



RAVEN 5000 ULTRA II
RAVEN 5100 ULTRA



RAVEN

Waterborne High Color
Coatings

WATERBORNE HIGH COLOR COATINGS

Birla Carbon offers Raven 5000 Ultra II and Raven 5100 Ultra carbon blacks, the finest particle size carbon blacks in the world. These products feature the highest surface area available in a carbon black which, in turn gives the deepest color. Jetness is the property most desired for high-end coatings applications in the automotive, industrial, and architectural industries. Birla Carbon team will work with you to obtain the ultimate level of color in your formulation.

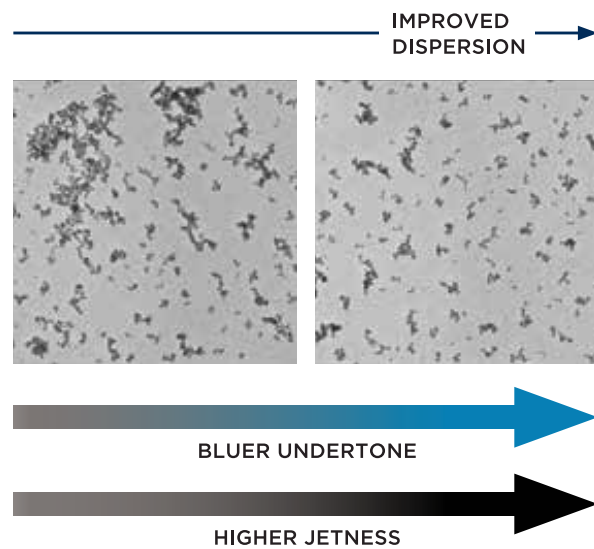
PERFORMANCE PROPERTIES

Birla Carbon's high color products provide industry leading levels of jetness in high color coatings. The very fine particle size and very high surface area of these products allow the most opportunity for light absorption which brings out an exceptional level of jetness.

In order to optimize the level of jetness, the maximum amount of surface area needs to be exposed. This is achieved through good dispersion. The surface oxidation of Raven 5000 Ultra II carbon black can strongly interact with certain classes of dispersants. However, the neutral surface of Raven 5100 Ultra carbon black provides formulation flexibility with different types of dispersants.

The use of external dispersants is usually necessary to attain the darkest color. Proper selection of dispersants is based on the resin system and the pigment surface chemistry. Optimization of the dispersant type, loading, and mixing conditions will lead to developing the ultimate level of color in your application.

Shown here are the effects of improved dispersion and color development. In this case, less than 15% additional dispersion time minimized micro-flocculation, enhanced jetness, and changed the undertone of the black from brown to blue. Optimizing the formulation through proper selection of the dispersant and its loading will show similar improvements.



Birla Carbon has dedicated teams and capabilities focused on specialty carbon black markets, including plastics, inks, and coatings. Our Raven and Conductex specialty carbon blacks meet the unique requirements in these markets and provide the desired properties of color, conductivity, viscosity, and UV protection for a wide range of applications. Our contemporary research

infrastructure and state-of-the-art technology centers make us well equipped to collaborate with our customers and provide the best possible solution to any challenge in the specialty carbon black market. With a presence in each of the key markets of Asia, Europe, and the Americas, Birla Carbon stands ready to deliver consistent, high-quality products and services worldwide.

16

MANUFACTURING SITES

8

OFFICES

2

TECHNOLOGY CENTERS

2

CORPORATE OFFICES



PROCESSING CONDITIONS

MILLBASE

- Shaker milling process
- Media: 0.6-0.8 mm Zirconia
- Media Wt: Dispersion Wt = 4:1
- Millbase mixing time = 12 hours

LETDOWN

- Blend letdown components for 30 minutes
- Add millbase to letdown
- Shake for 5 minutes

