

HAYNES[®] Waspaloy alloy

Welding

For welding HAYNES[®] Waspaloy alloy, please review the [General Welding and Joining Guidelines](#). In addition to those guidelines, there are some additional considerations when welding Waspaloy alloy.

HAYNES[®] Waspaloy alloy is a precipitation-strengthened alloy and requires a postweld heat treatment (PWHT) to develop suitable properties. Postweld heat treatment for Waspaloy alloy consists of two parts: a solution anneal, which is followed by a three-step aging treatment. Details can be found [here](#). During PWHT, the gamma-prime phase ($\text{Ni}_3\text{Al,Ti}$) precipitates and the alloy undergoes a slight volumetric contraction. This makes it susceptible to strain-age cracking, which typically occurs upon heating to the solution annealing temperature. To inhibit strain-age cracking, the heating rate to the solution annealing temperature should be as fast as possible, within the capability of the furnace being used.

Filler metal of matching composition is suggested for welding Waspaloy alloy to itself. For filler metal suggestions for welding Waspaloy alloy to other alloys, please refer to the Haynes [Welding SmartGuide](#), or contact Haynes International for further guidance.