

HAYNES[®] 242[®] alloy

Resistance to Hydrogen Embrittlement

Notched room-temperature tensile tests performed in hydrogen and air reveal that 242 alloy is roughly equivalent to alloy 625 in resisting hydrogen embrittlement, and appears to be superior to many important materials. Tests were performed in MIL-P27201B grade hydrogen, with a crosshead speed of 0.005 in./min. (0.13 mm/min.).

Alloy	Hydrogen Pressure		-	Ratio of Notched Tensile Strength, Hydrogen/Air
	psi	MPa	Kt	
Waspaloy	7,000	48	6.3	.78
625	5,000	34	8.0	.76
242 [®]	5,000	34	8.0	.74
718	10,000	69	8.0	.46
R-41	10,000	69	8.0	.27
X-750	7,000	48	6.3	.26