

DODECYL METHACRYLATE – VINYL ACETATE COPOLYMER: A MULTIFUNCTIONAL PERFORMANCE ADDITIVE FOR LUBRICATING OIL

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ABSTRACT

Homopolymer of the prepared dodecylmethacrylate (DDMA) monomer was synthesized and a series of copolymers of it were prepared by varying the ratio between the ester and vinyl acetate (VA) by free radical polymerization using BZP as initiator. The synthesized polymers were characterized by spectral studies (FT-IR and NMR) and by gel permeation chromatography (GPC). Thermogravimetric analysis (TGA) was used to investigate the thermal behaviour of the polymers at high temperature. Performances of the polymers as additives, and their responses as PPD and viscosity modifiers in the base oil were evaluated by standard ASTM methods in terms of pour point and viscosity index. Wax crystallization behaviour of the additives was examined by photo micrographic image. The copolymers showed better thermal stability, better flow improving efficiency and induced better viscosity modification than the homopolymer. It is also observed that the viscosity modification and the pour point performance of the additives depend on the concentration of the additives in the base fluid.

KEYWORDS: *Base Oil, Additive, Pour Point Depressant, Viscosity Modifier, GPC, TGA*

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