

CAB-O-SPERSE® DISPERSIONS FOR INK JET MEDIA AND PAPER COATINGS

APPLICATION GUIDE

Why CAB-O-SPERSE dispersions in paper media?

1. Improved and consistent performance:

- ♦ High absorptive capacity
- ♦ Fast drying characteristics
- ♦ Good substrate adhesion
- ♦ Excellent image quality and gloss

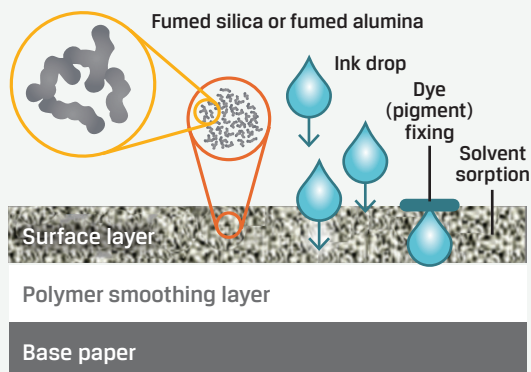
2. Processing ease:

- ♦ Pre-dispersed particles are simple to incorporate into water-based systems
- ♦ CAB-O-SPERSE products can be selected to maximize stability in formulation

3. High purity:

- ♦ Good chemical and temperature stability without yellowing
- ♦ Dispersant-free to minimize incompatibility and aid formulation flexibility

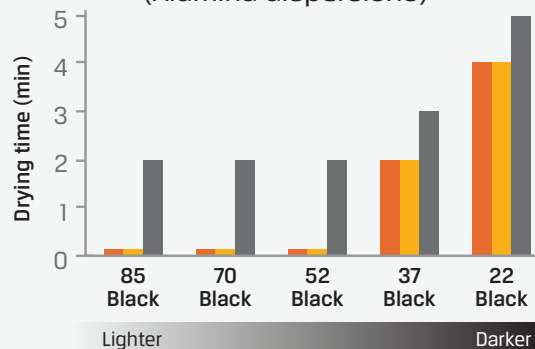
High surface area fumed metal oxide particles delivered by CAB-O-SPERSE dispersions enable rapid drying of inks. Coming pre-dispersed, they provide stable formulations and uniform dry porous coating layers. Drops of ink quickly wick into the surface layer, trapping the pigment.



High porosity delivers rapid drying times

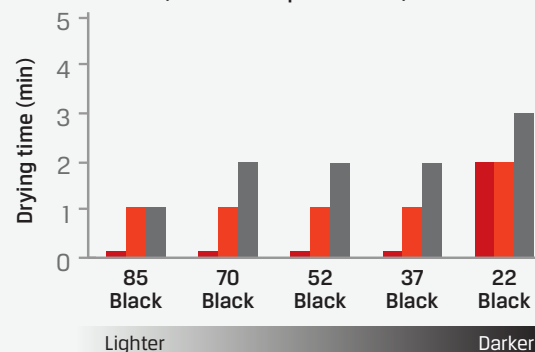
CAB-O-SPERSE dispersions deliver high porosity in ink jet paper and film coatings. The high porosity provides rapid drying for printed ink images, reducing smudging significantly.

Drying time vs. spot color
(Alumina dispersions)



Legend: CAB-O-SPERSE PG 003 dispersion (orange), CAB-O-SPERSE PG 008 dispersion (yellow), Competitor fumed alumina dispersion (grey)

Drying time vs. spot color
(Silica dispersions)



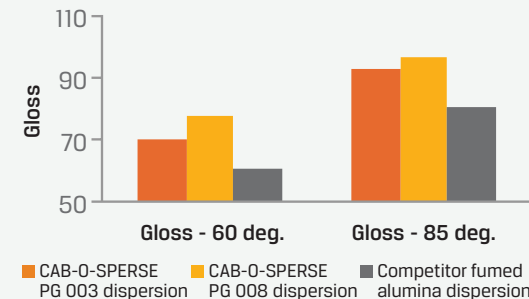
Legend: CAB-O-SPERSE PG 001 dispersion (red), CAB-O-SPERSE PG 002 dispersion (orange), Competitor colloidal silica dispersion (grey)

Note: Drying time refers to time required for printed black spot to resist smudging upon drying.

