

HAYNES[®] 282[®] alloy

Principal Features

Excellent High Temperature Strength

HAYNES[®] 282[®] alloy (UNS N07208) is a new, wrought, gamma-prime strengthened superalloy developed for high temperature structural applications, especially those in aero and industrial gas turbine engines. It possesses a unique combination of creep strength, thermal stability, weldability, and fabricability not found in currently available commercial alloys. The new alloy has excellent creep strength in the temperature range of 1200 to 1700°F (649 to 927°C), surpassing that of Waspaloy alloy, and approaching that of R-41 alloy.

Easily Fabricated

This high level of creep strength in HAYNES[®] 282[®] alloy has been attained at a relatively low volume fraction of the strengthening gamma-prime phase, resulting in outstanding resistance to strain-age cracking (normally a problem with superalloys in this creep strength range). Additionally, slow gamma-prime precipitation kinetics allow for the alloy to have excellent ductility in the as-annealed condition. Consequently, HAYNES[®] 282[®] alloy exhibits superior weldability and fabricability.

Heat Treatment

HAYNES[®] 282[®] alloy is provided in the solution-annealed condition, in which it is readily formable. The typical solution-annealing temperature is in the range of 2050 to 2100°F (1121 to 1149°C). After component fabrication, a two-step age hardening treatment is required to put the alloy into the high-strength condition. The treatment includes 1850°F (1010°C) / 2 hours / AC (air cool) + 1450°F (788°C) / 8 hours / AC.

Applications

The features of HAYNES[®] 282[®] alloy make it suitable for critical gas turbine applications, such as sheet fabrications, seamless and flash butt-welded rings, and cases found in compressor, combustor, and turbine sections. In augmented aircraft gas turbines, the new alloy will be useful for exhaust and nozzle components. In industrial gas turbines, HAYNES[®] 282[®] alloy is a good candidate for transition sections and other hot-gas-path components.
