

Colour Black FW 171 for High Jet Waterborne & Powder Coatings



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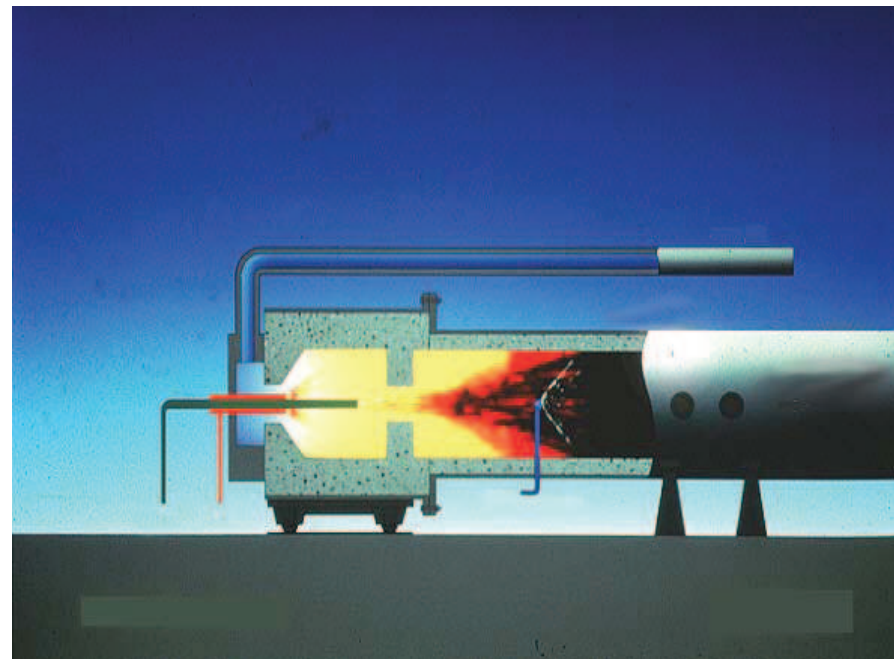
Colour Black FW 171 Overview



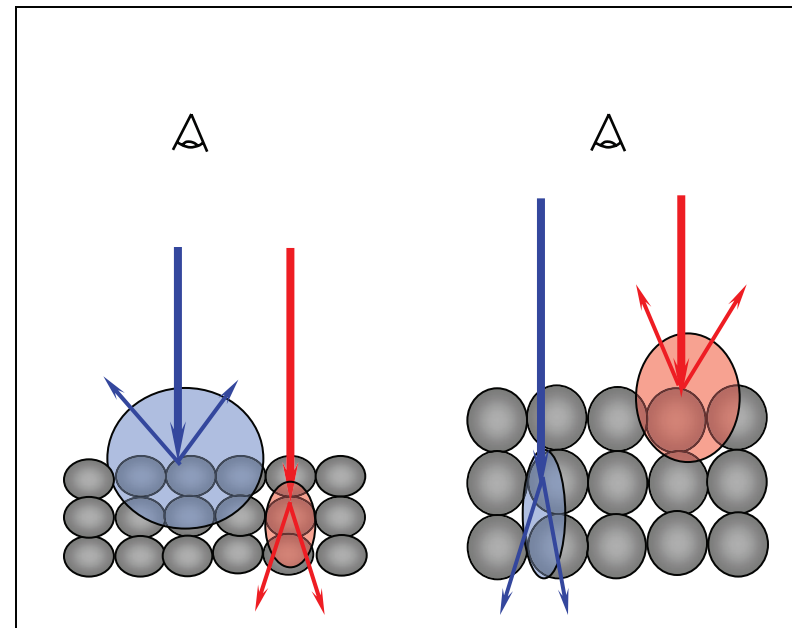
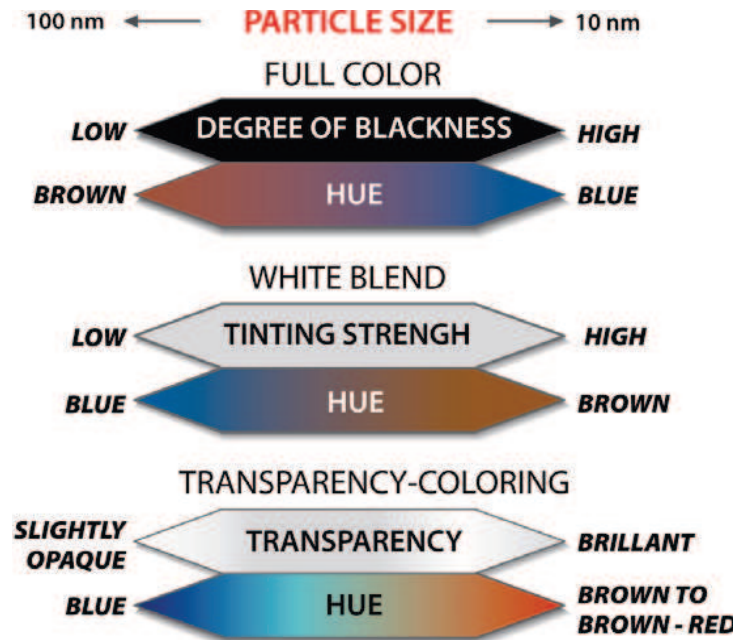
Through a technical modification of the furnace black reactor, it is possible to manufacturer a new class of fine particle size Carbon Black Pigment