Improved appearance and image quality

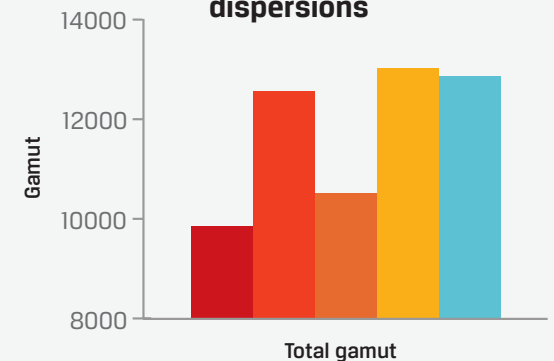
Higher gloss is desired for most photo media. CAB-O-SPERSE dispersions demonstrate that high porosity can yield high gloss finishes and rapid drying.

Gloss
(Fumed alumina dispersions)



CAB-O-SPERSE fumed silica and fumed alumina dispersions offer a very high color gamut, resulting in print content with a broad range of color space.

Color gamut of CAB-O-SPERSE dispersions



Legend: PG 001 (red), PG 002 (orange), PG 003 (yellow), PG 008 (light blue), PG 022 (dark blue)

PERFORMANCE SUMMARY

Product	Application					Functionality						
	Premium glossy photo paper	Glossy paper / wide format glossy paper	Semi-gloss (satin) photo paper	Transparency back-lit film	Greeting cards / specialty	Instant dry	Water fastness	Gloss	Transparency	Color gamut	High solids	Porosity
PG 001	○	○	◐	○	○	●	○	○	○	◐	●	●
PG 002	○	○	◐	◐	○	●	○	◐	◐	●	◐	●
PG 003	●	●	○	◐	●	●	●	●	◐	◐	●	●
PG 008	●	●	○	●	●	●	●	●	◐	●	●	●
PG 022	◐	●	●	●	●	●	●	◐	●	●	◐	●

The different silica and alumina dispersion products enable a range of performance benefits across a variety of print media substrates.

Performance recommendation: ○ Adequate ◐ Good ● Excellent

SAMPLE FORMULATION

Ingredients	Dry parts	Description
CAB-O-SPERSE dispersion	100	Fumed metal oxide dispersion
Polyvinyl alcohol	16.7	Low molecular weight
Polyvinyl pyrrolidone	4	Low molecular weight (15k-30k)
Surfactant	2	Wetting aid

To the left is a simple proxy ink jet media coating formulation. Most of the formulation is composed of particles, along with a small amount of binder (in this case, polyvinyl alcohol).

Recommended coating weights are 7-15 m²/g.

The performance summary above and performance data displayed on the other side of the page were generated using this type of formulation.

Other binders, such as polyvinyl acetates, or copolymers like ethylene vinyl acetate (EVAs), vinyl acetate ethylene (VAEs), and other styrene-acrylic copolymers may also be used. These more hydrophobic binders provide additional water fastness and rub resistance.

Additional cationic additives would add further pigment- or ink-trapping capabilities to the formulation.

PRODUCTS AND PROPERTIES FOR PRINT MEDIA

Product	Material	CAB-O-SPERSE dispersion properties			
		Specific surface area (m ² /g)	Surface charge	% wt.	pH
PG 001	Silica	90	Anionic	30	10
PG 002	Silica	200	Anionic	20	9.5
PG 003	Alumina	51	Cationic	40	4
PG 008	Alumina	81	Cationic	40	4
PG 022	Silica	200	Cationic	20	3.7

