

Title (en)
METHOD FOR MANUFACTURING INTERNAL COMBUSTION ENGINE PISTONS

Title (de)
VERFAHREN ZUR HERSTELLUNG VON BRENNKRAFTMASCHINENKOLBEN

Title (fr)
PROCEDE DE FABRICATION DE PISTONS DE MOTEUR A COMBUSTION INTERNE

Publication
EP 1163438 A1 20011219 (EN)

Application
EP 00913863 A 20000310

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Abstract (en)
[origin: WO0053914A1] A piston production method produces an internal combustion engine piston. The method comprises forging a billet from an initial billet comprising an aluminum alloy that comprises silicon, intermetallic particles, and injected hardening particles, the forging is conducted under at least one of super-plasticity and hot deformation conditions; and heat treating the forged billet. The forging comprises forging at a temperature in a range from about 0.8 T_{melt} to about 0.98 T_{melt}. The forging also comprises forging at a STRAIN rate in a range from about 5x10⁻² s⁻¹ to about 5x10⁻⁵ s⁻¹. The piston being formed with a configuration that enables other parts to be connected to the piston. The initial billet comprises at least one of: coarse grain silicon, intermetallic particles, and injected hardening particles having at least one of a lamellar, comprehensive shape, and fine grain silicon, intermetallic particles, and injected hardening particles being globular in shape. The silicon, intermetallic and injected hardening particle volume content is in a range from about 25 % to about 60 %, and an average grain size of the silicon, intermetallic, and injected hardening particles is less than about 15 μm.

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