ZetaSperse® 3100
Pigment Dispersing Additive

Introduction

ZetaSperse 3100 pigment dispersing additive is designed to wet, disperse, and stabilize a range of pigment and filler chemistries, with exceptional performance for carbon black dispersions. ZetaSperse 3100 dispersing additive is based on polymeric dispersant technology with characteristics that enable strong interactions with a variety of pigment surface chemistries. This property, combined with an optimized stabilization mechanism, provides performance benefits over current dispersant technologies. ZetaSperse 3100 additive is best suited for the following pigment chemistries: carbon black (all types) and inorganics (PW6, PY42, PR101, and others).

Advantages

- Robust color and dispersion stability in letdown
- Improved dispersion rheology
  - Inhibition of yield-value development
  - Stable viscosities over long-term/heat aging
- Increased color development
- Free from APEs, solvents, glycols and HAPS

Typical Properties

Actives, wt %	40%
Inactives	water
Appearance/form	clear liquid
Color	amber
Pour point	< 0°C
Viscosity, 25°C	400 cps
VOC measures	
Directive 2004/42/CE	none
EPA method 24	< 0.5%

Global Registrations

ZetaSperse 3100 additive is currently on the following regulatory lists:

EINECS (EU)
ENCS (Japan)
TSCA (USA)

Applications are in progress for listing on additional inventories. Please contact your local Air Products representative for the most recent information.

Use and Dosage

ZetaSperse 3100 additive is suitable for aqueous pigment dispersions. Table 1 shows a representative list of resin-free model formulations based on common commercial pigments. For additional model formulations, please contact us at one of the locations listed on the back of this bulletin or visit our FAZT website at www.airproducts.com/fazt.

The performance benefits of ZetaSperse 3100 additive are optimal in resin-free grinds, but comparable benefits can also be achieved in resinated systems. For use with resins, we recommend milling with ZetaSperse 3100 and as little grind resin as possible. The remaining resin in the formulation should be added after the bulk of the milling has been completed. This methodology optimizes the benefits of ZetaSperse 3100 by limiting competitive interactions with the resin on the pigment surface.

Table 1

Resin-free model formulations based on common commercial pigments

Pigment	Raven 5000 Ultra III	Raven 410 Ultra	Printex U	Emperor 2000	Elftex 415
Color Index	PBI 7	PBI 7	PBI 7	PBI 7	PBI 7
Supplier	Columbian	Columbian	Evonik-Degussa	Cabot	Cabot
Pigment, wt %	15	35	25	15	25
ZetaSperse 3100 dispersant, wt %	31	3.5	11	20	8
Surfynol® defoamer,* wt %	0.5	0.5	0.5	0.5	0.5
Water (remainder)	53.5	61	63.5	64.5	66.5

*recommended defoamer: Surfynol DF-58 (silicone-based, 0.2–0.5% use level), DF-75 (oil-based, 0.5–1.0% use level), or DF-110D (acetylenic-based, 0.5–1.0% use level) defoamers

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