Advantages of Colour Black FW171

- Very small mean primary particle size
- Narrow primary particle size distribution
- Narrow aggregate size distribution



Influence of Particle Size on Coloristics



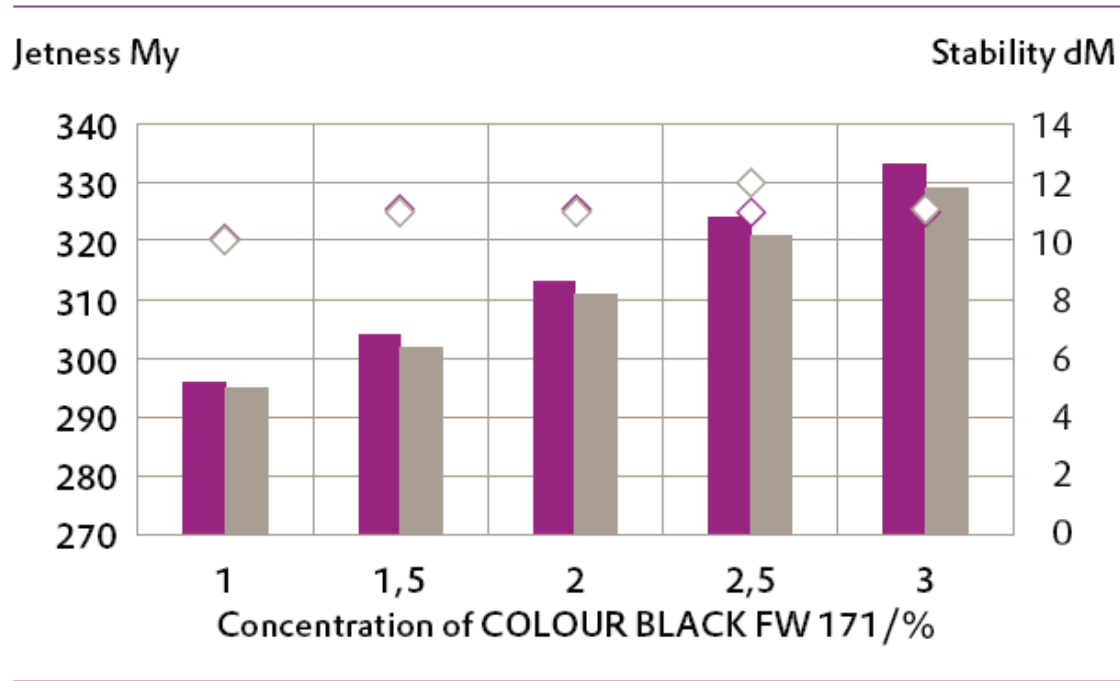
Colour Black FW 171 Physico Chemical Properties



