

Synthesis and analysis UV-curable polyurethane acrylates with poly(dimethyl siloxane)s

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Pre-coated metal (PCM) is generally defined as colored metal sheets that have been coated before processing. PCM has been regarded as a series of cost-effective sheet materials resulting from simplification of production process. PCM system has been widely studied in various industrial fields such as automotive appearances and electrical appliances. For these applications, PCM sheets should be coated with the resin to protect their surface from exterior harsh conditions. Especially, the surface hydrophobicity is one of the most important coating properties due to a protection of electric leakage and anti-corrosion, anti-fouling properties. Polyester-based PUAs have widely utilized in coatings due to its good mechanical strength, flexibility but water-resistance is relatively poor because of hydrolysis of ester groups. Therefore, PDMS can modify the coating surface of polyester-based PUAs to exhibit more hydrophobic due to the silicone component which has relatively low surface energy. By introducing reactive PDMS diols with different reactive position into polyester-based PUAs, the several properties of the modified PUA coatings could be improved.