

REACTION KINETICS, CATALYSIS

滴流床中乙醛液相氧化合成过氧乙酸新工艺

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摘要 In this paper, shorter residence time (a few minutes) with high yield in the trickle bed process for peracetic acid synthesis by acetaldehyde liquid phase oxidation can be realized on the selected packing material SA-5118. For acetaldehyde in acetone with ferric ion as catalyst, the optimized process conditions were presented. The main factors influencing the yield, selectivity and conversion are residence time, temperature and acetaldehyde concentration, respectively. The temperature range checked is from 30 to 65°C. High yield of 81.53% with high selectivity of 91.84% can be obtained at higher temperature of 55°C when the residence time is 5.5min and the acet-aldehyde concentration is 9.85% (by mass). And there is a critical acetaldehyde concentration point (Cccp) between 18% and 19.5% (by mass). At temperature less than 55°C, the highest yield to peracetic acid at each temperature level increases with temperature when the acetaldehyde concentration is below Cccp and decreases with temperature when the acetaldehyde concentration is above Cccp.

关键词 [peracetic acid](#) [liquid phase oxidation](#) [acetaldehyde](#) [trickle bed](#)

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Peracetic acid synthesis by acetaldehyde liquid phase oxidation in trickle bed reactor

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Abstract In this paper, shorter residence time (a few minutes) with high yield in the trickle bed process for peracetic acid synthesis by acetaldehyde liquid phase oxidation can be realized on the selected packing material SA-5118. For acetaldehyde in acetone with ferric ion as catalyst, the optimized process conditions were presented. The main factors influencing the yield, selectivity and conversion are residence time, temperature and acetaldehyde concentration, respectively. The temperature range checked is from 30 to 65°C. High yield of 81.53% with high selectivity of 91.84% can be obtained at higher temperature of 55°C when the residence time is 5.5min and the acet-aldehyde concentration is 9.85% (by mass). And there is a critical acetaldehyde concentration point (Cccp) between 18% and 19.5% (by mass). At temperature less than 55°C, the highest yield to peracetic acid at each temperature level increases with temperature when the acetaldehyde concentration is below Cccp and decreases with temperature when the acetaldehyde concentration is above Cccp.

Key words [peracetic acid](#); [liquid phase oxidation](#); [acetaldehyde](#); [trickle bed](#)

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