

CRAY VALLEY



Pre-Activated Amide Pastes

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

Introduction

CRAYVALLAC PA3X20 and CRAYVALLAC PA4X20 are pre-activated amide wax rheology modifiers supplied in xylene and alcohols. Pre-activation means the amide wax is now present in its active fibrous form (See Figure 1) and is therefore suitable for post-addition or addition during the letdown stage. These pre-activated pastes are suitable either as the sole rheology modifier, or in part as a quality control aid to fine tune the properties of the final coating.

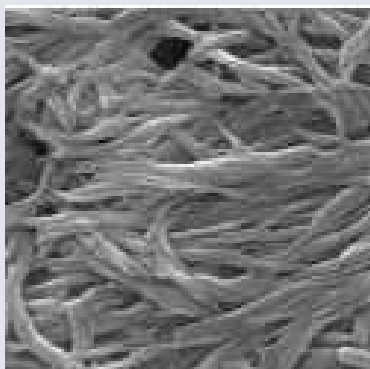


Figure 1: Scanning Electron Micrograph of a pre-activated amide wax paste in its fibrous form: Magnification = 20,000.

When pre-activated amide pastes are added to a coating, these crystalline fibres interact with one another to produce a three-dimensional network. It is this fibrous network that gives rise to the shear-thinning rheology of the final coating. During storage, where the coating is under the low shear conditions of gravity, this network is maximised due to the fibres being randomly distributed, an effect giving rise to a high viscosity. When higher levels of shear are applied, the fibres are forced to align in a parallel manner and this gives rise to a lowering in viscosity. This characteristic provides for a very high viscosity under the low shear rates associated with sedimentation and a low viscosity at the much higher application shear rates. The net result is excellent control of sedimentation combined with ease of application. Immediately following application, where low shear conditions again dominate, the viscosity of the coating undergoes a time dependent recovery as the network re-establishes itself. This time dependence is known as thixotropy and enables the final coating to attain very good levelling and sag resistance.

CRAYVALLAC PA3X20 and CRAYVALLAC PA4X20 provide excellent shear thinning rheology with thixotropic viscosity recovery to coatings systems. Although both provide good sag resistance, CRAYVALLAC PA3X20 is more suited to pigmented higher build coatings. CRAYVALLAC PA4X20 finds its niche in high quality finishes requiring excellent gloss and/or transparency.

Paint Applications

CRAYVALLAC PA3X20 and CRAYVALLAC PA4X20 are suitable for use in a variety of different solvent-based coating applications where low levels of the carrier solvent can be tolerated, xylene and alcohol. As an example of the use of CRAYVALLAC PA3X20 in various solvent based systems the following results were obtained for a thermoplastic acrylic topcoat, conventional solvent-based epoxy polyamide primer and an industrial alkyd topcoat (See Figure 2).

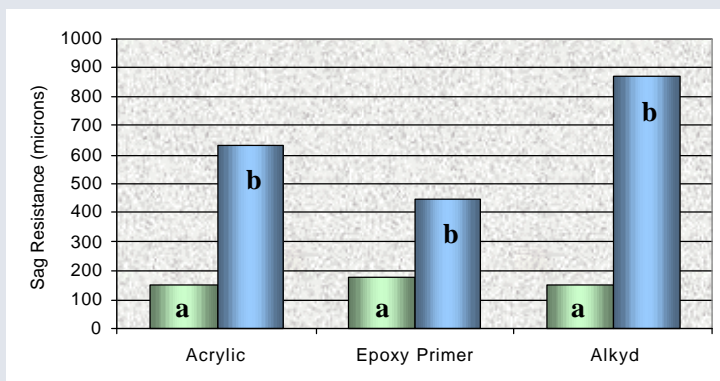


Figure 2: Sag resistance results for a thermoplastic acrylic topcoat, conventional solvent-based epoxy polyamide primer and an industrial alkyd: Green (a) = 0% CRAYVALLAC PA3X20; Blue (b) = 4.15% (active content = 0.83%) CRAYVALLAC PA3X20.

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.

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