

High-Performance Pigment Dispersant & Wetting Agent

STEPSPERSE® 61 for Industrial Applications

STEPSPERSE 61 is a novel, APE¹- and VOC-free, high-performance polymeric (HPP) dispersant designed for a wide variety of carbon blacks and organic pigments in waterborne applications. This technology offers improved performance over leading commercial dispersants in:

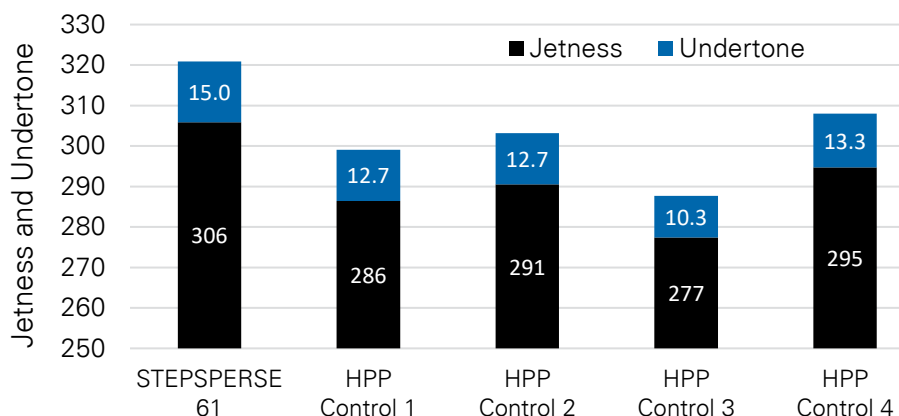
- Color development
- Resin compatibility
- Milling efficiency
- Dispersion stability

The performance attributes of STEPSPERSE 61 make it particularly powerful for high surface area carbon blacks used in industrial coatings, such as in automotive applications. STEPSPERSE 61 allows for simplified millbase formulations and potentially reduced cost because no wetting agents or auxiliary dispersants are needed in the formulations.

Color Development

STEPSPERSE 61 provides excellent jetness and blue undertone with industrial carbon black. Figure 1 shows the ability of STEPSPERSE 61 to offer superior performance compared to other commercial HPP dispersants.

Figure 1. Color Development



Industrial black tint: 15% Raven® 5000 Ultra® II (Birla Carbon) at 100% dispersant SOP². Tinting of hydroxyl functional acrylic paint at 1:9 ratio.

Reliable Performance Across Multiple Paint Systems

STEPSPERSE 61 can achieve excellent results in a wide variety of waterborne systems, providing a dependable and flexible solution to formulate industrial coatings with superior jetness and resin compatibility.

Figure 2. Dispersant Jetness and Compatibility

Dispersant	Acrylic	Vinyl Acrylic	PUD ³	Styrene Acrylic	Cationic Acrylic/ Styrene	Alkyd Emulsion/ Drier	Acrylic/ PUD Blend
STEPSPERSE 61	●	●	●	●	●	◐	●
HPP Control 1	◐	◐	◐	◐	◐	◐	◐
HPP Control 2	◐	◐	◐	◐	◐	◐	◐
HPP Control 3	○	◐	◐	○	○	◐	◐
HPP Control 4	◐	◐	◐	◐	◐	●	◐

Industrial black tint: 15% Raven® 5000 Ultra® II (Birla Carbon) at 100% dispersant SOP. Tinting of paint at a 1:9 ratio.

Relative Performance Rating: Worst Jetness ○ ——— ● Best Jetness

◐ Red outline indicates compatibility problems

¹ APE: Alkyl phenol ethoxylate

² SOP: Solids on weight of pigment = mass of dispersant used/mass of pigment used x 100%

³ PUD: Polyurethane dispersion

Compatibility

The chemistry of STEPSPERSE 61 excels in letdown, as it does not interfere with the other components in the formulation. Figure 3 illustrates how STEPSPERSE 61 yields millbases that maintain consistency of the base paint. Poor compatibility between the base paint and other dispersants demonstrates the advantage of our technology.

Figure 3. Compatibility of Vinyl Acrylic Base Paint

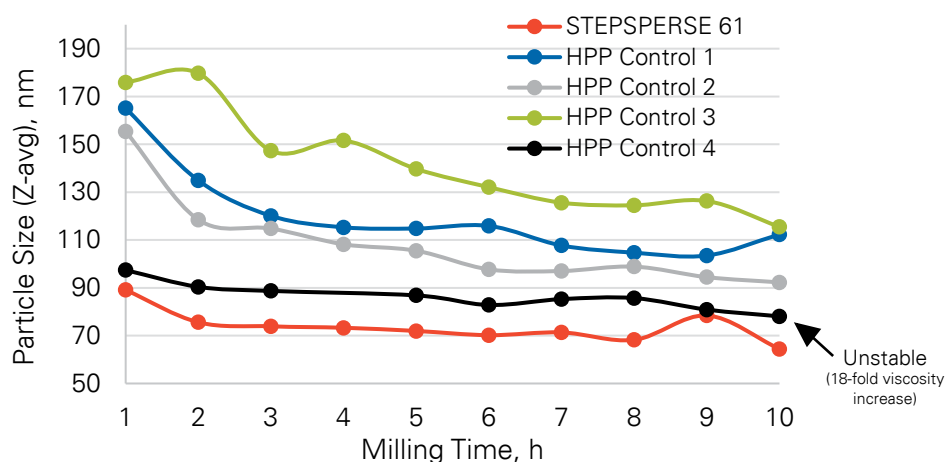


Industrial black tint: 15% Raven® 5000 Ultra® II (Birla Carbon) at 100% dispersant SOP. Tinting of paint at a 1:9 ratio.

Milling Efficiency

STEPSPERSE 61 provides superior milling of industrial grade carbon black, achieving finer particles more quickly relative to commercial HPP controls (Figure 4). Furthermore, use of STEPSPERSE 61 ensures excellent millbase stability, maintaining initial viscosity after 4 weeks at 50°C. In contrast, HPP Control 4, which also performs well in milling, yields an unstable dispersion at elevated temperature.

Figure 4. Milling Efficiency



Industrial black tint: 15% Raven® 5000 Ultra® II (Birla Carbon) at 100% dispersant SOP.

Representative Formulation

Component	Function	Weight %
STEPSPERSE 61	Dispersant, Wetting Agent	12.0 - 20.0
Raven® 5000 Ultra® II (Birla Carbon)	Pigment	15.0 - 20.0
NEOLONE™ M-10 (DuPont)	Preservative	0.1
BYK®-024 (BYK)	Defoamer	1.0
Deionized Water	—	Balance to 100.0
Dispersant SOP Range		60.0 - 100.0

NOTE: Use of grinding resin is not recommended.

For more information visit go.stepan.com/CASEAdditives or [contact us](#).