

## The study on the quality and quantity analysis method of Thermoplastic Elastomer (Polyoxymethylene + Polyurethane)

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Thermoplastic Elastomer is the polymer which consists of hard segment and soft segment. This study was done the quality and quantity of TPE which was included polyoxymethylene (POM) and polyurethane(PU) by FT-IR(Fourier Transform Infrared Spectroscopy) , DSC (Differential Scanning Calorimetry). Analyzed samples were A, B. Sample A consisted of POM:85% + PU:15%. And sample B consisted of POM :50% + PU:50%. The hard segment of TPE was identified POM by ATR(FT-IR). And the soft segment of TPE is identified PU by transmittance(FT-IR). The hard segment(POM) was analyzed DSC for identifying the quantity. Measured enthalpy by DSC was 160~154J/g(raw material), 137~135J/g(sample A) and 79~75J/g(sample B). Sample A was 86.1%(135.9/157.4\*100%) and sample B was 49.2% (77.4/157.4\*100%). The soft segment(Urethane) was analyzed FT-IR for identifying quantity. Polyurethane has the special peak at about 2270cm<sup>-1</sup> wavenumber. Measured transmittance rate was 6.5~7.5%(raw material), 0.82~0.94%(sample A), 3.4~4.0%(sample B) at that wavenumber. Consequently it was checked that sample A had about 13% urethane and sample B had about 53% urethane.