Optimization of workability technological testing for open-die forging

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Abstract:

The valid technology design of open-die forging of alloys with poor workability always presents a challenge. A method of a fast designation of open-die forging conditions is described in this paper. The simplified forging test was considered to assess the limit states during the open-die forging. As such, it should be employed in industrial scale foundries. A V-shaped testing die was designed using the finite element (FEM) simulation. The V-shaped geometry is convenient in terms of strain evaluation. A rectangular steel block was tested in a wide range of working temperatures. Based on the test results the limit states can be designated. Thus, the risk of material failure can be avoided or minimized. Experimental test results further serves for the FEM simulation validation.

Key words:

Open die forging, workability, technological testing, FEM simulation