

Title (en)

Method of making a heat treated spray formed superalloy article

Title (de)

Verfahren zur Herstellung von wärmebehandelten, sprühgegossenen Superlegierungsgegenstände

Title (fr)

Procédé de fabrication des objets en superalliage formés par projection et traités thermiquement

Publication

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Application

EP 99309128 A 19991117

Priority

US 21690498 A 19981221

Abstract (en)

Heat treated, spray formed articles are disclosed which exhibit crack growth rates and resistance to stress rupture comparable to corresponding, forged articles. The articles are first formed by depositing molten metal droplets, e.g., of a superalloy having a composition in weight percent of about 18-21 w/o Cr, 3.5-5 w/o Mo, 12-15 Co, 2.75-3.25 w/o Ti, 1.2-1.6 w/o Al, 0.01-0.08 w/o Zr, 0.003-0.010 w/o B, balance generally nickel, on a substrate to form a rough article. The articles are HIP'ed and then processed by heat treating, which includes solution, stabilization and precipitation heat treatments. The resultant articles have fine average grain sizes compared to forged and conventionally heat treated material, as well as yield and tensile strengths comparable to forged material. Importantly, the articles also exhibit low crack growth rates and stress rupture resistance, e.g., comparable to forged material, and have an isotropic microstructure. The articles can be used in place of forged articles. <IMAGE>

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