

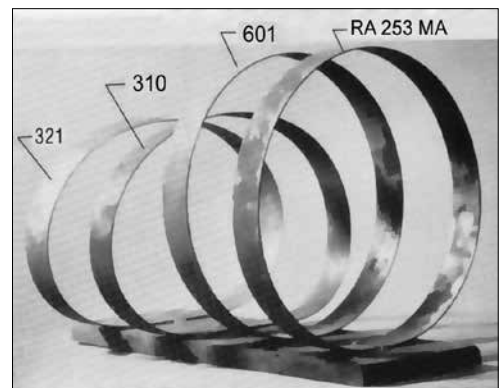
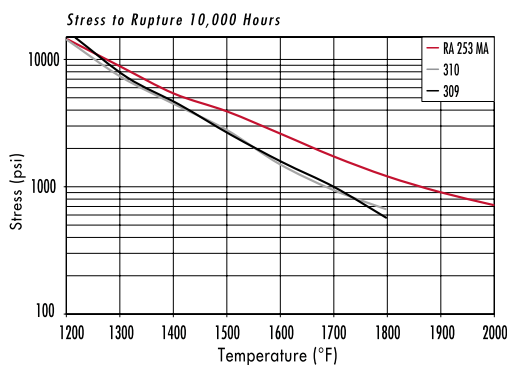
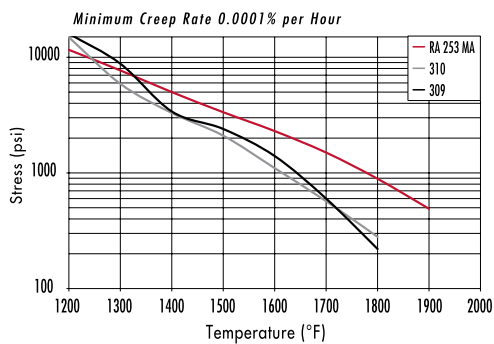
**RA 253 MA® Advantages**

- The main difference between RA 253 MA and both 309 and 310 stainless steel is the addition of cerium, silicon and nitrogen to RA 253 MA. RA 253 MA also has a lower alloy content of nickel and chromium making it less susceptible to fluctuating commodity prices.
- The micro alloy addition of cerium as well as silicon gives RA 253 MA good oxidation resistance up to 2000°F, which is comparable to 310 stainless and superior to 309 stainless.
- Due to the additions of both carbon and nitrogen, the creep strength of RA 253 MA is more than twice that of both 309 and 310 stainless at temperatures above 1600°F.
- RA 253 MA is ASME section VIII, Div 1 approved for pressure vessels up to 1650°F, while 309 and 310 are only approved up to 1500°F.
- RA 253 MA, 310, and 309 are assigned to the same P group in ASME Section IX. This is P group 8 Group 2.
- RA 253 MA is welded with RA 253 MA matching composition weld filler, available from Rolled Alloys in FCAW, GTAW, GMAW, and SMAW.
- RA 253 MA can also be welded to other 300 series stainless steels using the RA 253 MA weld filler or to higher nickel alloys using the RA333 weld filler to maintain similar strength in the weld compared to the RA 253 MA base metal.
- Rolled Alloys stocks a complete range of RA 253 MA products including plate, sheet, round bar, pipe, and welding consumables.

**Chemical Composition, %**

	Cr	Ni	Si	Mn	N	C	Ce	Fe
<b>RA 253 MA®</b> UNS S30815	21.0	11.0	1.7	0.6	0.17	0.08	0..04	balance
<b>310</b> UNS S31008	25.0	20.0	0.5	1.6	—	0.05	—	balance
<b>309</b> UNS S30908	23.0	13.0	0.8	1.6	—	0.05	—	balance

**Creep-Rupture Properties**



**Creep Test:** Ring specimens subjected to a temperature of 1800°F under the stress of their own weight for total of 32 hours.

Typical Tensile Properties, Plate

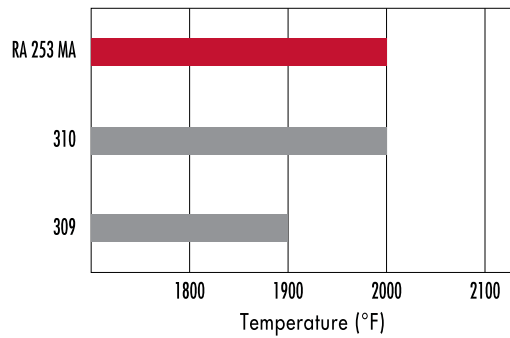
Temperature			70 °F	1200 °F
RA 253 MA	Ultimate Tensile Strength,	ksi	87	56.4
	0.2% Offset Yield Strength,	ksi	45	23.0
310	Ultimate Tensile Strength,	ksi	75	54.1
	0.2% Offset Yield Strength,	ksi	30	20.7
309	Ultimate Tensile Strength,	ksi	75	52.0
	0.2% Offset Yield Strength,	ksi	30	22.0

ASME Section VIII Div. 1 Maximum Design Allowable Stresses

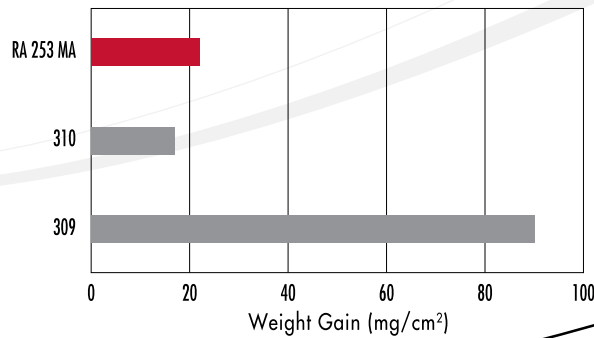
Temperature	°F	1100	1200	1350	1500	1650
RA 253 MA	ksi	9.0	5.2	2.4	1.3	0.71
310H	ksi	7.6	4.0	1.7	0.75	—
309H	ksi	7.6	4.0	1.7	0.75	—

310H and 309H are only approved to 1500°F. Values for 309H and 310H are used in this comparison as they have higher values than 309 and 310 straight grade.

Maximum Suggested Temperature Limit in Air



2000°F Cyclic Oxidation Testing in Air



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