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Rheology of thixotropic coatings

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Abstract

Rheology is the science of deformation and flow. The term “rheology” originates from the Greek: “rheos” meaning “the river”, “flowing”, “streaming”. Thus, rheology is literally “flow science”. However, rheological experiments do not merely reveal information about the flow behavior of liquids, but also the deformation behavior of solids. The connection here is that large deformations produced by shear forces cause many materials to flow.

Color industrie has to use rheology parameters as the most important parameters. In order to reduce the risk to the user and the environment due to exposure to volatile organic compounds (VOC), the Directive on the Limitations of Emissions due to the use of organic solvents in certain Paints, Varnishes and Vehicle Refinishing Products, (Decorative Paints Directive) Directive 2004/42/EC, limits the VOC content of these widely used products. In the paint industry research departments have been putting a lot effort into development of new products that would comply with VOC regulations. The challenge is very demanding as new approaches need to be developed and novel additives used.

In this presentation main introduction will be about decorative coating rheological behavior. Coatings are often exposed to different stress which can be measured with rheology parameters. Rheology parameters can be determined from the rheology flow graph and its understanding is of great importance for better prediction of paint application conditions. These conditions are important for painters and are usually closely linked to paint equipment, temperature, humidity and substrate properties.