Inorganic Pigments

HEUCODUR® & VANADUR®

Color solutions for the most demanding applications

heubach

COMPETENCE IN COLOR

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 comple x 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 dispersion obtainable with these pigments in various formulated systems.

Applications

› 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

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 alk ali) 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 v ariation of the calcination temperature. A higher calcination temperature results in dark er 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	Av. Primary Particle Size [µm] 1)	Oil Absorption [ml/100g] 2)	Heat Resistance [°C] 3)
HEUCODUR® Yellow 9064			$(Ni,Sb,Ti)O_2$	P.Y. 53	~ 1.0	~ 17	800
HEUCODUR® Yellow 152			$(Ni,Sb,Ti)O_2$	P.Y. 53	~ 1.2	~ 17	800
HEUCODUR® Yellow 8G			$(Ni,Sb,Ti)O_2$	P.Y. 53	~ 1.2	~ 16	800
HEUCODUR® Yellow G 9082			$(Ni,Sb,Ti)O_2$	P.Y. 53	~ 1.5	~ 15	800
HEUCODUR® Yellow G 9116			$(Ni,Cr,Sb,Ti)O_2$	P.Y. 53	~ 0.7	~ 17	800

Due to the limitation of printing process, some slight variations between the color as illustrated may be observed.

Chromium Rutile Pigments

Nickel and 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	Av. Primary Particle Size [µm] [1]	Oil Absorption [ml/100g] [2]	Heat Resistance [°C] [3]
HEUCODUR® Yellow 3R			$(Cr,Sb,Ti)O_2$	P.Br. 24	~ 0.6	~ 20	600
HEUCODUR® Yellow 253			$(Cr,Sb,Ti)O_2$	P.Br. 24	~ 0.8	~ 19	800
HEUCODUR® Yellow 252			$(Cr,Sb,Ti)O_2$	P.Br. 24	~ 1.0	~ 19	800
HEUCODUR® Yellow G 9239			$(Cr,Sb,Ti)O_2$	P.Br. 24	~ 0.7	~ 19	800
HEUCODUR® Yellow 255			$(Cr,Sb,Ti)O_2$	P.Br. 24	~ 0.9	~ 18	800
NEW HEUCODUR® Yellow 2550			$(Cr,Sb,Ti)O_2$	P.Br. 24	~ 1.3	~ 19	800
HEUCODUR® Yellow 6R			$(Cr,Sb,Ti)O_2$	P.Br. 24	~ 1.1	~ 17	800
HEUCODUR® Yellow 256			$(Cr,Sb,Ti)O_2$	P.Br. 24	~ 1.4	~ 17	800
HEUCODUR® Yellow 259			$(Cr,Sb,Ti)O_2$	P.Br. 24	~ 1.5	~ 16	800
HEUCODUR® Yellow G 9202			$(Cr,Sb,Ti)O_2$	P.Br. 24	~ 1.7	~ 16	800
HEUCODUR® Yellow G 9180			$(Cr,Sb,Ti)O_2$	P.Br. 24	~ 1.7	~ 16	800

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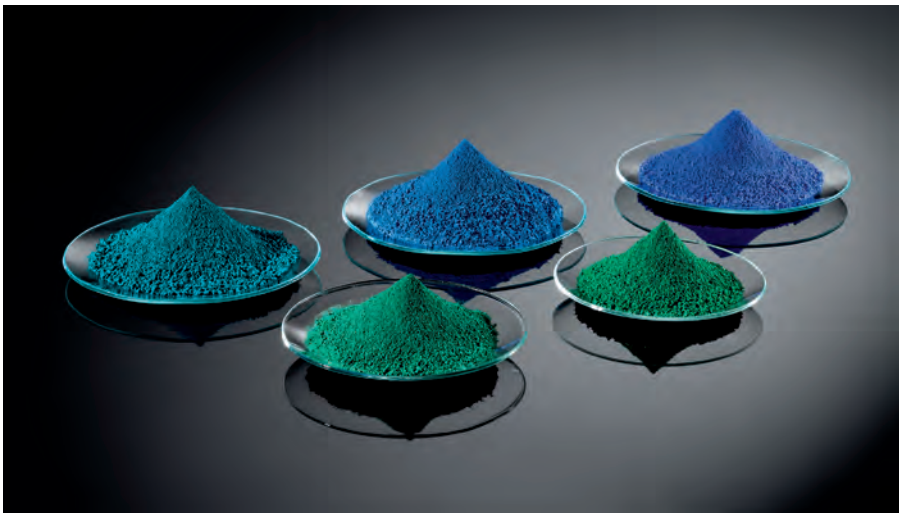
(Inverse) Spinel Pigments

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 triv alent chromium content in the crystal structure. The hiding power increases correspondingly with increased chromium content as seen in HD 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	Av. Primary Particle Size [µm] 1)	Oil Absorption [ml/100g] 2)	Heat Resistance [°C] 3)
HEUCODUR® Blue 550			$CoAl_2O_4$	P.Bl. 28	~ 0.9	~ 30	800
HEUCODUR® Blue 551			$CoAl_2O_4$	P.Bl. 28	~ 0.9	~ 27	800
HEUCODUR® Blue 552			$CoAl_2O_4$	P.Bl. 28	~ 0.9	~ 29	800
HEUCODUR® Blue 2R			$CoAl_2O_4$	P.Bl. 28	~ 1.4	~ 30	600
HEUCODUR® Blue 545			$Co(Al,Cr)_2O_4$	P.Bl. 36	~ 0.6	~ 17	800
HEUCODUR® Blue 5-100			$Co(Al,Cr)_2O_4$	P.Bl. 36	~ 0.9	~ 17	800
HEUCODUR® Blue 4G			$Co(Al,Cr)_2O_4$	P.Bl. 36	~ 0.7	~ 15	800
HEUCODUR® Green 5G *)			$(Co,Ni,Zn)_2(Ti,Al)O_4$	P.G. 50	~ 1.0	~ 17	800

