ZetaSperse® 3700 Pigment Dispersing Additive

Introduction

ZetaSperse 3700 pigment dispersing additive is designed to wet, disperse, and stabilize high-performance and problematic organic pigments. ZetaSperse 3700 pigment dispersing additive is based on a new polymeric dispersant tailored to maximize affinity to specific pigment surface chemistries. This strong interaction, combined with an optimized stabilization mechanism, provides performance benefits over current dispersant technologies. ZetaSperse 3700 additive is best suited for the following pigment chemistries: DPP (PR254, PR264, PO73, and others), Azo (PY74, PR170, PR210, PO5, and others), Dioxazine (PV23, PV37, and others), and Phthalocyanine (PG7, PG36, PB15:x, and others).

Advantages

- Improved dispersion rheology
  - Inhibition of yield-value development
  - Stable viscosities over long-term/heat aging
- Increased color development
- Robust color and dispersion stability in letdown
- 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	500 cps
VOC measures	
Directive 2004/42/CE	none
EPA method 24	< 0.4%

Global Registrations

ZetaSperse 3700 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 3700 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 3700 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 Z-3700 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 Z-3700 by limiting competitive interactions with the resin on the pigment surface.

Table 1

Resin-free model formulations based on common commercial pigments

Pigment	Irgazin DPP Red BO	Heliogen Green L8730	Sico Gelb FR1252	Hostaperm Violet RL Spec.	Heliogen Blue L7101F
Color Index	PR 254	PG 7	PY 74	PV 23	PB 15:4
Supplier	Ciba	BASF	BASF	Clariant	BASF
Pigment, wt %	50	40	45	35	40
ZetaSperse 3700 dispersant, wt %	4.5	15.5	4.5	18	16.5
Surfynol® defoamer,* wt %	0.5	0.5	0.5	0.5	0.5
Water (remainder)	45	44	50	46.5	43

*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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