

Kinetic study for de-crosslinking reaction of cross-linked polyolefin using supercritical fluids

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Kinetic study for de-crosslinking reaction of cross-linked polyolefins - cross-linked polyethylene(XLPE), cross-linked polypropylene(XLPP)- has been carried out under supercritical condition. Various experiments have been performed under the conditions of different temperature, reaction time, initial gel contents and concentration with the objective of determining the kinetic parameters. Also, the experiments, which were performed with different kinds of solvents, were designed to figure out how the solvent affects to the de-crosslinking reaction rate. All the experiments have been carried out in the SUS 316 reactor and both of heater and salt bath were introduced as heat sources. Among those conditions which were mentioned above, temperature was a dominant factor for this de-crosslinking reaction. As temperature increased, the rate of de-crosslinking reaction was dramatically increased. Other conditions such as reaction time, initial gel contents and concentration also pretty affected to the rate of de-crosslinking reaction.