

RA600

alloy

Features

- Oxidation resistance to 2000°F
- Carburization resistance
- Resistant to dry Cl₂ to about 1000°F
- Virtually immune to chloride ion stress corrosion cracking
- Good caustic corrosion resistance

Applications

- Heat treating muffles and retorts
- Bar frame heat treating baskets
- Chlorination equipment to 1000°F
- Pulp mill alkaline digesters

Chemical Composition, %

ASTM/ASME	Min	Max
Nickel	72.0	--
Chromium	14.0	17.0
Carbon	--	0.15
Manganese	--	1.0
Copper	--	0.5
Silicon	--	0.5
Sulphur	--	0.015
Iron	remainder	

Specifications

UNS N06600 W. Nr. 2.4816
ASTM B 168, B 166, B 167
ASME SB-168, SB-166, SB-167
AMS 5665

For external pressure design under ASME use figure NFN-4 of Section II, part D. In Section IX, RA600 is listed as P-No. 43.

EN 10095
Name NiCr15Fe
Number 2.4816

Performance Profile

RA600 is a nickel-base alloy with excellent carburization, and good oxidation resistance at elevated temperatures. The alloy has long been used in the heat treating industry for many of the same applications as RA330.

RA600 has useful resistance to dry Cl₂ and HCl gases at moderately elevated temperatures. RA600 is not suggested for use at red heat when sulfur is present.

RA200 and RA201 nickel are normally preferred for handling concentrated, high temperature caustic. However, when sulfur compounds are present as well, or for ammonium hydroxide service, RA600 is suggested. RA600 is subject to stress corrosion cracking in hot, concentrated caustic alkalies. To avoid stress corrosion cracking, the RA600 fabrication should be fully stress relieved prior to use. A minimum treatment of 1650°F 1 hour is suggested, 1800-1850°F 1 hour preferred.

Static Corrosion in Molten Caustic Soda

Corrosion Rate, Mills Per Year

Alloy	400°C (750°F)	500°C (932°F)	580°C (1076°F)	680°C (1256°F)
RA 201	0.9	1.3	2.5	37.8
RA 400	1.8	5.1	17.6	—
RA 600	1.1	2.4	5.1	66.4

Mechanical Properties

Typical Room Temperature Property Range

Tensile Strength, psi	0.2% Yield Strength, psi	Elongation %	Hardness Brinell
80,000-105,000	35,000-50,000	30-55	130-180

Physical Properties

Temp °F	Density lb/in ³	Melting Range °F	
	0.306	2470-2575	
	Coefficient* of Thermal Expansion, in/in°F x 10 ⁻⁶	Thermal Conductivity Btu•ft/ft ² •hr•°F	Modulus of Elasticity Dynamic, psi x 10 ⁶
70	—	8.6	30.0
1000	8.4	13.2	25.6
1200	8.6	14.3	24.5
1400	8.9	15.5	23.6
1600	9.1	16.7	22.2
1800	9.3	—	20.4

* 70°F to indicated temperature.