

METHOD FOR PRODUCING NEAR-NET-SHAPE MATERIAL FOR ENGINE PISTON

ABSTRACT

A method of producing a near-net-shape material for an engine piston includes a continuous casting step of continuously casting an aluminum alloy melt 30 at a melt temperature of 720 °C or above to thereby obtain a cast rod 31 having a diameter of 85 mm or less, and a forging step of forging a forging material 32 obtained by homogenizing the cast rod 31 at a temperature of 300 to 500 °C to obtain a near-net-shape material 11 for an engine piston. The melt has a composition consisting of Si: 11.0 to 13.0 %, Fe: 0.6 to 1.0 %, Cu: 3.5 to 4.5 %, Mn: 0.25 % or less, Mg: 0.4 to 0.6 %, Cr: 0.15 % or less, Ni: 0.6 to $\{(-4/6) \times [\text{Cu mass\%}] + 5\}\%$, Zr: 0.07 to 0.15 %, P: 0.005 to 0.010 %, Ca: 0.002 % or less, and the balance being Al and inevitable impurities.

Fig. 7