HEAT-RESISTANT ALLOY AT A GLANCE

HAYNES International

HAYNES® 233-W® Alloy Filler Metal

Alloy Description:

HAYNES® 233-W® alloy filler metal is specially formulated for welding of HAYNES® 233® alloy. It exhibits enhanced weldability and the deposited weld metal provides an excellent combination of high temperature strength and ductility. 233-W® alloy bare wire is produced in straight lengths for gas tungsten arc welding (GTAW / "TIG") and in layer wound spools for gas metal arc welding (GMAW / "MIG") processes. 233-W® alloy filler metal provides the same basic properties that make 233® alloy a good choice for demanding applications in aerospace and industrial gas turbines, industrial heating fixtures and sensors, and various structural components in emerging technology applications. 233® alloy wire and bar products are used to produce wire mesh, springs, and fasteners, while 233-W® alloy filler metal is used for welding and additive manufacturing (AM) applications.

Nominal Chemical Composition, Weight %:

Ni	Cr	Co	Mo	Ti	Al	Fe	Mn	Si	C	B	Ta	W	Y	Zr
48[a]	19	19	7.5	0.5	3.25	1.5*	0.4*	0.2*	0.07	0.003*	0.6	0.3*	0.025*	0.02*

[a] As Balance *Maximum

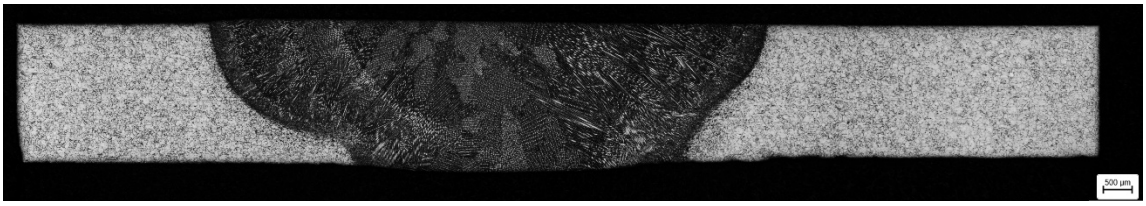
Transverse Weld Tensile Properties:

HAYNES® 233® alloy welds produced with HAYNES® 233-W® alloy filler metal can be utilized in the as-welded condition or postweld age-hardened conditions. Shown in the tables below are transverse weld tensile properties for 0.125" sheet and 0.50" plate welds. Tensile strength values are similar or higher than comparable data for HAYNES® 233® alloy sheet and plate samples.

233® 0.125" Sheet Manual GTAW with 233-W® Filler Metal						
Temperature		0.2% Yield Strength		Ultimate Tensile Strength		Elongation
°F	°C	ksi	MPa	ksi	MPa	%
As-Welded						
RT		66.6	459	116.9	806	22.7
1400	760	85.4	589	105.9	730	11.2
1600	871	61.7	425	71.6	494	11.2
1800	982	12.3	85	19.3	133	83.1
2000	1093	5.6	39	7.8	54	39.0
Postweld Age-Hardened 2150°F(1149°C)/15min/WQ + 1650°F(899°C)/4hr/AC + 1450°F(788°C)/8hr/AC						
RT		116.8	805	172.6	1190	18.9
1400	760	98.8	681	116.9	806	13.6
1600	871	55.2	381	65.4	451	17.2
1800	982	12.5	86	17.6	121	61.8

233® 0.50" Plate GMAW with 233-W® Filler Metal							
Temperature		0.2% Yield Strength		Ultimate Tensile Strength		Elongation	Red. of Area
°F	°C	ksi	MPa	ksi	MPa	%	%
As-Welded							
RT		96.3	664	139.3	960	25.6	34.2
1400	760	88.8	612	107.4	740	7.6	18.1
1600	871	62.4	430	75.6	521	6.1	9.0
1800	982	15.2	105	19.7	136	43.9	44.5
Postweld Age-Hardened 2150°F(1149°C)/30min/WQ + 1650°F(899°C)/4hr/AC + 1450°F(788°C)/8hr/AC							
RT		114.9	792	173.3	1195	19.3	21.1
1400	760	109.9	758	120.6	832	17.6	22.5
1600	871	60.3	416	70.3	485	13.7	18.1
1800	982	13.0	90	18.6	128	47.3	55.9

HAYNES® 233® 0.125" sheet manual GTAW with HAYNES® 233-W® filler metal



Please contact us at the numbers listed below or Brandon Furr (bfurr@haynesintl.com) for HAYNES® 233-W® alloy filler metal sizes and availability.

HAYNES International

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