



BIRLA CARBON
SPECIALTY BLACKS

RAVEN®

WATERBORNE HIGH COLOR COATINGS

RAVEN® 5000 ULTRA® II

RAVEN® 5100 ULTRA®



WATERBORNE HIGH COLOR COATINGS

Birla Carbon offers Raven 5000 Ultra II and Raven 5100 Ultra, 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's Specialty Blacks team will work with you to obtain the ultimate level of color in your formulation.

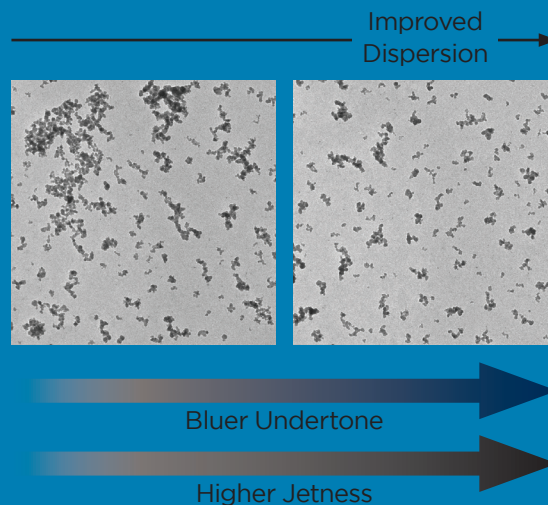
PERFORMANCE PROPERTIES

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 can strongly interact with certain classes of dispersants. However, the neutral surface of Raven 5100 Ultra 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 is the world's largest manufacturer and supplier of carbon black, capable of producing more than 2 million mt each year. As a flagship business of the Aditya Birla Group, our facilities are spread across five continents and 12 countries consisting of 16 manufacturing units, 2 regional technical service centers, and 2 technology centers. Our presence in each of the key markets of Asia, Europe, and the Americas enables us to deliver consistent, high-quality products and services worldwide. With our portfolio of more than 100 types of carbon black, we provide solutions to leading companies in the rubber and specialty applications segments.

The Birla Carbon Specialty Blacks business focuses on the plastics, inks, and coatings markets. Our **Raven®** and **Conductex®** specialty blacks meet every requirement 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.

FOCUSING ON SUSTAINABLE OPERATIONAL EXCELLENCE

Through our implementation of Sustainable Operational Excellence, we optimize the way we make carbon black, minimize our environmental footprint, and make valuable contributions to our communities and society as a whole. We strive to fulfill our commitment to reduce the environmental and social impact of our products, while ensuring world-class quality and supply continuity for our customers.