| | | Standard / Test Method | Value |
|---|----------------|---------------------------|----------|
| Blackness value M_Y | | * | app. 300 |
| Abs. contribution of hue dM | | * | app. 12 |
| Oil Absorption Number | ml/100g | ASTM D 2414 | app. 110 |
| Volatile matter (950°C) | % | DIN 53552 | ≤ 3, 0 |
| pH value | | ISO 787-9 | app. 8 |
| Mean primary particle size | nm | Evonik Degussa Method | 11 |

* waterborne PU acrylate system, measuring conditions following PA 1540

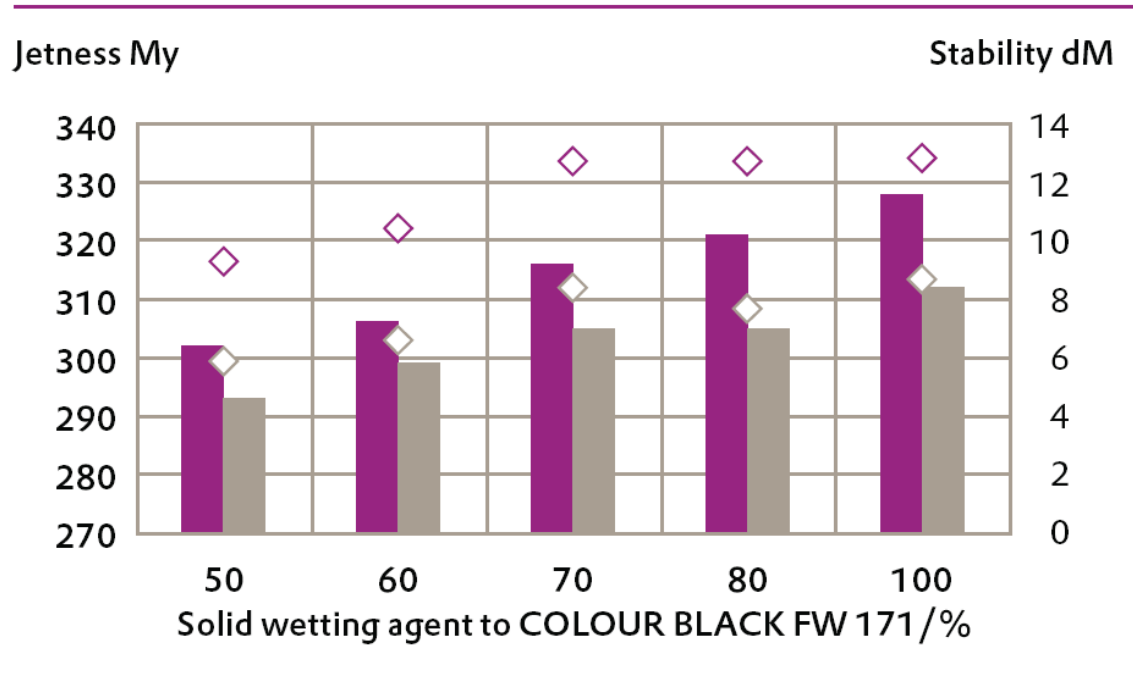
Influence of FW 171 concentration on jetness and stability



■ My, through glass ■ My, commercial BC/CC
◇ dM, through glass ◇ dM, commercial BC/CC

- Binder-less millbase with 70% wetting additive on pigment black
- Let down in Alberdingk U710 & commercial basecoat / clearcoat system
- At 1.5% PB concentration (typical for automobile basecoats) a very high jetness (My > 300 and strong bluish undertone (dM ~11) is achieved

