NEROX® 510 & NEROX® 600

Specialty Carbon Blacks for Industrial Coatings

Technical Information TI 1272

orion ENGINEERED CARBONS

Focused. Innovative. Responsive.

Introduction

For applications in the industrial coatings industry there is an increasing demand for black pigments which provide higher jetness and blue undertone. Such pigments must also have good stability in solvent and waterborne systems, and exhibit good outdoor weatherability.

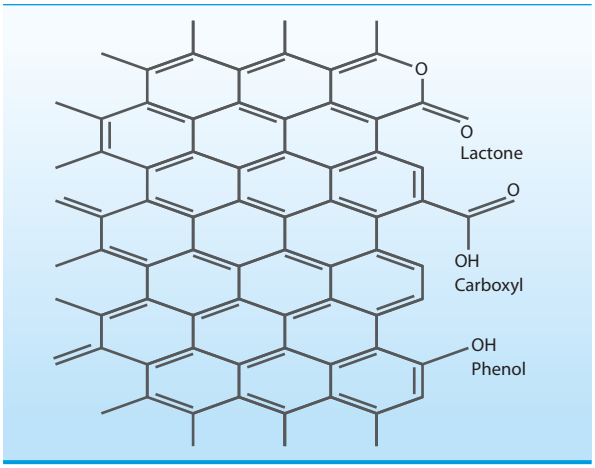
Using a modified process Orion Engineered Carbons GmbH has succeeded in developing special Furnace Blacks: The grades NEROX® 510 and NEROX® 600 are characterized by a medium primary particle size, a narrow primary particle size distribution and a high structure making them very **suitable** for water- and solventborne industrial paint systems.

An innovative oxidation process makes it possible to create a relatively high density of oxygen-bearing groups on the surface of the Specialty Carbon Blacks (Figure 1) together with a relatively weak acid strength. This results in lower mill base viscosity and higher flocculation stability compared to conventional Channel and Furnace Blacks.

NEROX® 510 and NEROX® 600 have a volatile content at 950 °C of approximately 3 % due to a special oxidative aftertreatment process. This aftertreatment leads to better wetting and dispersion properties, lower oil and binder adsorption, and consequently to better stability, higher gloss and lower viscosity in water- and solventborne coatings.

Figure 1

Typical oxygen-bearing Groups on the Surface of an aftertreated Specialty Carbon Black



Properties in Coatings

A direct comparison of coloristic properties of NEROX® 510 and NEROX® 600 is given in Figure 2. Alkyd-melamine coatings based on NEROX® 510 show moderate jetness and higher gloss, while NEROX® 600 can provide high jetness, a significant bluish undertone and high gloss in the same coating system (Figures 3 and 4).

Figure 2

Relative Comparison of coloristic Properties of NEROX® 510 and NEROX® 600

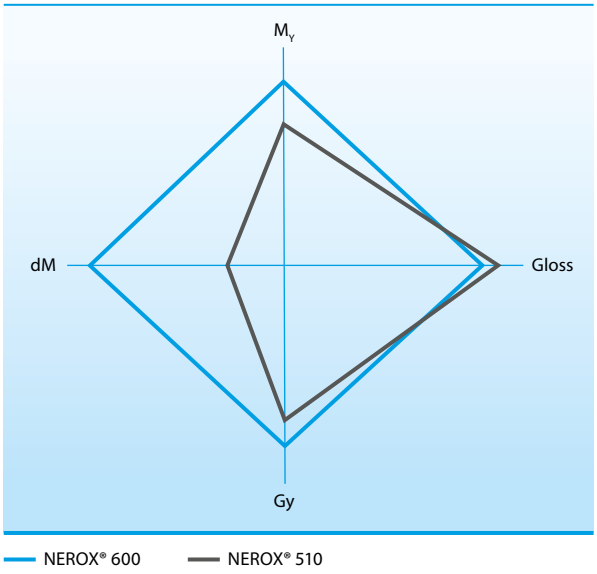


Figure 3

Jetness of different Specialty Carbon Blacks in an Alkyd-Melamine System

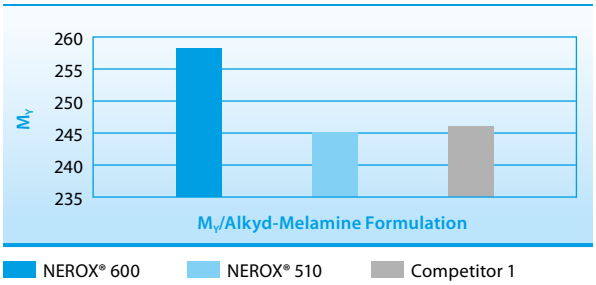
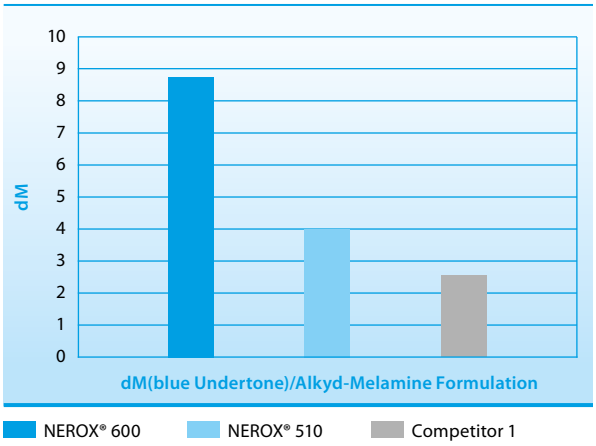