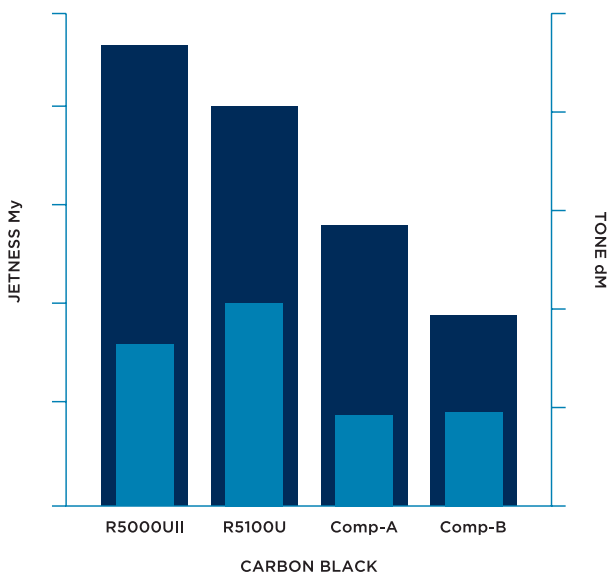
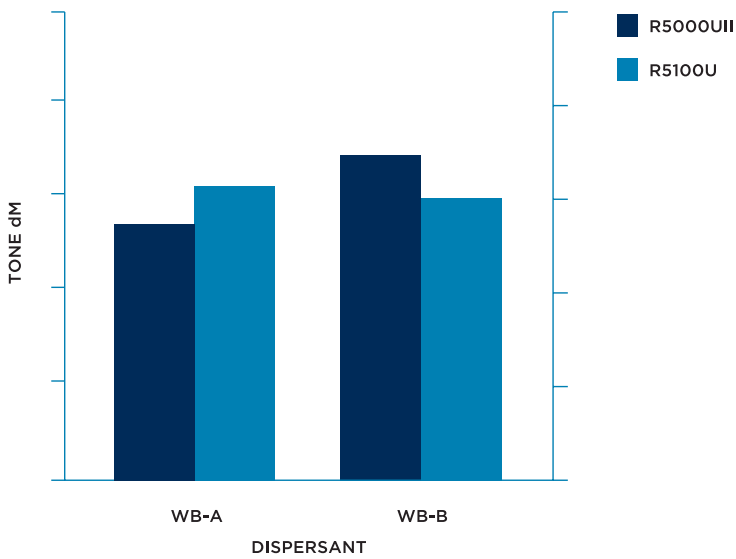
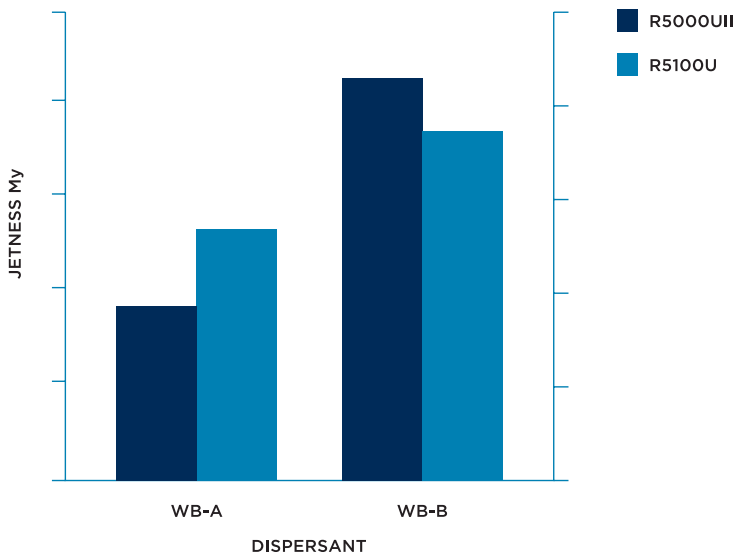
MILLBASE FORMULATIONS

COMPOSITION	35% ACTIVE	50% ACTIVE	100% ACTIVE
MILLBASE			
Water	41.9	54.8	69.8
Dynol™ 604	0.2	0.2	0.2
Dispersant	42.9	30.0	15.0
Carbon Black	15.0	15.0	15.0
Total	100.0	100.0	100.0
LETDOWN			
Cymel® 373	7.0	7.0	7.0
DPnB	3.3	3.3	3.3
PnB	5.0	5.0	5.0
Dynol™ 604	0.2	0.2	0.2
Neocryl® XK101	84.5	84.5	84.5
Total	100.0	100.0	100.0
PAINT			
Millbase	10.0	10.0	10.0
Letdown	90.0	90.0	90.0
Total	100.0	100.0	100.0

POLYMERIC DISPERSANTS EVALUATED

Dispersant	Charge	Polymer Type	% Active
WB-A	Non-ionic	Polyurethane	35
WB-B	Anionic	Polymeric Alkoxylate	100





Collaborating with our customers means much more than finding a product solution. It means having the drive to explore solutions to a challenge from every angle, and leveraging our proven, global expertise to do it. It means

creating practical innovations that deliver real results. And it means creating a seamless experience that is built on a relationship, not a process. The experience begins with a conversation. **Please contact us** to get started.

ABOUT BIRLA CARBON

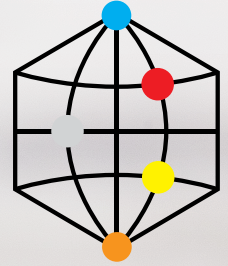
Birla Carbon is a leading global supplier of carbon black. As one of the flagship businesses of the leading Indian multinational conglomerate, the **Aditya Birla Group**, Birla Carbon provides innovative sustainable carbon black solutions that enhance the performance of paints and coatings, inks and toners, plastics, adhesives, sealants, textile fibers, mechanical rubber goods, tires, Energy Systems, and Sustainable Carbonaceous Materials.

As an ardent practitioner of sustainable development, Birla Carbon's Sustainable Operational Excellence (SOE) strategy focuses on employee safety, environmental stewardship, efficient use of carbon sources, product circularity and sustainability, and

a key focus on conducting operations in a socially and ethically responsible manner. Birla Carbon has been recognized by EcoVadis since 2016 as an advanced practitioner of sustainability. Our current rating is available on the **Birla Carbon Sustainability webpage**.

Birla Carbon's Purpose, 'Share the Strength', is about balanced and shared leadership, working at the product level to innovate cutting edge solutions through collaboration with its people, customers, and communities and backed by knowledge built over a century.

For more information, visit birlacarbon.com, or follow us [@BirlaCarbon](https://twitter.com/BirlaCarbon) on [Twitter](https://www.linkedin.com/company/birlacarbon), [LinkedIn](https://www.facebook.com/birlacarbon), [Facebook](https://www.facebook.com/birlacarbon), or [Instagram](https://www.instagram.com/birlacarbon).



SHARE THE STRENGTH

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