Economical low VOC colorants for in-plant, solvent-based applications

Color Solutions

Novapint™ D Solar Reflective

Novapint D Solar Reflective colorants are an intelligent combination of conventional façade colorants that have excellent solar heat reflective properties and a functional NIR reflective black colorant to replace iron oxide black.

Application

Novapint D Solar Reflective colorants are specially developed for water-based façade paints and plasters. They minimize heat build-up in architectural paint applications for facade, roofs, window frames and Exterior Insulation Finishing Systems (EIFS).

Properties

The aim of solar-reflective coatings is to maximize the solar reflectivity of the coated surface. Reflectivity is achieved by the physical back-scattering of solar radiation by pigment particles. This is well-known for the visible range. However, solar radiation does not only comprise visible "light", but also ultraviolet (UV) and near-infrared (NIR), contributing over 50% of the solar energy, see figure 1.

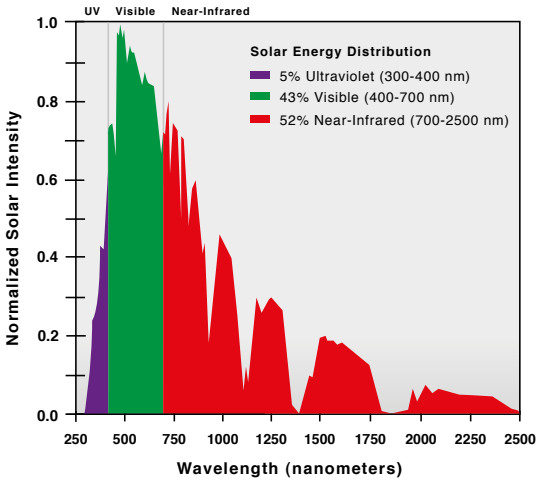

Figure 1: Typical solar radiation spectrum
Light colors reflect more energy compared to dark colors, however the pigment choice can also have a great influence on the reflection properties. Figure 2 and 3 on the back, illustrate the reflection curves of different pigmented topcoats and the corresponding heat build-up profiles.

The amount of total solar energy absorbed by a top coat determines the heat build-up of a coated surface and results in a surface temperature depending on the duration of exposure. To achieve cool façade surfaces, the pigments in the coating, need to reflect as much energy as possible. This reflection ability can be expressed as the Total Solar Reflectance (TSR) value (100% = total reflection: 0% = total absorption). Therefore, pigments with high TSR values show a high reflection combined with low heat build-up, and vice versa.

Our Services

As a frontrunner in integrating tinting solutions, Vibrantz Technologies provides excellent service in the set-up of your tinting systems as well as smooth colorant technology conversions. Our technical support includes:

- Assurance of colorant and base paint compatibility
- System design, optimization and pigment selection
- Color matching and database development
- Equipment compatibility and sales support

Stringent production controls and processes ensure that all colorants are manufactured to rigid specifications for color shade, strength and rheology. The end result is assured color accuracy and reproducibility.



Name	Color	Pigment	Pigment content of colorant [%]	Light Fastness of Pigment [1]		Weather Resistance of Pigment [2]		TSR [4] [%]	Density of Colorant (kg/m3)
				Mass	Tint	Mass	Tint		
D-11[3]	White	PW 6	75	8	N.A.	5	N.A.	88	2382
D-800[3]	Black Oxide	PBk 33	69	8	8	5	5	21	2257
D-100[3]	Yellow Oxide	PY 42	58	8	8	5	5	51	1807
D-117[3]	Orange Oxide	PY 42	58	8	8	5	5	53	1767
D-200[3]	Red Oxide	PR 101	64	8	8	5	5	50	2123
D-102[3]	Yellow	PY 53	73	8	8	4-5	4-5	67	2307
D-105[3]	BiVa Yellow	PY 184	57	8	8	4-5	4-5	70	1899
D-106[3]	BiVa Yellow	PY 184	57	8	8	4-5	4-5	76	1972
D-126[3]	Orange Oxide	PY 216	57	8	7-8	5	4-5	66	1863
D-201	Red	PR 168	36	8	8	5	4-5	58	1231
D-803[3]	Black NIR	PBr 29	74	8	8	5	5	33	2452
D-902[3]	Turquoise Green	PB 28	46	8	8	5	5	42	2157
D-900[3]	Blue Cobalt	PB 28	50	8	8	5	5	41	1951
D-300[3]	Green Oxide	PG 17	70	8	8	5	5	35	2281
D-301[3]	Cobalt Green	PG 50	65	8	8	5	5	31	2120
D-606[3]	Violet Ultramarine	PV 15	60	8	8	5	5	48	1581

The values given in the table are guidance figures only. The data is obtained from pigment suppliers, individual testing is recommended.
[1] Light fastness is measured on an eight step blue scale, where 1 = very poor light fastness, 8 = excellent light fastness.
[2] Weather resistance is measured on a five step gray scale, where 1 = very poor weather resistance , 5 = excellent weather resistance.
[3] Colorant containing inorganic pigment(s). Vibrantz Technologies recommends to use only colorants containing inorganic pigments in high alkaline environments and in exteriorsilicate or silicone based products.
[4] TSR values (Solar spectrum AM 1.5 according to ASTM G 159-98) at adjusted L value (1/3)

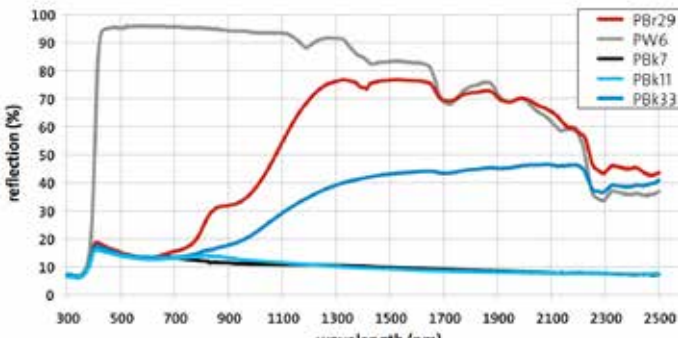

Figure 2: Reflection curves of different pigments

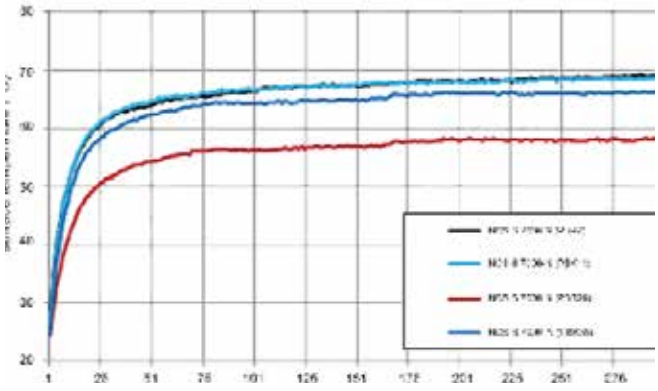

Figure 3: Heat build-up profiles of shade RAL 7037 made with different black pigments