

Lightfastness of polyurethane coating based on diphenylolpropane

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Abstract

The resistance of polyurethane coating based on oligoether polyol, aromatic polyisocyanate, and diphenylolpropane to UV-irradiation was studied. The lightfastness was assessed by change in colour of the film both visually and by iodometric scale as well as by variation in physical and chemical characteristics prior to and after irradiation. Simultaneously, the commercial aromatic isocyanate-based polyurethane samples were tested for comparison. When exposed to UV-irradiation, all samples showed change in colour due to the di(carbamoylphenyl)methane units contained in their backbone and formed due to photooxidation of quinoneimide species. The film based on diphenylolpropane-containing formulation showed better lightfastness as evidenced by the longer time of appearance of first chromatic border as well as the strength retention index. Better lightfastness of polyurethane coating is due to the diphenylolpropane fragments, disrupting the extended conjugation in polymer chain.

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