

Title (en)
PROCESS AND DEVICE FOR THE POWDER-METALLURGICAL PRODUCTION OF BLISTER-FREE ALUMINIUM SEMI-FINISHED PRODUCTS
POOR IN HYDROXIDE AND OXIDE

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Abstract (en)
[origin: EP0279941A2] For the powder-metallurgical production of aluminium-based semifinished products, gas-atomised aluminium alloy powders are used. The oxide contents and/or hydroxide contents of such powders lead to blister formation and a porous microstructure in the semifinished product. Especially high-strength alloys containing magnesium and/or lithium, which are heat-treated above 400 DEG C, suffer pronounced embrittlement, if the oxide content on the particle surface exceeds certain limits. These limits cannot be adhered to by conventional vacuum processes and equipment. According to the novel process, and using the corresponding equipment, high-strength aluminium alloys having a blister-free structure and low embrittlement are to be produced by powder-metallurgical means. According to the invention a blanketing gas flows at a minimum velocity of 0.2 m/s around all sides of the gas-atomised alloy powder at temperatures between 400 and 550 DEG C. This produces a dynamic pressure gradient which promotes the transport of the oxides/hydroxides away from the powder. The powder thus treated is hot-formed and rapidly cooled immediately after forming. This gives products of a blister-free structure having low embrittlement and a very low content of hydrogen and oxides. Power-metallurgical production of pressed, forged or rolled products based on high-strength aluminium alloys.

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