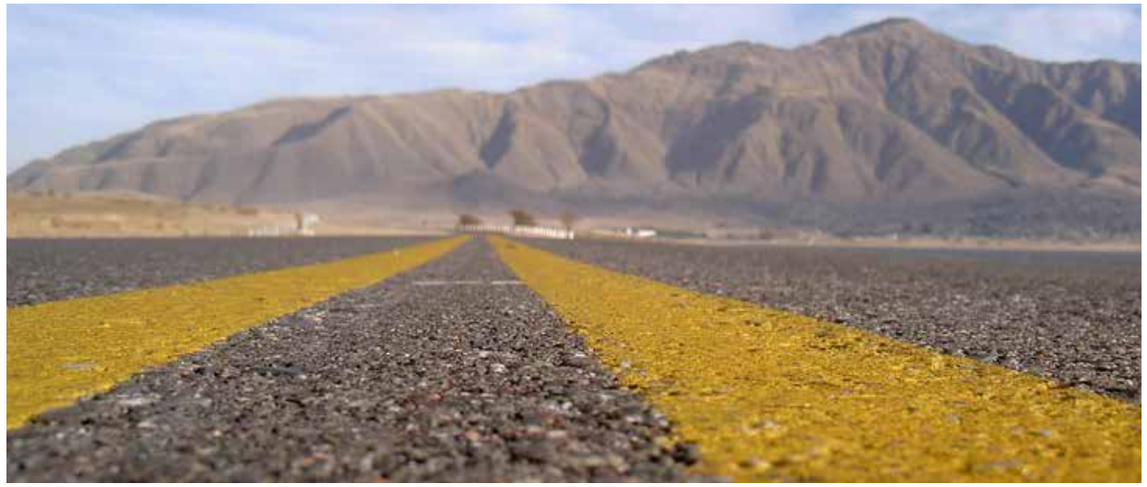
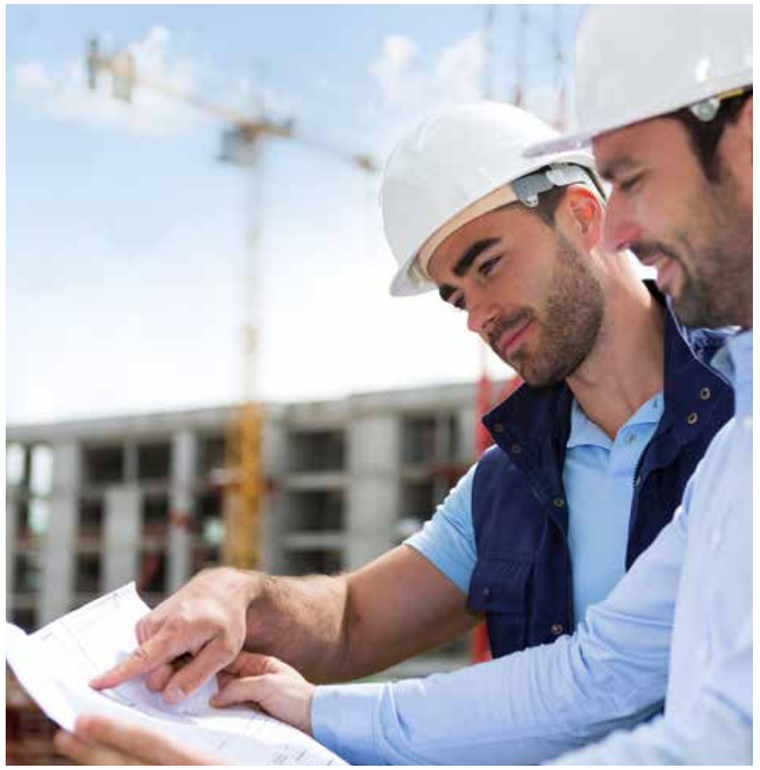
(C) or/and (P): C = specified for Coatings, P = specified for Plastics

1) according to ISO 13320
2) acc. to ISO 787-5
3) Tested in heat resistant coating up to 600 °C for 30 minutes.
4) Tested in alkyd/melamine system.
5) Tested in HDPE [1:3] system acc. to DIN EN 12877-2.
6) Pigment was dipped into soda solution (10%). Rating with gray scale: 1=poor, 5=excellent.



Heubach's range of high performance inorganic pigments offers solutions for the most demanding applications such as:

- Coil coatings, powder coatings, industrial coatings, architectural coatings etc.
- Plastics (PE, PP, PVC etc.) for masterbatch, building products, etc.
- Engineering plastics (ABS, PC etc.) for e.g. automotive applications
- Fiber and thin film plastic applications
- Exterior building products, e.g. cement, concrete, roofing granules etc.
- Ceramic applications



Our Service

At Heubach, customer satisfaction comes first. As a supplier of high-quality pigment and pigment preparation solutions we support our customers anywhere where pigments are in use.

With active service centers both globally and regionally we provide our customers with the technical support essential for the implementation of customer-specific requirements and solutions.

Fully equipped technical laboratories and centers enable us to carry out tests for all relevant applications, such as printing inks, paints and coatings, including corrosion protection, coil and powder coatings and plastics.

Custom color adjustments play a significant role both in coatings and plastics applications.

We have extensive expertise in the development of colors for a variety of plastics, paint and coating systems. Depending on fastness properties, application or processing requirements, we can deliver the right color for your application, plastic compounds or even a specific paint system.

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