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催化、动力学与反应器

2,6-二异丙基萘液相空气氧化制2,6-萘二甲酸

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摘要 在1 L钛材反应釜内，采用Co-Mn-Br系催化剂对2,6-二异丙基萘（2,6-DIPN）液相氧化合成2,6－萘二甲酸（2,6-NDCA）的工艺条件进行了研究。采用反相高效液相色谱法分析2,6-萘二甲酸的纯度，考察了催化剂的量、反应温度、压力、原料的进料量、体系的含水量等因素对氧化反应结果的影响，得出了氧化反应较为适宜的操作条件；考察了在含氧气体中添加一定量的CO2和催化剂中加入Ni对氧化反应的影响，结果表明，CO2和Ni都可作为反应促进剂，明显提高产物的收率和纯度。在适宜的工艺条件下，实现了2,6-萘二甲酸的连续化生产，反应稳定后产品纯度可达到95%以上，随反应时间的延长，2,6-NDCA收率由69%提高到73%。

关键词 2,6-二异丙基萘 2,6-萘二甲酸 液相氧化反应 Co-Mn-Br催化剂

分类号

Air oxidation of 2,6-diisopropylnaphthalene to 2,6-naphthalenedicarboxylic acid in liquid phase

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Abstract

The influences of catalyst concentration, reaction temperature and pressure, feed rate, and water content on the liquid phase oxidation of 2,6-diisopropylnaphthalene to 2,6-naphthalenedicarboxylic acid (2,6-NDCA)were studied in a 1 L titanium reactor using air as oxidant, acetic acid as solvent, and a Co-Mn-Br mixture as catalyst, and the optimum operation conditions were obtained in the experimental range.Meanwhile, the promotor effects of individual CO2 and Ni2+ and their combined use on the activity of Co-Mn-Br catalyst were discussed.Based on the results of the batch experiments, a continuous process for making 2,6-NDCA was developed.The yield of 2,6-NDCA increased from 69% to 73% and the purity of 2,6-NDCA could be up to 95% with the increasing of reaction time.

Key words 2 6-diisopropylnaphthalene 2 6-naphthalenedicarboxylic acid liquid phase oxidation process Co-Mn-Br catalyst

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