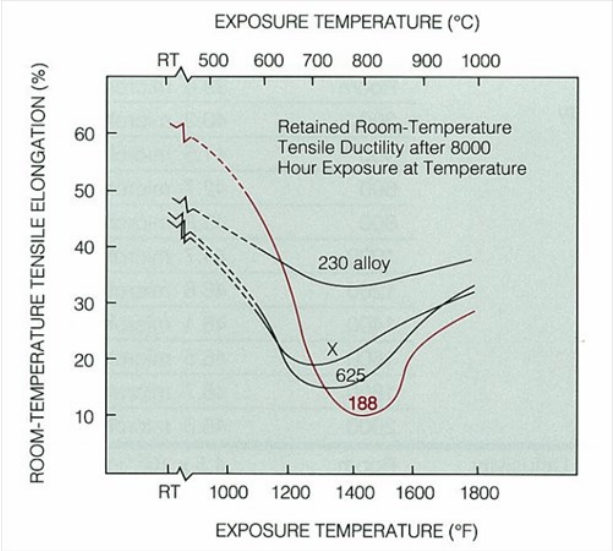
HAYNES® 188 alloy

Thermal Stability

HAYNES® 188 alloy is similar to the solid-solution-strengthened superalloys, such as alloy 625 or HASTELLOY® X alloy, which will precipitate deleterious phases upon such long-ter m exposure. In this case. the phase in question is a CO_2W laves phase. which serves to impair both tensile ductility and impact strength. The behavior of 188 alloy is significantly better in this regard than HAYNES® 25 alloy, which it replaced; but for applications where thermal stability is important, 230® alloy is recommended.



Room-Temperature Properties of Plate after Thermal Exposure

Exposure Temperature		-	0.2% Yield Strength		Ultimate Tensile Strength		Elongation	Impact Strength	
°F	°C	h	ksi	MPa	ksi	MPa	%	ft.- lbs.	J
1200	650	0	65.0	450	140.0	965	56.0	143	194
		8000	79.7	550	151.6	1045	29.1	23	31
1400	760	0	65.0	450	140.0	965	56.0	143	194
		8000	74.0	510	147.9	1020	10.8	3	4
1600	870	0*	70.1	485	146.0	1005	50.4	143	194
		1000	70.7	490	157.5	1085	28.7	10	13
		4000	68.8	475	156.0	1075	26.6	10	13
		8000*	64.5	445	147.4	1015	22.2	9	12
		16000	63.8	440	146.1	1005	24.0	8	11

*Average of two test exposure. All other single exposures.

Comparative Impact Strength after 8000-Hour Exposures

Alloy	Solution-Annealed Charpy V-Notch Impact		Charpy V-Notch Impact Following Exposure For 8000 Hours at Temperatures					
			1200°F	650°C	1400°F	760°C	1600°F	870°C
-	ft.-lbs.	J	ft.-lbs	J	ft.-lbs	J	ft.-lbs	J
230®	54	73	30	41	21	28	21	28
188	**143**	**194**	**23**	**31**	**3**	**4**	**9**	**12**

X	54	73	15	20	8	11	15	20
625	81	110	5	7	5	7	15	20