

HAYNES[®] 242[®] alloy

Fabrication and Welding

HAYNES[®] 242[®] alloy has excellent forming and welding characteristics. It may be hot-worked at temperatures in the range of about 1800-2250°F (980-1230°C) provided the entire piece is soaked for a time sufficient to bring it uniformly to temperature. Initial breakdown is normally performed at the higher end of the range, while finishing is usually done at the lower temperatures to afford grain refinement.

As a consequence of its good ductility, 242[®] alloy is also readily formed by cold-working. All hot or cold-worked parts should be annealed at 1900-2050°F (1038-1121°C) and cooled by air cool or faster rate before aging at 1200°F (650°C) in order to develop the best balance of properties.

The alloy can be welded by a variety of processes, including gas tungsten arc, gas metal arc, and shielded metal arc. High heat input processes such as submerged arc and oxyacetylene welding are not recommended.

Welding Procedures

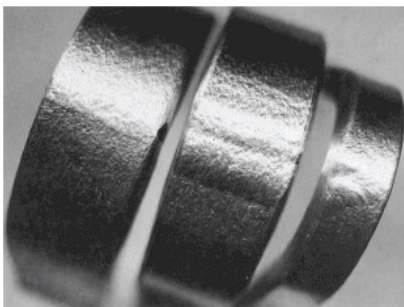
Welding procedures common to most high-temperature, nickel-base alloys are recommended. These include use of stringer beads and an interpass temperature less than 200°F (95°C). Preheat is not required. Cleanliness is critical, and careful attention should be given to the removal of grease, oil, crayon marks, shop dirt, etc. prior to welding. Because of the alloy's high nickel content, the weld puddle will be somewhat "sluggish" relative to steels. To avoid lack of fusion and incomplete penetration defects, the root opening and bevel should be sufficiently open.

Filler Metals

HAYNES[®] 242[®] alloy should be joined using matching filler metal. If shielded metal arc welding is used, HASTELLOY[®] W alloy coated electrodes are suggested. Please [click here](#) or see the [Haynes Welding SmartGuide](#) for more information.

Postweld Heat Treatment

HAYNES[®] 242[®] alloy is normally used in the fully-aged condition. However, following forming and welding, a full solution anneal is recommended prior to aging in order to develop the best joint and overall mechanical properties.



Typical root, face, and side bends (L to R) for welded 242[®] alloy 0.5-inch (13 mm) plate and matching filler metal. Bend radius was 1.0 inch (25 mm).

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