

309S vs. 309E (European Equivalent)

The European version of 309 is made to W.Nr. 1.4828. 309E does not match up with the ASTM designation for 309 or 309S that are commonly used in the United States. Both the U.S. and European grades are used in high temperature service (Above 1000°F).

CHEMISTRY

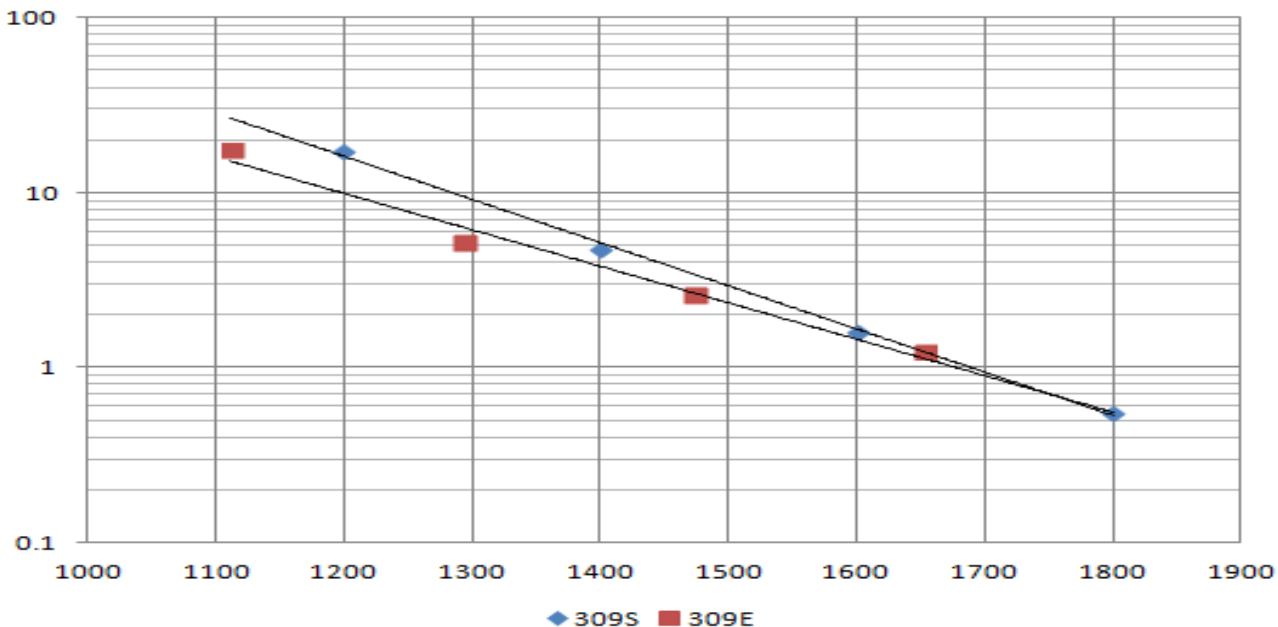
		Cr	Ni	C	P	S	Mn	Si	N	Fe
309S (UNS S30908)	Min	22.0	12.0							
	Max	24.0	15.0	0.08	0.045	0.030	2.0			Bal.
309E (1.4828)	Min	19.0	11.0					1.5		
	Max	21.0	13.0	0.20	0.045	0.015		2.0	0.11	Bal.

Chromium and Silicon are added to stainless steels to provide oxidation resistance at high temperatures. 309E contains slightly less chromium than 309S, but has a 1.75% addition of silicon as a substitute. As a result the recommended maximum operating temperatures for both grades are in the 1800-1900F range.

Nickel, Carbon, and Nitrogen additions provide high temperature creep-rupture strength. 309E contains slightly less nickel. To make up for that 309E has a nitrogen addition and a higher maximum carbon level. The following graphs provide 10,000 hour stress to rupture information for 309S and 309E.

CREEP-RUPTURE STRENGTH

10,000 Hour Stress to Rupture Strength, KSI vs. Temperature, °F



ROOM TEMPERATURE TENSILE PROPERTIES

	309	309E
Tensile Strength Min (ksi)	75	73
0.2% Yield Strength Min (ksi)	30	34
Elongation (min %)	40	30

FABRICATION

Both grades are readily formed at room temperature and weldable.