

Workability Behaviour of Fe-C-Mo Steel Preforms During Cold Forging

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Abstract: A systematic method to construct the workability diagram for powder metallurgy (P/M) materials has been proposed. Preforms of Fe-0.8% C, Fe-0.8% C-1% Mo and Fe-0.8% C-2% Mo were prepared to the relative density of 0.86 with two different geometries through primary operations of P/M processes. Each sintered preform was cold upset forged with incremental compressive loading of 0.04 MN under three different lubricant conditions till a visible crack appeared at the free surface. Oyane's fracture criterion was used to develop a theory to study P/M products. The least square method was used to determine the constants in fracture criteria and these equations were eventually used to construct workability diagram. It is found that the proposed method was well in agreement with the experimental results.

Key words: workability diagram; yield criterion; formability