

CRAY VALLEY



Pre-Activated Amide Pastes

RHEOLOGY MODIFIERS IN PASTE FORM FOR POST-ADDITION TO SOLVENT-BASED COATINGS.

Coating Performance

Structure drift and loss of gloss as a result of seeding have often been associated with the older hydrogenated castor oil (HCO) based rheology modifiers. Structure drift, or secondary activation, generally occurs when micronised organowax additives are not satisfactorily incorporated i.e. processed at too low a temperature or for too short a time. This is not an issue with CRAYVALLAC PA3X20 or CRAYVALLAC PA4X20 as they are supplied in pre-activated paste form, which ensures easy and complete incorporation. Being amide rheology modifiers, they are also extremely resistant to seeding and false-body. In order to examine storage stability, CRAYVALLAC PA3X20 was incorporated into a thermoplastic acrylic topcoat at a level of 2.4% based on total formulation. The paints were stored at 23°C (73°F) and 40°C (104°F) for 1, 7 and 28 days before testing the sag resistance, viscosity and gloss (Figures 1, 2 and 3).

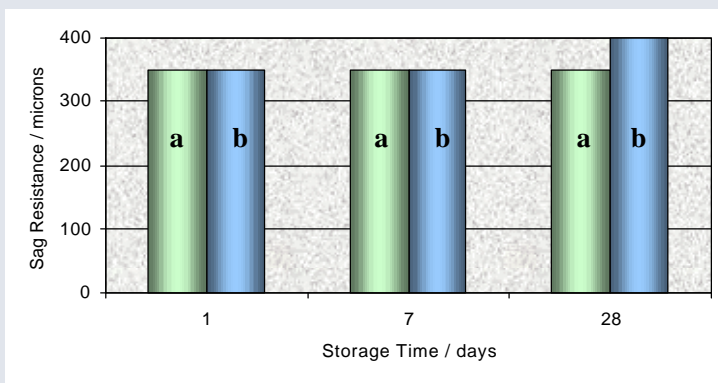


Figure 1: Sag resistance data for an acrylic topcoat prepared using CRAYVALLAC PA3X20 at a level of 2.4% (active content = 0.48%) based on total formulation: Green (a) = 23°C (73°F); Blue (b) = 40°C (104°F).

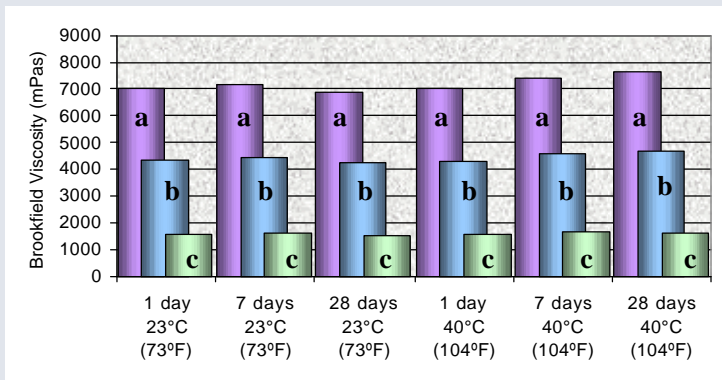


Figure 2: Brookfield viscosity data (spindle 3) for an acrylic topcoat prepared using Crayvallac PA3X20 at a level of 2.4% (active content = 0.48%) based on total formulation: Purple (a) = 5rpm; Blue (b) = 10rpm; Green (c) = 50rpm.

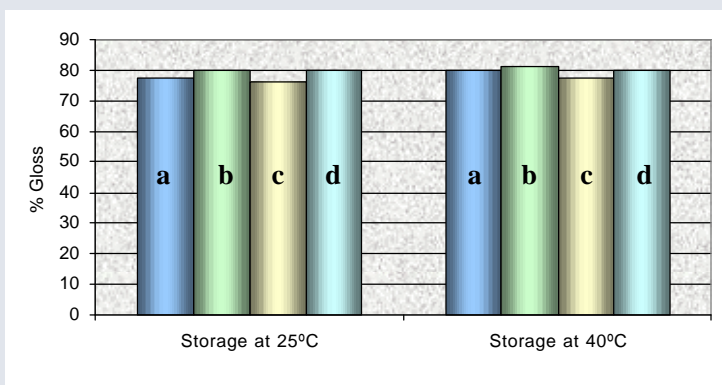


Figure 3: Gloss data for an acrylic topcoat prepared using Crayvallac PA3X20 at a level of 2.4% (active content = 0.48%) based on total formulation: Blue (a) = 1 day results, letdown addition; Green (b) = 28 day results, letdown addition; Yellow (c) = 1 day results, post addition; Light blue (d) = 28 day results, post addition.

The amide composition of both CRAYVALLAC PA3X20 and CRAYVALLAC PA4X20 is extremely resistant to the solubilising effects of strong solvent at elevated temperatures, resulting in storage stability that is far superior to the HCO-based thixotropes. The sag resistance, viscosity and gloss data verify this high storage stability.

False-Body Effects

The presence of very polar solvents and aromatic hydrocarbons cause serious false-body problems with HCO-based thixotropes, fortunately this can be permanently removed by the application of shear. False-body is an excessively thick structure that develops on cooling, causing erroneous viscosity measurements and difficulty in product handling during manufacture and application. By comparison, use of pre-activated amide pastes causes only minimal false body. Figure 4 illustrates this minimal false-body effect for an epoxy polyamide topcoat stored at 40°C (104°F). The sheared values indicate the equilibrium structure on recovery, after the removal of any false-body effects. Compared to HCO-based thixotropes, CRAYVALLAC PA3X20 and CRAYVALLAC PA4X20 exhibit exceptional resistance to false-body.

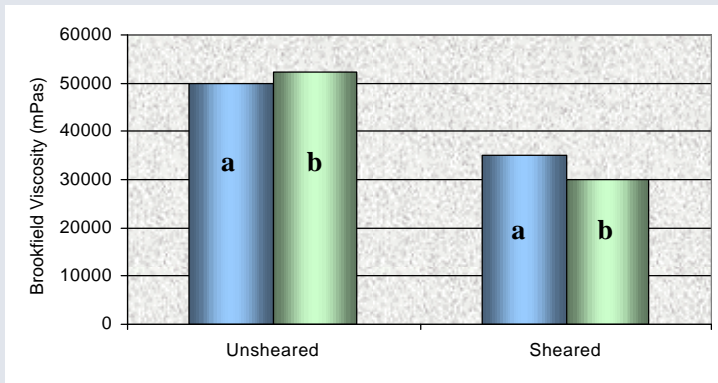


Figure 4: Brookfield viscosity data for an epoxy polyamide topcoat: Blue (a) = viscosity after 1 day; Green (b) = viscosity after 28 days.

Precautions

When amide pastes have been stored at temperatures less than 20°C (68°F) for a prolonged time, tiny particles may occasionally be observed in the final coating. These particles are the result of secondary crystallisation within the paste. Although these particles have no effect on either the sag resistance or viscosity, their presence may sometimes be an undesirable feature of the final cured film. In order to remove these particles it is recommended that the amide paste be warmed to 40°C (104°F) for 24 hours prior to use.

Due to the multitude of formulations, processing methods and application conditions used in the field, we strongly recommend that all products containing CRAYVALLAC PA3X20 or CRAYVALLAC PA4X20 be tested thoroughly to ensure suitability for their intended end use. In particular, application in poorly ventilated areas, or on hot substrates, or by hot spray may require additional attention.