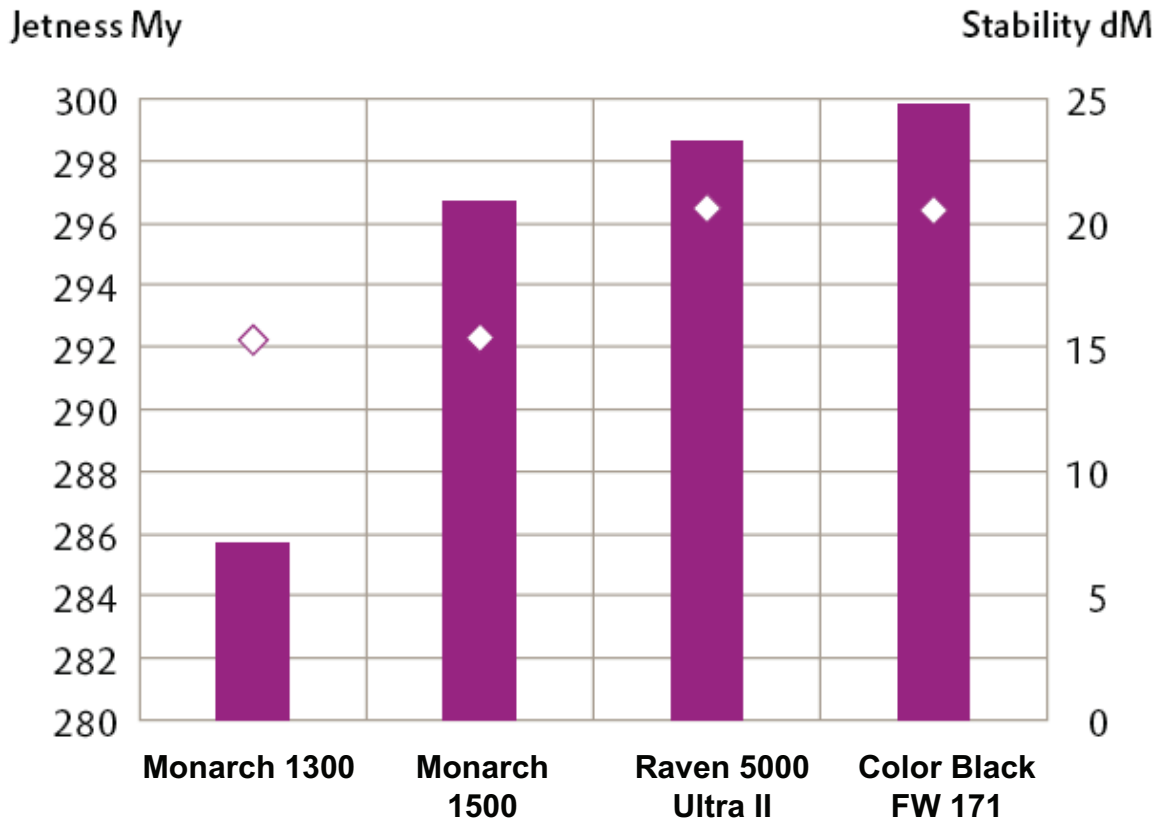
Influence of Wetting Additive on Colour Black FW 171



- Tego Dispers 760W highly recommended for waterborne systems
- A ratio of 70% wetting additive to FW 171 provides the maximum stability as indicated by no increase in the dM value
- Higher loading of wetting additive increases jetness, but cost should be considered

■ My, Tego Dispers® 760W ■ My, Disperbyk® 190
◇ dM, Tego Dispers® 760W ◇ dM, Disperbyk® 190

Color Black FW 171 vs. competitive grades in automotive system



- 15.6% Carbon Black loading in binder-less millbase with 80% wetting additive on pigment black
- Let down in commercial PUR basecoat / acrylate clearcoat system
- At 1.0% PB concentration Color Black FW 171 out performs similar competitive pigment blacks

