

现代化工技术

立式捏合机捏合间隙影响CFD分析

易朋兴, 胡友民, 崔峰, 杜润生, 杨叔子

华中科技大学机械学院机电系

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摘要 本文利用计算流体力学(CFD)方法研究捏合间隙对立式捏合机混合性能的影响。首先,根据立式捏合机搅拌桨叶运动特点以及被混物料的流变特性,进行立式捏合机混合流场数值模拟。其次,确定立式捏合机混合性能宏观评价指标。最后,分析了捏合间隙的变化对混合性能评价指标的影响。分析结果表明:间隙越小,立式捏合机的混合性能越好;当空心桨叶两侧的捏合间隙大小相等时,立式捏合机的功耗最小。

关键词 [立式捏合机](#) [混合间隙影响](#) [数字模拟](#) [性能评价](#)

分类号

Numerical investigation of effect of kneading clearance on mixing performance of vertical kneading mixers

YI Pengxing, HU Youmin, CUI Feng, DU Runsheng, YANG Shuzi

Abstract

The effect of kneading clearance on the mixing performance of vertical kneading mixers was investigated by using the CFD methods. Firstly, the mixing field in the kneading tank was simulated numerically after analyzing the movement of mixer blade and the rheological properties of the material. Next, some macro mixing performance evaluation indices of the device were proposed. Lastly, the effect of kneading clearance on mixing performance was studied. The results indicated that a small kneading clearance could improve the mixing performance of vertical kneading mixers and better kneading efficiency could be achieved with a uniform kneading clearance.

Key words [vertical kneading mixer](#) [effect of mixing clearance](#) [numerical simulation](#) [performance evaluation](#)

DOI:

通讯作者 易朋兴 pongshinyee@163.com

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