

NAS H840

NAS Heat Resistant Stainless Steel

NAS H840 is an austenitic stainless steel with excellent oxidation resistance and high temperature corrosion resistance against chlorides. It is suitable for use in high grade sheathed heater clad tubes. Nippon Yakin supplies NAS H840 in sheet and strip forms.

Steel Grade/Standard

NAS	JIS	ASTM	EN
NAS H840	—	—	—

Chemical Composition

	C	Si	Mn	P	S	Ni	Cr	Al	Ti
Specification (NAS H840)	≤0.08	≤1.0	≤1.0	≤0.030	≤0.015	18.00~22.00	18.00~22.00	≤0.6	≤0.6

[wt %]

Physical Properties

Density	[g/cm ³]	7.98
Specific heat	[J/kg · K]	450
Electrical resistivity	[μΩ · cm]	90.0
Thermal conductivity	[W/m · K]	13.0
Average coefficient of thermal expansion [10 ⁻⁶ /°C]	20~ 300°C	16.7
	20~ 500°C	17.4
	20~ 800°C	18.6
	20~1000°C	19.4
Young's modulus	[MPa]	19.7 × 10 ⁴
Magnetism		None
Melting range	[°C]	1365~1417

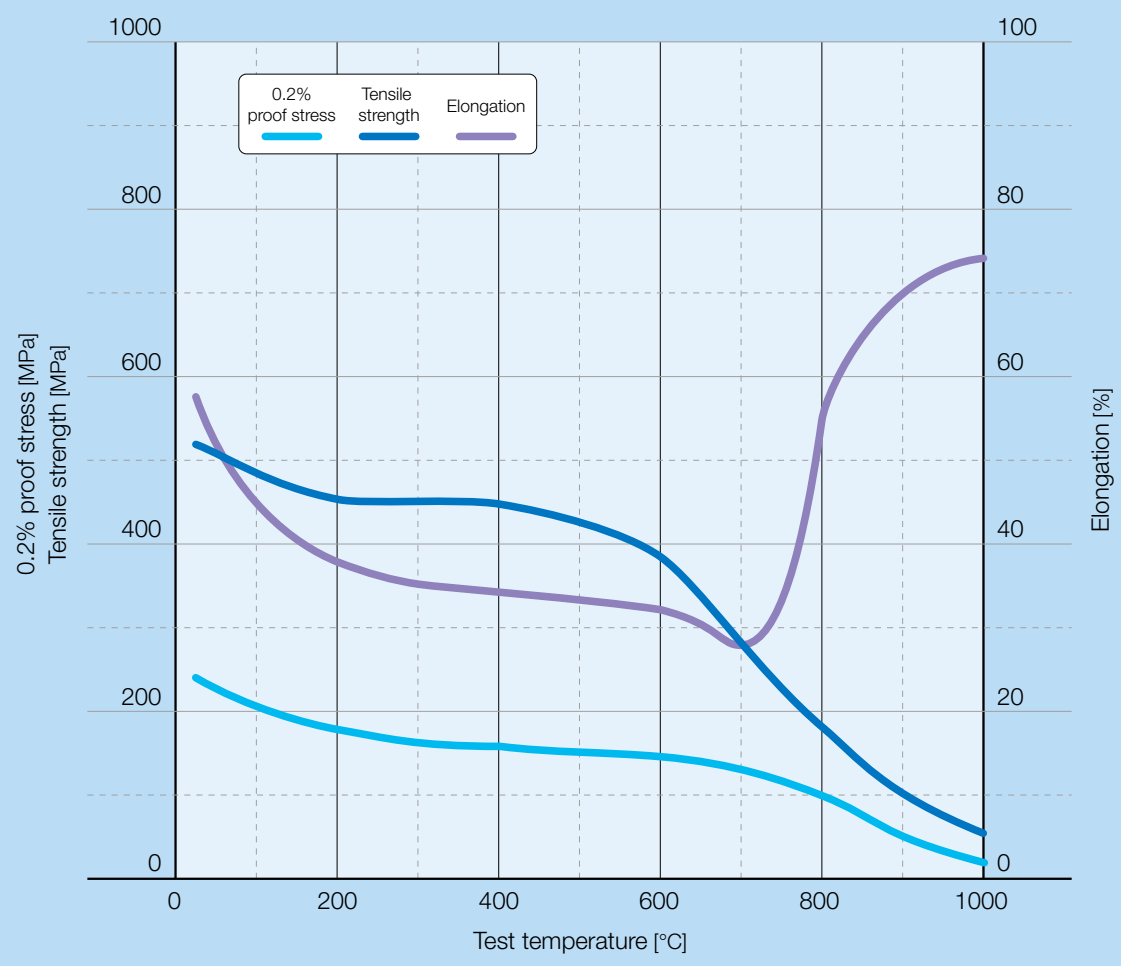
Mechanical Properties

Mechanical Properties at Room Temperature

	0.2% proof stress [MPa]	Tensile strength [MPa]	Elongation [%]	Hardness [Hv]
Specification	≥ 205	≥ 520	≥ 30	≤ 170
Example Cold-rolled sheet 0.4mm ^t	270	540	45	130

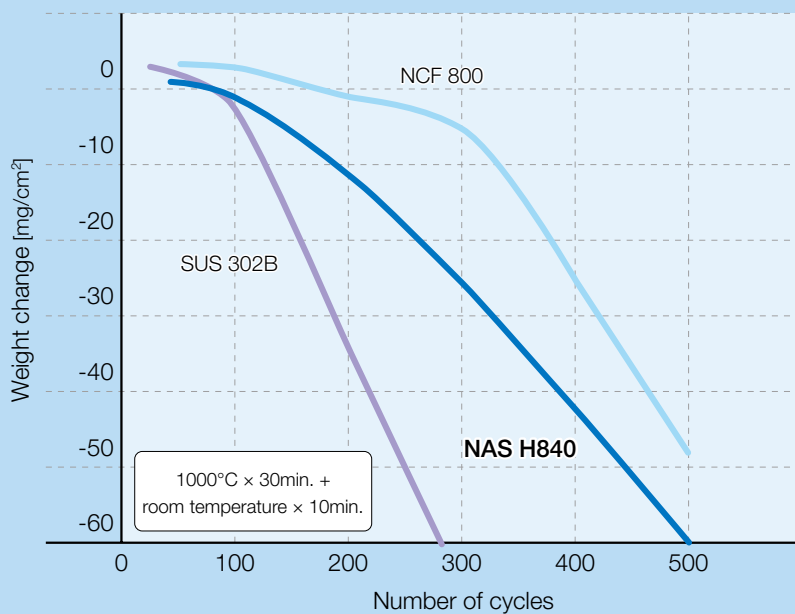
