

0.5左右,全充满流场略大,都以剪切为主;转子楔入区及背压区经过区域以拉伸流动为主,而压砣和卸料门区及转子根部以旋转流动为主。

(4)剪切应力在两种密炼机内都近似呈层状分布,转子棱顶最大,根部最小。全充满流场的剪切应力大于部分充满流场。

(5)全充满密炼机流场的混合指数和剪切应力都大于部分充满流场,但是扭矩输入却是部分充满密炼机的2倍。

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## Numerical Simulation of Rubber Flow in Partially Filled Internal Mixer

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**Abstract:** The 2D finite element model of flow field in partially filled and full-filled internal mixer at constant temperature by using the package FLUENT was investigated. By numerical simulating the free interface of compound, the flow state of fluid was analyzed, and the mixing efficiency of rotors was quantified in terms of shear stresses and mixing index generated in the flow field. The results showed that, compared with the full-filled internal mixer, the flow field became more complicated in partially filled internal mixer. The full-filled internal mixer seemed to provide better flow field characteristics for mixing, but the torque input to operate the machine was higher than that of the partially filled internal mixer.

**Key words:** internal mixer; flow field; numerical simulation; partially filled

## 汽车制动气室橡胶隔膜循环成型装置

中图分类号: TQ330.4<sup>+</sup>6 文献标志码: D

由宁国市海天力工业发展有限公司申请的专利(公开号 CN 103231476A, 公开日期 2013-08-07)“汽车制动气室橡胶隔膜循环成型装置”, 涉及的汽车制动气室橡胶隔膜循环成型装置包括真空硫化机、注射硫化机、脱模机构和橡胶隔膜成型模具。其中注射硫化机上设置有注射机, 真空

硫化机用于一次硫化处理, 注射硫化机用于二次硫化处理, 真空硫化机和注射硫化机沿左右方向并排设置, 脱模机构用于橡胶隔膜成型模具中压环与下模的分离操作。该发明突破了传统的二次硫化成型工艺方法, 由注射硫化机向模腔内注入胶料, 在进料的同时进行硫化处理, 自动化程度高, 生产效率高、产品质量稳定, 生产成本降低。

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