HAYNES® 25 alloy

Welding

HAYNES® 25 alloy is readily welded by Gas Tungsten Arc (GTAW), Gas Metal Arc (GMAW), Shielded Metal Arc (SMAW), electron bean welding, and resistance welding techniques. Its welding characteristics are similar to those of HAYNES® 188 alloy. Submerged Arc welding is not recommended, as this process is characterized by high heat input to the base metal and slow cooling of the weld. These factors can increase weld restraint and promote cracking.

Base Metal Preparation

The joint surface and adjacent area should be thoroughly cleaned before welding. All grease, oil, crayon marks, sulfur compounds, and other foreign matter should be removed. Contact with copper or copper-bearing materials in the joint area should be avoided. It is preferable, but not necessary, that the alloy be in the solution-annealed condition when welded.

Filler Metal Selection

Matching composition filler metal is recommended for joining alloy 25. For shielded metal arc welding, HAYNES® 25 alloy electrodes (AMS 5797) are suggested. For dissimilar joining of 25 alloy to nickel-, cobalt-, or iron- base materials, 25 alloy itself (AMS 5796), 230-W® filler wire(AMS 5839), HAYNES® 556® alloy (AMS 5831), HASTELLOY® S alloy (AMS 5838), or HASTELLOY® W alloy (AMS 5786) welding products are suggested, depending upon the particular case. Please click here or see the Haynes Welding SmartGuide for more information.

Preheating, Interpass Temperatures, and Postweld Heat Treatment

Preheat is not required. Preheat is generally specified as room temperature (typical shop conditions). Interpass temperature should be maintained below 200°F (93°C). Auxiliary cooling methods may be used between weld passes, as needed, providing that such methods do not introduce contaminants. Postweld heat treatment is not generally required for 25 alloy. For further information, please click here.

Welded Tensile - Room Temperature

Form	0.2% Yield Strength		Ultimate Tensile Strength		Elongation
	ksi	MPa	ksi	MPa	%
Sheet	69.0	476	144.5	996	54.7
Plate	68.7	474	145.1	1000	58.8
Welded Transverse, GTAW	72.4	499	134.2	925	36.5
All Weld Metal, SMAW	88.6	611	141.0	972	31.5