

研究论文

钨酸催化氧化环己烯合成己二酸

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摘要 以钨酸/有机酸性添加剂为催化体系, 在无有机溶剂、相转移剂的情况下, 催化30%过氧化氢氧化环己烯合成己二酸. 当钨酸: 有机酸性添加剂: 环己烯: 过氧化氢=1: 1: 40: 176(摩尔比, 钨酸用量为2.5 mmol)时, 使用有机酸性添加剂考察钨酸的催化性能, 结果表明以钨酸/间苯二酚催化氧化环己烯的催化效果最优, 反应8 h时己二酸分离产率达90.9%、纯度为~100%; 而不使用有机酸性添加剂时, 己二酸分离产率只有72.1%, 产品纯度为96.2%. 当使用磺酸水杨酸、草酸、水杨酸为有机酸性添加剂时, 随反应时间的增加, 己二酸分离产率均升高, 但反应6 h以后, 己二酸分离产率随时间的变化不明显. 当磺酸水杨酸用量为2.5 mmol时, 己二酸分离产率和纯度均较高. 钨酸-磺酸水杨酸催化体系重复使用五次后, 己二酸分离产率仍可达到80.5%.

关键词 [环己烯](#) [催化氧化](#) [钨酸](#) [过氧化氢](#) [己二酸](#)

分类号

Tungstic Acid-Catalyzed Oxidation of Cyclohexene to Adipic Acid in the Presence of Acidic Organic Additives

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Abstract In the absence of organic solvent and phase-transfer reagent, the catalytic oxidation of cyclohexene to adipic acid with aqueous 30% hydrogen peroxide can be achieved in the presence of tungstic acid/acidic organic additive. When the molar ratio of tungstic acid: acidic organic additive: cyclohexene: hydrogen peroxide was 1: 1: 40: 176 (tungstic acid, 2.5 mmol) and the tungstic acid/resorcinol used as catalyst, the isolated yield of adipic acid was up to 90.9% for 8 h. If the tungstic acid alone was used as catalyst, the isolated yield of adipic acid was only 72.1% and the purity of product was low. With sulfosalicylic acid, oxalic acid or salicylic acid used as additives, the isolated yield of adipic acid increased with increasing reaction time, but after 6 h, it did not increase obviously. The yield and purity of adipic acid were very high when the amount of sulfosalicylic acid was 2.5 mmol in the reaction medium. Tungstic acid/sulfosalicylic acid catalyst can be reused five times and the isolated yield of adipic acid was still 80.5% in the fifth time.

Key words [cyclohexene](#) [catalytic oxidation](#) [tungstic acid](#) [hydrogen peroxide](#) [adipic acid](#)

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