High Temperature Strength

Results of high temperature tensile test



Oxidation Resistance

Oxidation of various alloys in cyclical oxidation test (weight change)



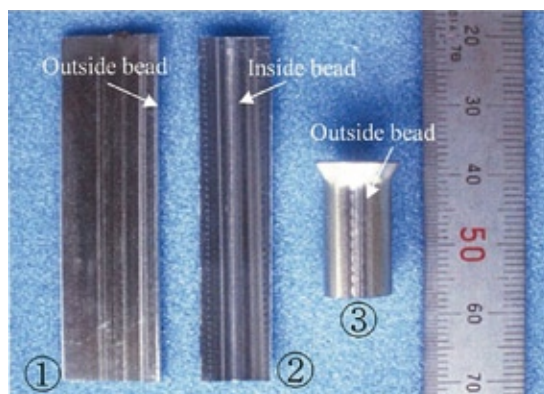
Corrosion Resistance

Stress Corrosion Cracking Resistance

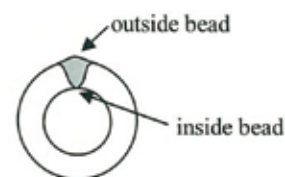
	Test I	Test II
	20%NaCl+1%Na ₂ Cr ₂ O ₇ (boil, 330hr)	30%MgCl ₂ (boil, 110hr)
NAS H840	No SCC	No SCC
NCF 800	No SCC	No SCC
SUS 316	SCC	SCC
SUS 304	SCC	SCC

Weldability

NAS H840 has superior weldability. After plasma welding, no cracking occurred in the bending test or 30% tensile test.



①Face bending ②Root bending ③Tube expansion
Bending test specimens of NAS H840 plasma welded pipe



30% tensile test of NAS H840 plasma welded pipe

Heat Treatment

Heat treatment of NAS H840 can be performed in the same manner as with other austenitic stainless steels. The heat treatment temperature range which is normally used is as follows:

Solution treatment: 1030~1100°C; water cooling

Applications

Sheathed heater clad tubes, various types of heat resistant parts

For more information, please contact:

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