

**FORMULATION FOR LITHOL RUBINE DISPERSION AND INK
USING ESPERSE 506**

Traditionally, lithol rubine and other metallized azo red aqueous dispersions have a tendency to be unstable due to free metallic cation content of the pigment. Some improvements in formulation have been made with the introduction of HPD 296 dispersing resin from Johnson Polymer. Though the pigments have more stability in this grind resin, some degree of pseudoplastic character still exists in the dispersions and inks made from it. The addition of a small amount of Esperse 506 to the formula dramatically reduces the pseudoplastic tendencies while maintaining viscosity and color stability.

Dispersion:

LR 1309 (PR 57:1), Magruder Color Company	37.50
Esperse 506, Ethox Chemicals, LLC	2.5
HPD 296, Johnson Polymer	22.24
Byk 022 defoamer, Byk-Chemie	1.00
Water	<u>36.76</u>
TOTAL	100.00
Pigment/binder ratio:	4.75

Add liquid ingredients and mix well; add pigment in portions, mixing well after each addition to avoid clumping. Once pigment is wetted, premix at high speed for 10 minutes. Then mill using horizontal media mill or equivalent for 10 minutes. Keep millbase temperature below 60 C.

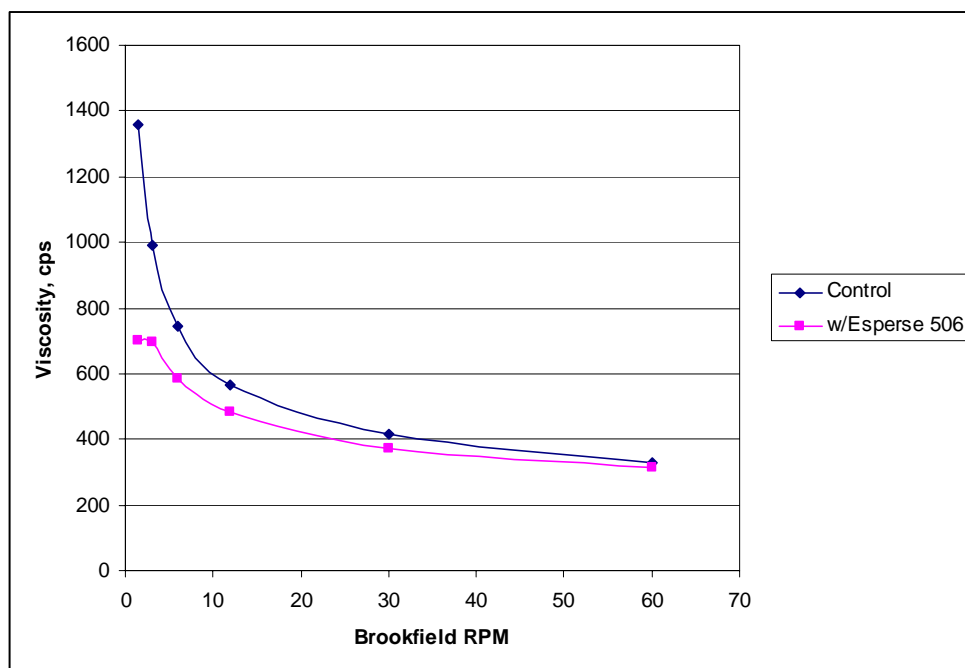
Ink:

Lithol Rubine Dispersion (above)	17.5
Masstone Vehicle (below)	<u>32.5</u>
TOTAL	50.0
Pigment loading:	13.125%

Ink Vehicle:

ECO 2177	68.42
Joncryl 63	26.32
Water	<u>5.26</u>
TOTAL	100.00

AMBIENT AGED VISCOSITIES, CONTROL (no Esperse 506) INK vs. ESPERSE 506-containing ink – three days



After three days aging, the control ink is more pseudoplastic than the ink containing Esperse 506.

Proofs:

Flexographic proofs of the two inks on Leneta 3NT-3, polyester film, and foil show the ink containing Esperse 506 to be approximately 5% stronger than the control ink in all cases.

Heat aging, 1 week at 50° C:

Initial results show that the inclusion of Esperse 506 enhances viscosity stability at elevated temperatures. The heat-aged sample dropped in viscosity from its initial value, and maintained its color properties.

