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Influence of the fraction of comonomers and diluents on the preparation of polymeric microspheres based on poly (methacrylic acid-co-divinylbenzene) obtained by precipitation polymerization

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Abstract: Preparation and characterization of polymeric microspheres based on poly(methacrylic acid-*co*-divinylbenzene) (P(MAA-*co*-DVB)) by precipitation polymerization are reported. The influence of the change in comonomer composition, crosslinking degree, ratio of total monomers/diluents by weight/volume (g/100 mL) and the volume ratio of diluents were studied. Spherical particles were obtained in the range from 1.42 to 8.41 μm . An increase in particle size and thermal resistance with decreasing molar fraction of methacrylic acid (MAA) were observed, associated with increases in critical chain length (CCL) and the number of crosslinks in this system, respectively. The analysis of particles with molar fraction of 50% MAA and acetonitrile/toluene volumetric ratio of 75/25 showed that larger particle size and yield were achieved with increasing ratio of total monomers/diluents (g / 100 mL). The particles prepared with 14% molar fraction of MAA obtained greater swelling ratios than the particles prepared with 50% MAA.