



RA 602 CA® is one of the most oxidation resistant, high strength and heat resistant alloys available. Elevated levels of chromium and aluminum along with the addition of yttrium permit RA 602 CA to develop a tightly adhering oxide scale with an alumina based subscale. This allows it to be considered for applications up to 2250°F. RA 602 CA is often used for applications where it is important to minimize product contamination at extreme temperatures. The high strengths achieved are due to carbon contents around 0.2% and the addition of zirconium helps RA 602 CA maintain its ductility over time by restricting grain growth that would normally be seen in other alloys above 1800°F. RA 602 CA is readily available (from stock) in plate, sheet, round bar and welding consumables.

RA333 has been the alloy of choice for applications requiring resistance to carbon or metal dusting. One large capital equipment manufacturer has specified RA 602 CA as an acceptable replacement for RA333 in such applications. Carbon dusting occurs at low temperatures (800 to 1200°F) in heat treating furnaces with carburizing atmospheres. When it does it occurs in areas where the metal is shielded from high temperature, either by insulation or by being inside another part. Contact a Rolled Alloys Metallurgical Services representative for additional information.

**Chemical Composition, %**

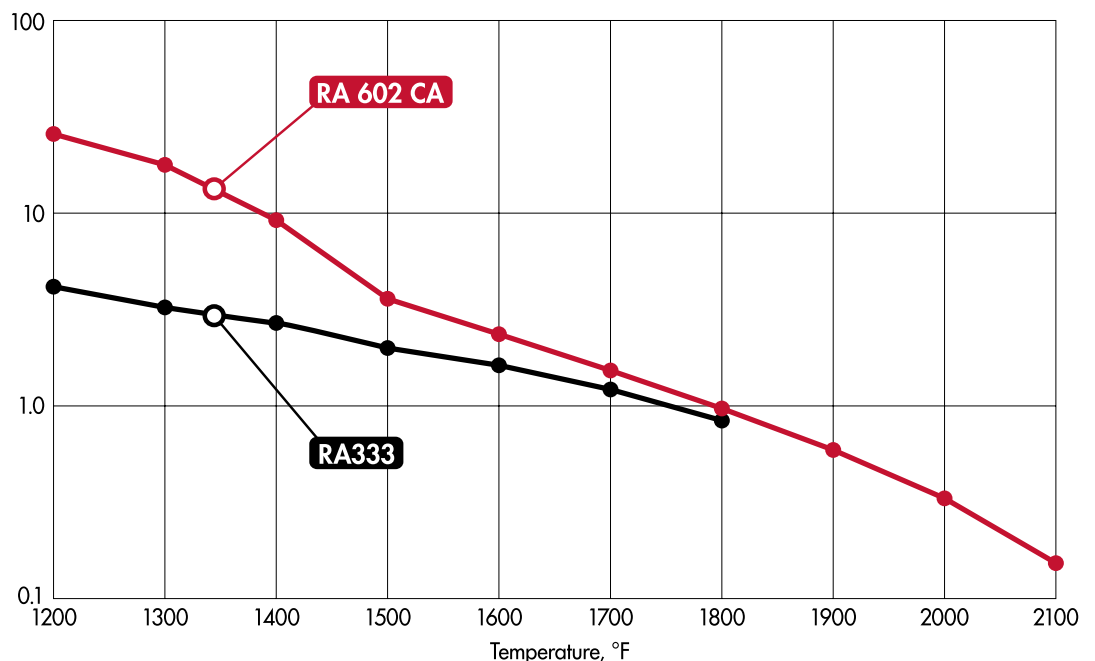
	Cr	Ni	Si	Al	Fe	C	Mo	Mn	Co	W	Ti	Y	Zr
RA 602 CA® UNS N06025	25.0	63.0	0.25	2.1	9.5	0.2	—	0.08	—	—	0.15	0.09	0.06
RA 333® UNS N06333	25.5	45.5	1.1	—	19.7	0.04	3.25	1.0	3.25	3.25	—	—	—

