

The Effect of Hydroxyl Ethyl Cellulose (HEC) and Hydrophobically-Modified Alkali Soluble Emulsions (HASE) on the Properties and Quality of Water Based Paints

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Abstract : The coatings industry is a million dollar business, and it is easy and inexpensive to set-up but it is growing very slowly in developing countries, and this study developed a paint formulation which gives better quality and good application properties. The effect of rheology modifiers, i.e. non-ionic polymers hydrophobically-modified ethoxylated urethanes (HEUR), anionic polymers hydrophobically-modified alkali soluble emulsions (HASE) and hydroxyl ethyl cellulose (HEC) on the quality and properties of water-based paints have been investigated. HEC provides the in-can viscosity and increases open working time while HASE improves application properties like spatter resistance and brush loading and HEUR provides excellent scrub resistance. Four paint recipes were prepared using four different thickeners HEC, HASE (carbopol) and Cellulose nitrate. The fourth formulation was thickened with a combination of HASE and HEC, this aimed at improving quality and at the same time reducing cost. The four samples were tested for quality tests such viscosity, sag resistance, volatile matter, tinter effect, drying times, hiding power, scrub resistance and stability on storage. Environmental factors were incorporated in the attempt to formulate an economic and green product. Hydroxyl ethyl cellulose and cellulose nitrate gave high quality and good properties of the paint. HEC and Cellulose nitrate showed stability on storage whereas carbopol thickener was very unstable.

Keywords : properties, thickeners, rheology modifiers, water based paints

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