

Title (en)

PROCESS FOR THE POWDER METALLURGY PRODUCTION OF METAL FOAM AND OF PARTS MADE FROM METAL FOAM

Title (de)

VERFAHREN ZUR PULVERMETALLURGISCHEN HERSTELLUNG VON METALLSCHAUMSTOFF UND VON TEILEN AUS METALLSCHAUMSTOFF

Title (fr)

PROCEDE DE FABRICATION DE MOUSSE METALLIQUE ET DE PIECES EN MOUSSE METALLIQUE PAR METALLURGIE DES POUDRES

Publication

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Application

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Abstract (en)

[origin: WO2007014559A1] The invention relates to a process for the powder metallurgy production of metal foam and of parts made from metal foam. In known powder metallurgy processes, foaming agent particles are admixed with the metal particles and form gas bubbles on heating. This results in the formation of unevenly distributed cells of different sizes in the metal foam. The cell size and the volume expansion are difficult to control during the process. In the process according to the invention, the metallic material in powder form, which has been pressed under mechanical pressure and at a temperature of up to 4000 °C to form a dimensionally stable semi-finished product, is heated, in a chamber which has been closed in a pressure-tight manner and at a selected initial pressure which is preferably up to 50 bar, to the melting or solidus temperature of the metallic material in powder form. After the melting or solidus temperature of the metallic material in powder form has been reached, the pressure in the chamber is reduced, at a predetermined gradient, to a final pressure which may be lower than 0.1 bar. This causes the semi-finished product to foam, and the metal foam formed in this way solidifies during the subsequent drop in temperature. It is also possible to produce accurately dimensioned metal foam bodies if suitable shaping moulds are used. The advantage is that there is no need to admix any foaming agent particles, and by using settable initial and final pressures it is possible to set the cell size and the volume expansion within certain limits with simple and accurate selection and/or during the course of the process.

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