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论文

圆环压缩过程的有限元模拟——一种标定摩擦系数理论曲线的新方法

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摘要： 本文采用大变形弹塑性有限元理论，八节点四边形单元，准确的摩擦边界处理技术和反映材料在热加工过程中真实应力－应变的本构关系曲线，用ANSYS5.1软件对尺寸为外径：内径:高度＝6:3:2的圆环在不同摩擦系数（μ＝0－0.577）条件下的镦粗过程进行了数值模拟研究，并根据模拟结果绘制了金属热加工成形过程中测量摩擦系数的理论标定曲线，该曲线比经典方法的结果具有更高的精度。

关键词： 圆环压缩 摩擦系数 弹塑性有限元 金属成形

NUMERICAL SIMULATION ON RING COMPRESSION——A New Approch to Determine Calibration Curves of Friction Coefficient

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Abstract: This paper describes the theory of elasto-plastic FEM for large strain and themathematical model of the contact problems on the dynamic boundary. And it presents thesimulation results of the ring compression by using the elasto-plastic FEM program ANSYS 5.1 and the material constitutive relationship in hot metal working. The theoretical calibration curves of determining the friction coeffcient for 6:3:2 rings have been predicted.The equivalent strain and theshear stress distributions have been presented.

Keywords: ring compression friction coeffcient elasto-plasticFEM metal forming

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