*) *In accordance with CLP Regulation No. 1272/2008 this product is classified as dangerous substances with Hazard Classes and Category Codes: Skin Sens. 1; H3 17 / Carc. 1A; H350i / STOT RE 2; H373*

Browns

Iron chromite brown pigments produce colors from a w arm chocolate brown as seen in HEUCODUR® Brown 855 to a dark, blue shade brown seen in HEUCODUR® Brown 869.

Blacks

The black pigments here fall into two distinct classes.

HEUCODUR® Black 940 is an Iron chromite brown pigment that absorbs in the visible region, but reflects at wavelengths in the near infrared. The acid soluble iron content is kept low. This pigment class is used to prevent heat build-up that may be caused by sun light or IR radiation.

HEUCODUR® Black 953-1, HEUCODUR® Black 9-100 and HEUCODUR® Black 955 are black spinel pigments based on copper and cobalt , respectively and absorb in the IR region.

Name	Full Shade	Reduction 1:5	Pigment	Color Index	Av. Primary Particle Size [µm] 1)	Oil Absorption [ml/100g] 2)	Heat Resistance [°C] 3)
HEUCODUR® Brown 855			$(Fe,Cr)O_3$	P.Br. 29	~ 0.6	~ 25	600
HEUCODUR® Brown 869			$(Fe,Cr)O_3$	P.Br. 29	~ 0.6	~ 25	700
HEUCODUR® Black 940			$(Fe,Cr)O_3$	P.Br. 29	~ 1.0	~ 22	800
HEUCODUR® Black 953-1			$Cu(Cr,Fe)_2O_4$	P.Bk. 28	~ 1.2	~ 16	800
HEUCODUR® Black 9-100			$Cu(Cr,Fe)_2O_4$	P.Bk. 28	~ 1.8	~ 17	800
HEUCODUR® Black 955			$Co(Cr,Fe)_2O_4$	P.Bk. 27	~ 1.4	~ 18	800

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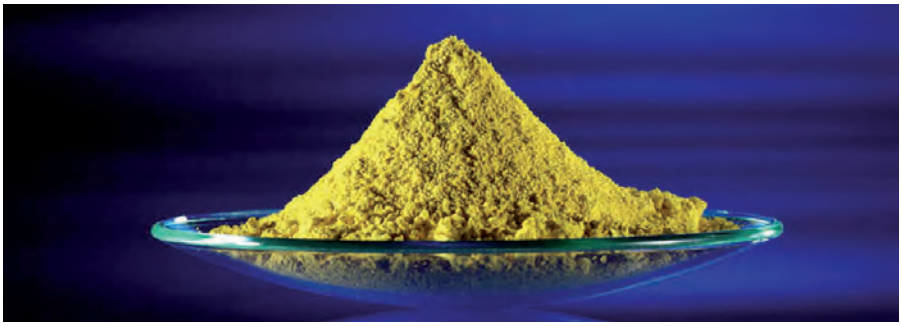
(Encapsulated) Bismuth Vanadate Pigments

VANADUR® 1010, VANADUR® 1030 and VANADUR® 2108 are green shade bismuth vanadate pigments with outstanding application properties lik e improved opacity, high gloss, excellent weather and light fastness and good tinting strength. They are easily dispersible and can be used in solventbased as well as in waterborne systems including aqueous dispersions.

VANADUR® 1030 is slightly reddisher compared to VANADUR® 1010 while VANADUR 2108 features an extraordinary high tinting strength.

VANADUR® PLUS 9010 & VANADUR® PLUS 9060 are two Silica encapsulated green & red shade bismuth vanadate pigments. For some applications stability properties of 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 highly stabilized bismuth vanadate pigments. Due to the encapsulation, these pigments show improved application properties like extreme heat resistance and improved acid, alkali and SO_2 resistance.



Name	Full Shade	Reduction 1:1	Color Index	Av. Primary Particle Size [µm] [1]	Oil Absorption [ml/100g] [2]	Heat Resistance [°C] [4]	Alkali Resistance [6]
NEW VANADUR® 2108			P.Y. 184	~ 0.5	~ 20	200	5
VANADUR® 1010			P.Y. 184	~ 0.7	~ 24	200	5
VANADUR® 1030			P.Y. 184	~ 0.8	~ 22	200	5

Name	Full Shade	Reduction 1:1	Color Index	Av. Primary Particle Size [µm] [1]	Oil Absorption [ml/100g] [2]	Heat Res. in HDPE (5 min) [°C] [5]	Alkali Resistance [6]
VANADUR® PLUS 9010			P.Y. 184	~ 0.7	~ 40	300	5
VANADUR® PLUS 9060			P.Y. 184	~ 1.0	~ 40	260	5

[1] according to ISO 13320-1
[2] according to DIN EN ISO 787/5
[3] AA-00170
[4] Pigments were tested in an alkyd / melamine system with 30 minutes baking time. Temperature range 140 °C to 200 °C.
[5] AA-00366
[6] Pigments were stirred 24h in hydroxide solution at room temperature

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