

HASTELLOY[®] C-22[®] 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. Predictably, the inhomogeneous nature of weld microstructures leads to higher corrosion rates (than with homogeneous, wrought products). Nevertheless, HASTELLOY[®] C-22[®] alloy exhibits excellent resistance to the key, inorganic acids, even in welded form, as shown in the following table:

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	0.6	0.02	0.4	0.01
H ₂ SO ₄	50	150	66	9.3	0.24	0.8	0.02
H ₂ SO ₄	70	150	66	10.3	0.26	11.0	0.28
H ₂ SO ₄	90	150	66	18.5	0.47	13.4	0.34
HCl	5	100	38	<0.1	<0.01	<0.1	<0.01
HCl	10	100	38	<0.1	<0.01	0.4	0.01
HCl	15	100	38	11.1	0.28	9.4	0.24
HCl	20	100	38	10.2	0.26	7.9	0.20