■ My ◇ dM

Color Black FW 171 in High Jet Black Powder Coating System

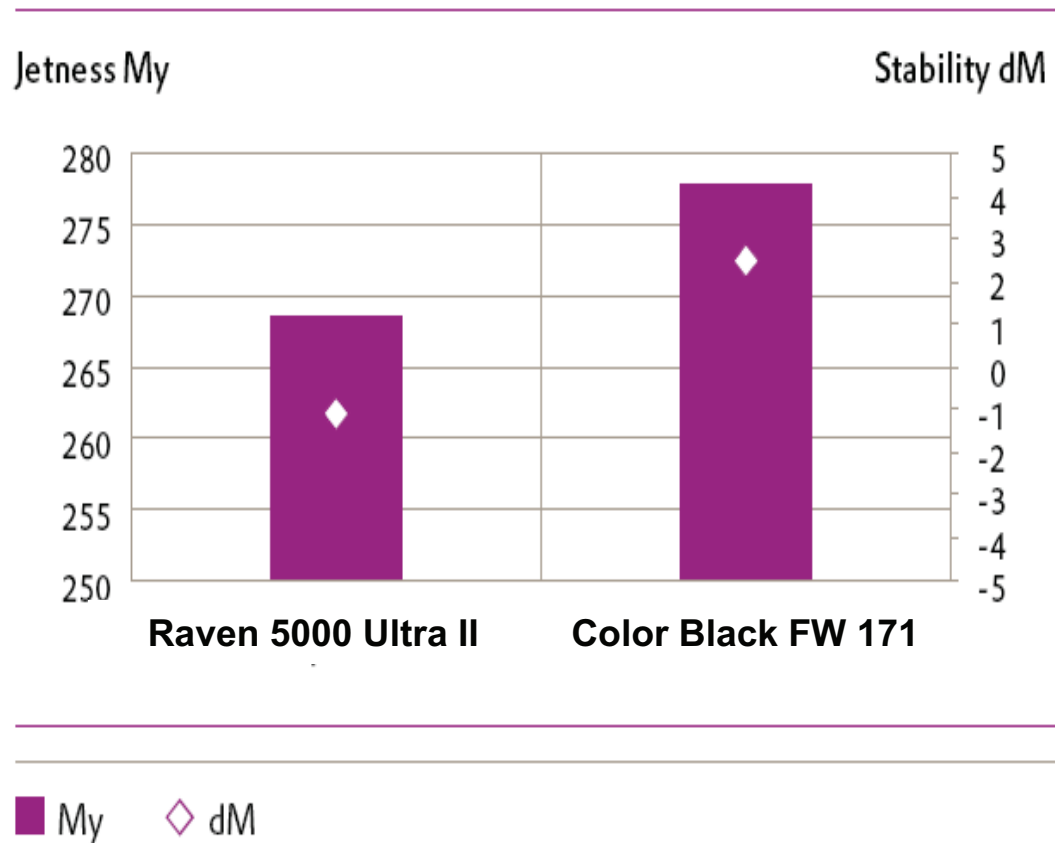


| | |
|---|----------------|
| VESTAGON® HA 320 (Evonik Industries) | 3.30g |
| URALAC® P 865 (DSM N.V.) | 68.20g |
| Carbon Black Pigment | 1.50g |
| RESIFLOW® PV 88 (Worlée Chemie GmbH) | 1.50g |
| Benzoine | 0.50g |
| Blanc Fixe F (Sachtleben Chemie GmbH) | 25.00g |
| Total | 100.00g |
| Carbon Black Pigment concentration | 1.5% |



Hydroxyalkylamide-polyester (HAA-Pes) powder coating

Color Black FW 171 in High Jet Black Powder Coating System



- Due to the fine particle size and structure, Colour Black FW 171 in powder coating performs similar to waterborne coatings
- Significantly higher jetness and stability versus competitors
- 1.5% Pigment Black concentration in a Hydroxyalkylamide-polyester (HAA-Pes) powder coating provides good hiding
- Powder coating was milled and classified prior to spray – fraction between 25µm to 63 µm