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

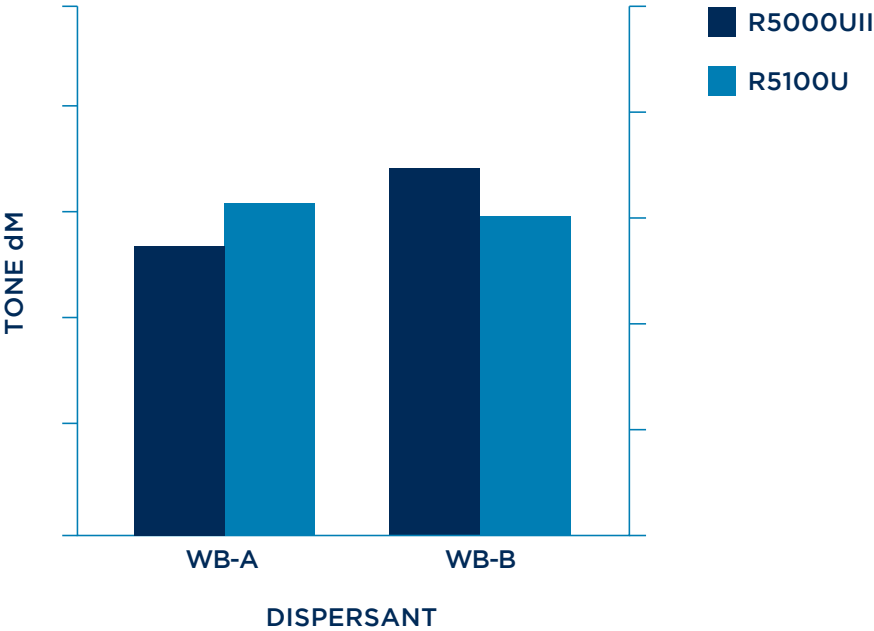
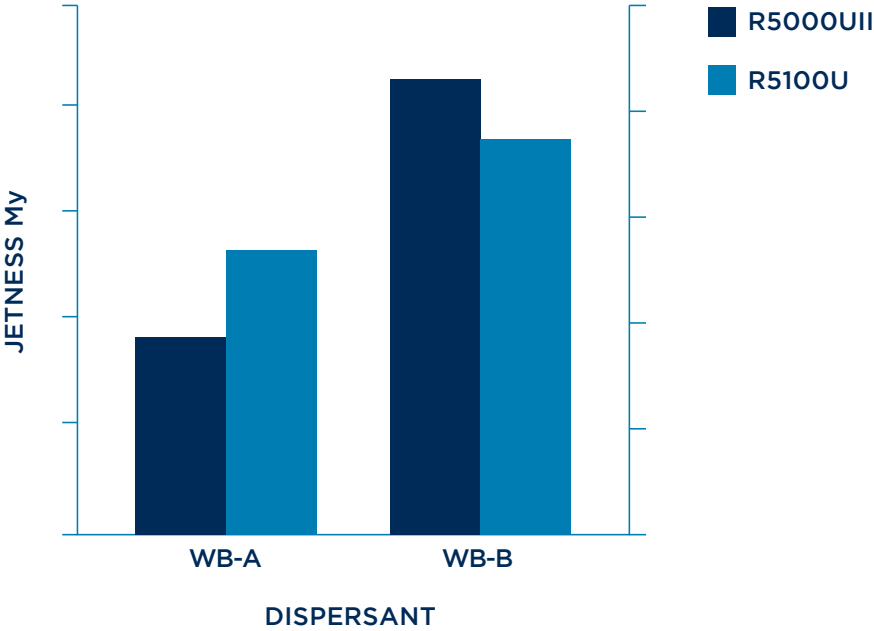


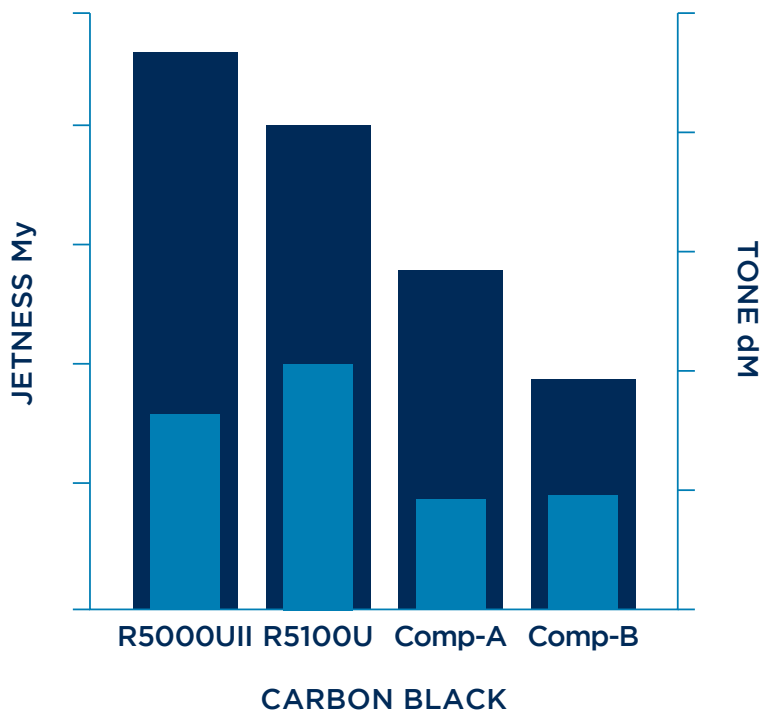
MILLBASE FORMULATIONS

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 at birlacarbon.specialty@adityabirla.com to get started.

**THE ONLY SPECIALTY BLACKS SOLUTION
YOU NEED, FROM THE WORLD LEADER
IN CARBON BLACK. CONTACT US TODAY.**

birlacarbon.specialty@adityabirla.com

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