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PROCESSING AND PROPERTIES OF OPEN-CELL METALLIC FOAMS

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Abstract :

A new process based on a powder metallurgy approach was developed to produce open-cell materials. A metallic powder, a solid polymer binder (i.e. resin) and a chemical foaming agent are dry-mixed together. The molded mixture is then heat-treated in a three-step thermal treatment including foaming, debinding and sintering. The structure, density and pore size of the resulting materials can be controlled by adjusting the powder blend formulation and the process parameters. In this paper, the effect of powder composition and process parameters on the structural and mechanical properties of different metallic foams is presented and discussed. Increasing foaming temperature allows obtaining foams with a larger average pore size. Both foam structure and composition affect the final material properties.