

HAYNES® 556® Alloy

Universal High-Temperature Filler Metal For Welding Dissimilar High-Temperature Alloys

Learn to rely on only one weld rod for your high-temperature dissimilar welding needs - 556 weld rod. The HAYNES® 556® alloy displays excellent welding characteristics along with outstanding all-weld-metal (AWM) strength and corrosion resistance making it a "universal" filler metal for high-temperature dissimilar metal welding. The 556 filler metal typically possesses better high-temperature strength and corrosion resistance than the base metals being welded (i.e. performance might be limited by base metal properties instead of weld metal properties).

Possible Combinations

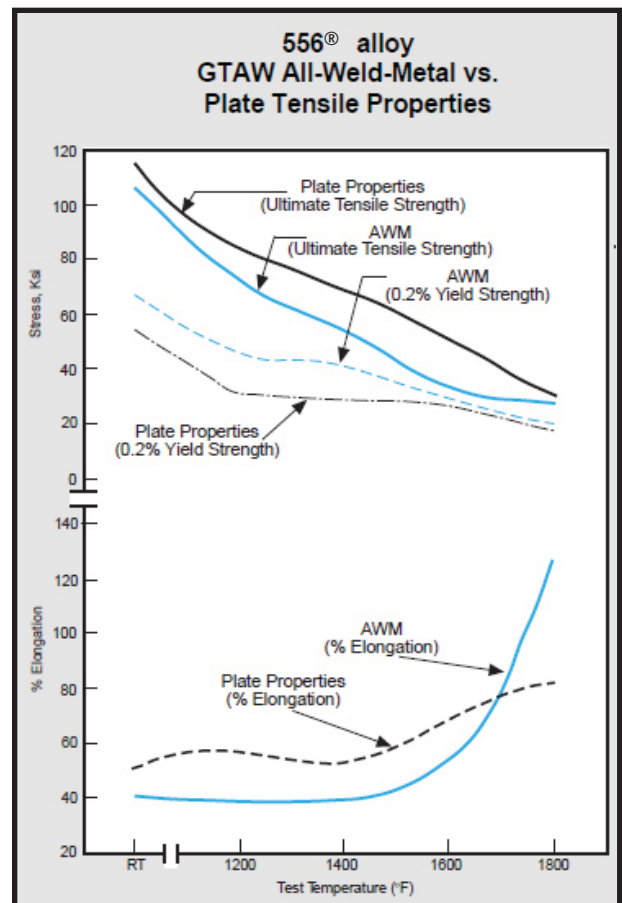
- Ni-base to Fe-base
- Fe-base to Fe-base
- Co-base to Fe-base
- Stainless Steel to C-steel
- Stainless Steel to Fe-base
- Stainless Steel to Co-base
- Stainless Steel to Ni-base
- C-steel to Fe-base
- C-steel to Ni-base

Weld Wire Sizes (Standard)

- Cut Lengths - 0.062, 0.094, 0.125 (in)
- Layer Wound - 0.035, 0.045, 0.062 (in)

Specifications

- AMS 5874 (sheet, plate and strip)
- AMS 5831 (wire)
- AMS 5877 (bars, forgings, and rings)
- ASTM B435 (sheet and plate)
- ASTM B622 (seamless pipe and tube)
- ASTM B626 (welded tubes)
- ASME Code Case No. 2010 Sec. 1 (sheet, plate, bar, pipe, and tube)

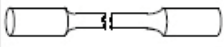

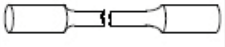



Chemistry: Weight %

Fe	Co	Cr	Mo	W	Ni	Ta	N	Si	Mn	Al	C	La	Zr
31a	18	22	3	2.5	20	0.6	0.20	0.4	1	0.2	0.10	0.02	0.02

^aAs Balance

HAYNES® 556® Alloy

			
Tensile Tested	Metallography	Stress Rupture Tested	Bend Tested
800HT® alloy/556/800HT 800HT/556/625 188/556/800HT 625/556/556 304 SS/556/C-steel 800HT/556/304 SS	800HT/556/800HT 800HT/556/625 188/556/800HT 625/556/556 304 SS/556/C-steel 800HT/556/304 SS	625/556/800HT 188/556/800HT	800HT/556/800HT 800HT/556/625 188/556/800HT 625/556/556 304 SS/556/C-steel 800HT/556/304 SS 230/556/304 SS HASTELLOY® X alloy/556/304 SS 2-1/4Cr-1Mo Steel/556/304 SS
800HT is a registered trademark of INCO Family of Companies.			
* For test results, ask for publication H-3117			

All-Weld-Metal Rupture Properties:

(0.25-inch diameter specimen machined from single V-groove weldment)

Temperature		Rupture Properties: Stress Required to Produce Rupture in Hours Shown, Ksi (MPa)					
°F	(°C)	100		1,000		10,000 (Est.)	
1400	(760)	28.0	(193)	23	(159)	19	(131)
1600	(870)	16.0	(110)	11.5	(79)	8.5	(59)

Thermal Stability:

(Room Temperature Tensile Properties of GTAW All-Weld-Metal Following 1000 Hour Thermal Exposures*)

Exposed Temperature		0.2% YS		UTS		El. in 1.25 in.
°F	(°C)	Ksi	(MPa)	Ksi	(MPa)	%
As-Welded		70	(483)	110	(758)	36
1200	(650)	72	(496)	117	(807)	24
1400	(760)	72	(496)	109	(752)	18
1600	(870)	59	(407)	109	(752)	23

Typical Room Temperature Physical Properties:

	British Units	Metric Units
Density	0.297 lb/in ³	8.23 g/cm ³
Electrical Resistivity	37.5 μohm-in	95.2 μohm-cm
Dynamic Modulus of Elasticity	29.7 x 10 ⁶ psi	206 Gpa
Thermal Conductivity	77 Btu-in/ft ² -hr-°F	11.1 W/m-K
Specific Heat	0.111 But/lb.-°F	464 J/Kg-K

Environmental Resistance:

Oxidation in Air - Excellent at 2000°F (1095°C)

Chlorination - Very good to 1650°F (900°C)

Sulfidation - Second only to Co-base alloys

Molten Zinc - Best Available

Molten Chloride Salts - Equal to alloy X

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