

反应堆工程

窄矩形通道内单相水阻力特性实验研究

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摘要 文章对两个宽高比不同的窄矩形通道在竖直与倾斜条件下的单相水阻力特性进行了实验研究。通过对实验数据的分析确定了窄矩形通道内单相流动从层流向紊流转变的临界雷诺数为2 400左右。在层流区内, 竖直和倾斜条件下试验段内单相水的阻力系数实验值均大于圆管经验公式值, 紊流区内阻力系数实验值与Blasius经验公式值符合良好。倾斜对试验段内单相水的阻力特性无影响, 但宽高比越小, 阻力系数越大。

关键词 [窄矩形通道](#) [阻力特性](#) [临界雷诺数](#) [宽高比](#)

分类号

Experimental Study on Single-Phase Flow Characteristics in Narrow Rectangular Channel

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Abstract Experimental studies of single-phase flow characteristics in vertical and inclined rectangular channels with different aspect ratios were carried out. The experimental results indicate that the flow transition occurs when Reynolds numbers are larger than 2 400. In laminar state, the friction factors of both upright and acclivitous rectangular channels are larger than that of the classical laminar solution of round channels. In turbulent area, the friction factors are shown to be in good agreement with the Blasius expression. The inclinations have no effect on difference on the single-phase flow characteristics in narrow rectangular channels, but the friction factors increase with the decrease of aspect ratios.

Key words [narrow](#) [rectangular](#) [channel](#) [flow](#) [characteristic](#) [critical](#) [Reynolds](#) [number](#) [aspect](#) [ratio](#)

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