

Synthesis of polystyrene

Summary of the analysed protocols

$n \text{ CH}_2\text{CHC}_6\text{H}_5 \xrightarrow{(\text{C}_6\text{H}_5\text{COO})_2} \text{-(CH}_2\text{CHC}_6\text{H}_5\text{)}_n \text{-} \quad (1)$
Protocol A^{1,2}
Preparation of reagents (Prep₁): extraction (10% sodium hydroxide aqueous solution) → washing (water) → drying (anhydrous calcium chloride) → filtration (gravity) Reaction (R₁): equation (1), benzoyl peroxide, toluene and methanol (auxiliary substances), reflux, T > 100 °C, r = 142 Isolation (I₁): filtration → washing (methanol) → drying (oven at 40-50 °C) Purification: not prescribed
Protocol B³
Reaction (R₂): equation (1), benzoyl peroxide, toluene and methanol (auxiliary substances), 0 °C < T < 100 °C, r = 29 Isolation (I₂): filtration (suction) → washing (methanol) → drying (air) Purification: not prescribed
Protocol C⁴
Preparation of reagents (Prep₂): filtration (through alumina) Reaction (R₃): equation (1), benzoyl peroxide (auxiliary substance), T > 100 °C, r = 43 Isolation (I₃): separation of the product Purification: not prescribed
Protocol D⁵
Reaction (R₄): equation (1), benzoyl peroxide (auxiliary substance), T > 100 °C, r = 74-93 Isolation (I₄): cooling → separation of the product Purification: not prescribed

^α → – Sequential; r – molar ratio between styrene and benzoyl peroxide

References

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