

Reforming of Petroleum residue oil for binder pitch to control its quinolone-insoluble content

김경훈, 이상민, 김민일, 이영석†

충남대학교

(youngslee@cnu.ac.kr†)

Pyrolysis fuel oil (PFO) which is petroleum residue is used as a precursor for binder pitch. A quinoline-insoluble (QI) content of the binder pitch is important to prepare an artificial graphite. In this study, to increase QI content of binder pitch, the PFO was modified by heat-treatment with different amount of carbon black at 340 °C for 4 h. Softening point (SP) and QI of the prepared binder pitch were measured using SP apparatus (mettler FP90) and QI measuring apparatus of ASTM D4746 method. Matrix-assisted laser desorption/ionization spectroscopy was used to confirm molecular weight distribution of prepared pitches. SP and molecular weight distribution of carbon black added reforming pitches are decreased compared to that of the pristine pitch because volatile components of PFO residue are absorbed onto carbon black surface during heat treatment. QI of pristine pitch and carbon black added pitch are 0.5 and 17%, respectively. This result indicates that the carbon black into PFO is acted as nuclei for growth of QI particles, thus QI content in the binder pitch can be controlled according to carbon black content.

Keywords: PFO; quinoline-insoluble; carbon black; binder pitch