

ZENIGLOSS ZWETTING

by Jane Hollenberg

Comparison of pigment wetting capability via suspension viscosity is a simple method used in the paint industry that anyone can perform. One can compare wetting ability of oils of similar viscosity, effect of adding wetting agents, or effect of pigment surface treatments. Other parameters being equal, the lower the viscosity of a suspension, the better the vehicle has spread over the pigment surfaces, replace adsorbed air and water.

As a representative inorganic material, I use mica, because complete dispersion can be achieved by simple stirring with a paddle mixer. Any tested organic pigment needs to be dispersed using a media mill or three roll mill. In making comparisons, one sees some oils wetting inorganics better, others being more effective with organics.

The method is simple: prepare a mica slurry of a concentration to allow a sufficient viscosity to allow a wide range above and below and produce a suspension that will not settle within 5-10 minutes. For the castor oil/Zenigloss comparison, I used 20%; I have data on lighter oils measured from a 35% suspension. The mica and oil are blended for thirty minutes using a paddle mixer, then the suspension is allowed to stand for five minutes. Readings are taken using a Brookfield viscometer, model RVT.

I concluded that Zenigloss wets inorganic pigment better than castor oil because castor oil has a lower viscosity (780 cps vs. 1,630 cps), but the 20% mica suspension in castor oil has a higher viscosity (3,760cps vs. 3,600cps).

Other oils I have compared are:

35% mica suspensions:

Light oils	Neat Viscosity	Mica suspension viscosity	
Isopropyl myristate	5.7 cps	21,500 cps	IPM is a good solvent
but a poor wetter of inorganic pigment			
isostearyl neopentanoate	14.2 cps	600 cps	good wetting
Ethyl hexyl palmitate	9.0 cps	2,500 cps	better than below
Cetearyl ethyl hexanoate	10.1 cps	3,300 cps	

Better wetting translates to creamier feel in lipstick with no loss of elevated temperature stability, better mass tone/write off agreement, less brittle structure, particularly in shades containing high levels of pearl.

Formulation of powder cream foundations in which the pigment percentage needs to be maximized, yet fluidity of the melt maintained, was also the impetus for testing the lighter oils and the effect of the various surface treatments on wetting.