Preparation and Properties of Conductive UV-curable Hybrid Coating Materials using Lithium Perchlorate

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The polymeric display panel has a serious problem of dust or dirt attraction due to electrostatic charging, which may result in damage of substrate upon removal of attracted particles. Therefore, a combination of abrasion resistance with antistatic property is required for display coating application. In this study, we prepared UV curable hybrid hard coating materials with antistatic property. The lithium perchlorate (LiClO4) was employed to impart conductive property, which can be ionized during sol-gel process. The UV-curable urethane acrylate was used as the main backbone, and three different diluing materials with multi functional groups were added to obtain more densified network structure. The anti-abrasive property of the films coated by hybrids prepared at optimum conditions was remarkably improved due to superior abrasion resistant inorganic silicate along with good adhesion to substrate provided by binder resin. The incorporation of lithium perchlorate as a conducting salt could result in highly transparent coating films with improved antistatic property, while maintaining abrasion resistance.