Figure 4

Blue undertone of different Specialty Carbon Blacks in an Alkyd-Melamine System



In tinting systems NEROX® 510 and NEROX® 600 generate a high tinting strength and due to the aftertreatment an excellent stability behaviour (Figures 5 and 6).

Figure 5

Optical Density Values of an Alkyd-Melamine Tinting System based on different Specialty Carbon Blacks

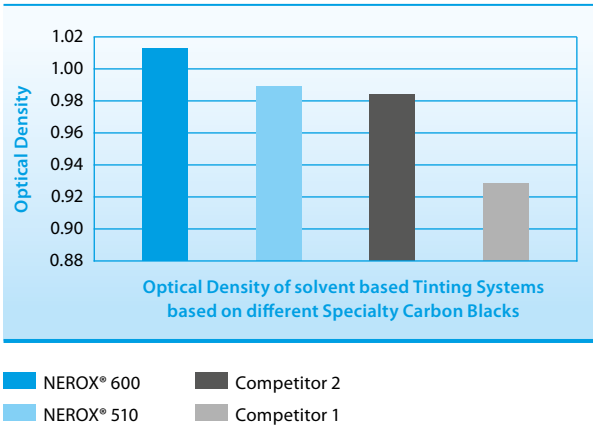
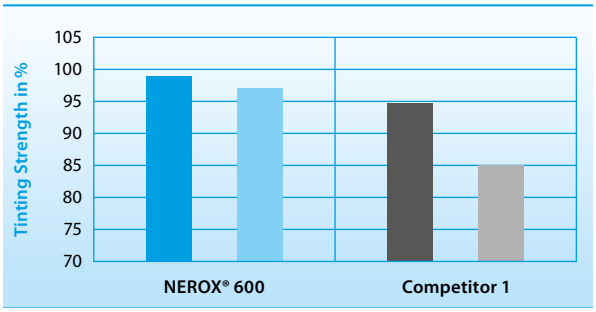


Figure 6

Stability of different Specialty Carbon Blacks in a Tinting System

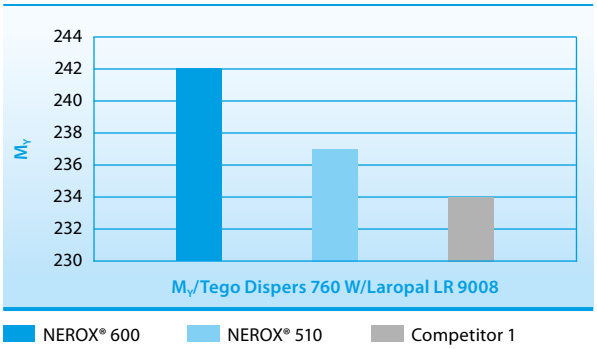


Left bar: rub out
Right bar: non rub out

The performance of the NEROX® types have been tested in water based coating systems as well. Both NEROX® types did show a superior jetness in the tested water based system as can be seen in Figure 7.

Figure 7

Jetness of different Specialty Carbon Blacks in a water based Coating



Summary:

NEROX® 500 and NEROX® 600 are suitable for solvent- and waterborne coatings.

These NEROX® Grades show significant Advantages:

- High jetness
- High bluish undertone
- Stable dispersion

ENGINEERED CARBONS

Focused. Innovative. Responsive.

The Americas

Orion Engineered Carbons LLC
4501 Magnolia Cove Drive, Suite 106
Kingwood, TX 77345
USA
Phone +1 832 445 3300

AMERICAS@orioncarbons.com

Europe/ Middle East/ Africa

Orion Engineered Carbons GmbH
Hahnstraße 49
60528 Frankfurt am Main
Germany
Phone +49 69 36 50 54 100

EMEA@orioncarbons.com

Asia Pacific

Orion Engineered Carbons Trading (Shanghai) Co., Ltd.
BM Intercontinental Business Centre, Room 3701-3702
100 Yutong Road
200070 Shanghai, China
Phone +86 21 6107 0966

APAC@orioncarbons.com

Global Corporate Headquarters

Orion Engineered Carbons S.A., 6 Route de Trèves, L-2633 Senningerberg, Luxembourg, Phone +352 27 04 80 60

www.orioncarbons.com

OEC-TI1272-11/2018