**Mechanical Properties**

	Temperature, °F	70	1600	1800	2000	2200
RA 602 CA	Ultimate Tensile Strength, ksi	105	32.8	17.1	13	5.8
	0.2% Offset Yield Strength, ksi	50.5	28.7	15.2	11.6	5.0
	Elongation, %	38	82	78	85	96
RA333	Ultimate Tensile Strength, ksi	107	27.5	15.7	7.4	4.0
	0.2% Offset Yield Strength, ksi	47	23.9	12.1	6.5	3.5
	Elongation, %	48	75	64	25	106

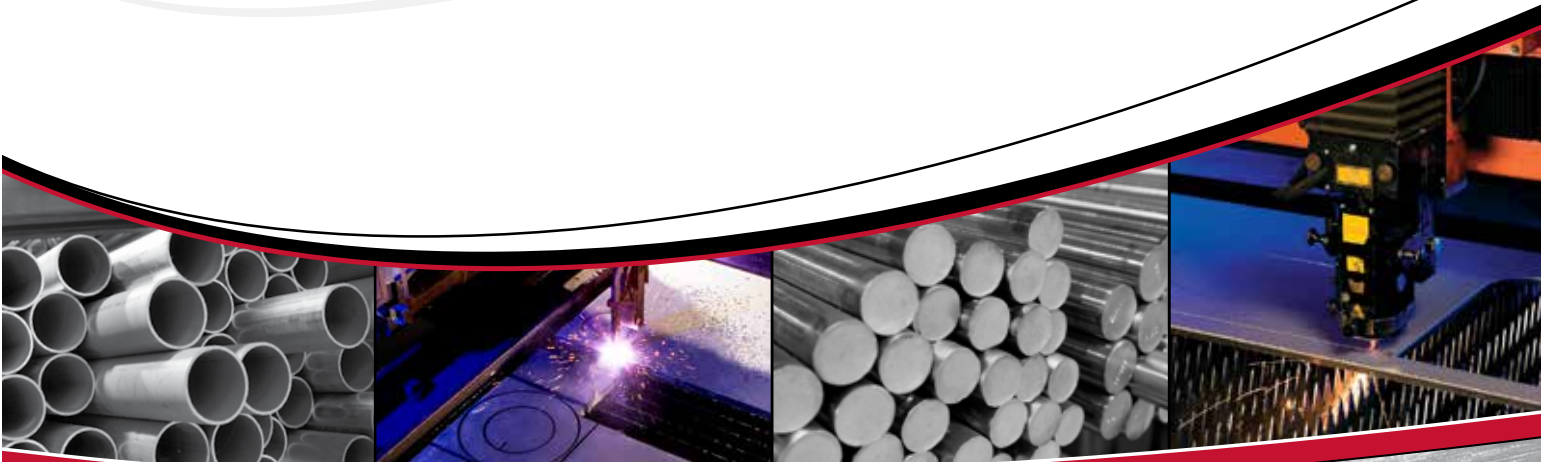
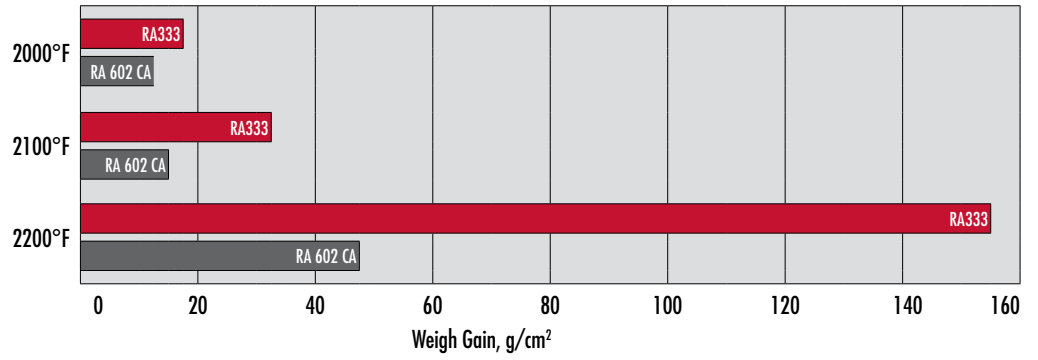
**Creep Strength**

Average Stress for 1% Total Creep in 10,000 Hours (ksi)



1% total creep includes the primary stage creep when the specimen is first loaded, as well as secondary stage creep. Minimum creep rate data is based entirely on second stage creep.

Oxidation Resistance,  
3000 Hours



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