

LOW DISPERSANT DEMAND FOR TITANIUM DIOXIDE WITH **K-SPERSE® 152**

This study demonstrates the advantage of using K-SPERSE 152 to disperse titanium dioxide when compared to another commercially available dispersant. Improvement can be seen in dispersant efficiency, as measured by pigment dispersant demand. Also, due to the hydrophobicity of K-SPERSE 152, there is generally a reduction in water sensitivity and an improvement in corrosion resistance in the finished coating.

MATERIAL	DESCRIPTION	WEIGHT %
MILL BASE		
TI-PURE® R-960 ¹	Titanium Dioxide	66.7
K-FLEX® 188 ²	Polyester resin	23.3
PARALOID® AT-400 ³	Acrylic resin	5.0
Xylene	Solvent	5.0
	TOTAL	100.0

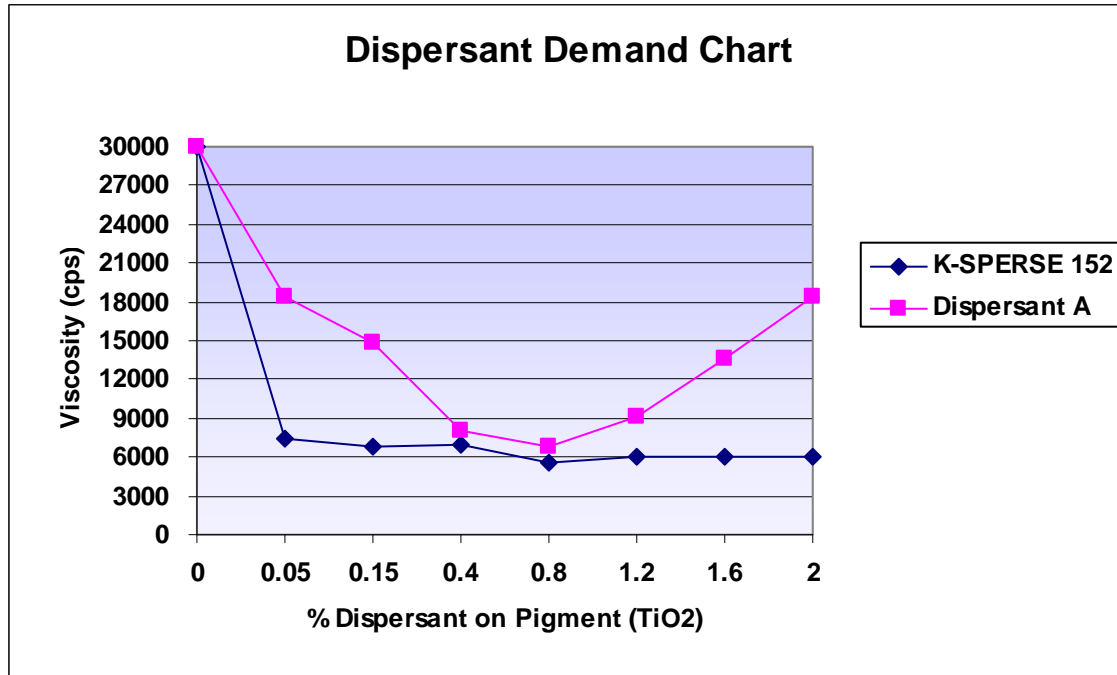
MILL BASE PREPARATION

Batch size, grams	300
Milling time, minutes	4 (max. temperature – 35°C)
Cowles Blade	2 inch diameter
Dispersator	High speed
RPM	1,000 – 1,500
Container	400 ml beaker (3 inch diameter)

TEST RESULTS: Brookfield Viscosity, cps (35°C)

Dispersant, % on Pigment	K-SPERSE® 152	Dispersant A ⁴
0	30,000	30,000
0.05	7,400	18,400
0.15	6,800	14,800
0.40	6,900	8,000
0.80	5,600	6,800
1.20	6,000	9,200
1.60	6,000	13,600
2.00	6,000	18,400

TEST RESULTS: Graph of Viscosity versus Dispersant demand



Summary

As shown in the table and graph above, K-SPERSE® 152 provides lower viscosity grinds (5,600 cps) versus a commercially available alternative (6,800 cps) at dispersant levels of 0.8%. The K-SPERSE also provides a much broader minimum viscosity range than the alternative product. Due to the slightly acidic nature of K-SPERSE 152, it can act as a weak catalyst in aminoplast crosslinked thermoset systems, in which case it may be possible to reduce the level of the primary acid catalyst. When reduced catalytic activity is desired with the addition of a dispersant, K-SPERSE 132 should be substituted. This is a calcium sulfonate salt and has much less catalytic activity than that of the zinc based K-SPERSE 152.

SUPPLIER REFERENCES

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| 1.) E.I. DuPont Company – Titanium dioxide | 3.) Rohm and Haas – Reactive acrylic resin, 75% solids in MAK |
| 2.) King Industries – Polyester polyol, 100% solids | 4.) Byk-Chemie – Solution of polyamine amide salts, 50% active |

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