

HASTELLOY[®] G-35[®] alloy

Corrosion Resistance of Welds

To assess the resistance of welds to corrosion, Haynes International has chosen to test all-weld-metal samples, taken from the quadrants of cruciform assemblies, created using multiple gas metal arc (MIG) weld passes. Interestingly, the resistance of all-weld-metal samples of G-35 alloy to key, inorganic acids is close to that of the wrought, base metal, and even exceeds it in concentrated sulfuric acid.

Chemical	Concentration	Temperature		Corrosion Rate			
	wt.%	°F	°C	Weld Metal		Wrought Base Metal	
				mpy	mm/y	mpy	mm/y
H ₂ SO ₄	30	150	66	<0.4	<0.01	0.4	0.01
H ₂ SO ₄	50	150	66	<0.4	<0.01	<0.4	<0.01
H ₂ SO ₄	70	150	66	56.3	1.43	63.8	1.62
H ₂ SO ₄	90	150	66	66.5	1.69	122.8	3.12
HCl	5	100	38	<0.4	<0.01	<0.4	<0.01
HCl	10	100	38	9.4	0.24	6.7	0.17
HCl	15	100	38	22.0	0.56	20.5	0.52
HCl	20	100	38	17.7	0.45	16.5	0.42
HNO ₃	70	Boiling		4.7	0.12	3.9	0.10

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