

Suspension polymerization of thermally expandable microspheres using low-temperature initiators

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Thermally expandable microspheres with core-shell structure have a number of industrial applications like printing inks, light weight fillers, extrusion and injection molding and so on. They are also used in the automobile industry as coating material to reduce noise and weight. In this study, thermally expandable microspheres are synthesized with acrylonitrile(AN) and methyl methacrylate(MMA) and n-octane is used the blowing agent. Four initiators are used in this study. When the 2,2'-Azobis(4-methoxy-2,4-dimethyl acrylonitrile) (V-70) is used, the microspheres are made at low temperature. Fixing the initiator with V-70 and the temperature with 35 °C, the influence of the initiator amount and polymerization pressure are investigated. When the initiator amount is 1.5 wt.% and the pressure is 3 bar, the particle size is 30.16 μm and the encapsulation of n-octane is 40%. The particles expand at 156 °C.

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