Modeling the solubility of ethylene and propylene in a typical polymerization diluent: some selected situations. Atiqullah, Muhammad; Hammawa, Hassan; Hamid, Halim. Petroleum Gas Technol. Div., Res. Inst., King Fahd Univ. Petroleum and Minerals, Dhahran, Saudi Arabia. European Polymer Journal (1998), 34(10), 1511-1520. Publisher: Elsevier Science Ltd., CODEN: EUPJAG ISSN: 0014-3057. Journal written in English. CAN 130:25369 AN 1998:694101 CAPLUS

Abstract

The soly. of ethylene and propylene in toluene, which is mostly used as the diluent in metallocene-catalyzed olefin polymn., was molded as a function of temp. and pressure. Two selected slurry polymn. situations were considered: the early stage of a conventional slurry polymn. and the prepolymd. one. The phase equil. approach and the Prausnitz-Shair (P-S) correlation were used to independently develop the models. The former unlike the latter, predicted the soly. which closely matched the exptl. value. However, in the phase equil. approach, the type of the cubic equation of state affected the prediction. The Redlich-Kwong-Soave (R-K-S) equation, compared to the Peng-Robinson (P-R) one, showed better results. The overall prediction was more accurate at pressures below 5 atm. So far as the influence of temp. is concerned, the R-K-S equation also performed overall the best up to about 50°C. The above model-predicted soly. can be applied to calc. as a function of polymn. time the activity of metallocene catalyst systems polymg. ethylene or propylene in a semi-batch computer-interface automated, lab.-scale reactor. These activity values can be later used to model the kinetics of such olefin polymn