NASH880

Heat Resistant Stainless Steel

NASH880 is an austenitic stainless steel which was developed by Nippon Yakin. It is suitable for use in high grade sheathed heater tubes and provides excellent corrosion resistance in wet environments such as hot water supply devices.
Nippon Yakin supplies NASH880 in sheet and strip forms.

Steel Grade/Standard

Nippon Yakin Grade	JIS	ASTM	EN
NASH880	—	—	—

Chemical Composition

[wt %]

	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	Al	Ti	Co	N
Specification (NASH880)	≦0.030	0.30~ 0.50	0.35~ 0.65	≦0.025	≦0.002	24.50~ 27.00	22.80~ 23.90	1.15~ 1.35	≦0.25	0.20~ 0.40	0.25~ 0.45	0.05~ 1.00	≦0.02

Physical Properties

Density	[g/cm³]		7.92
Specific heat	[J/kg · K]		462
Electrical resistivity	[μΩ · cm]		92.5
Thermal conductivity	[W/m · K]		12.3
Average coefficient of thermal expansion	[10⁻⁶/°C]	25~ 200°C	15.6
		25~ 400°C	16.4
		25~ 600°C	16.8
		25~ 800°C	17.6
		25~1,000°C	18.4
Young's modulus	[MPa]		19.4 × 10⁴
Magnetism			None
Melting range	[°C]		1,380~1,407

NIPPON YAKIN KOGYO CO., LTD.

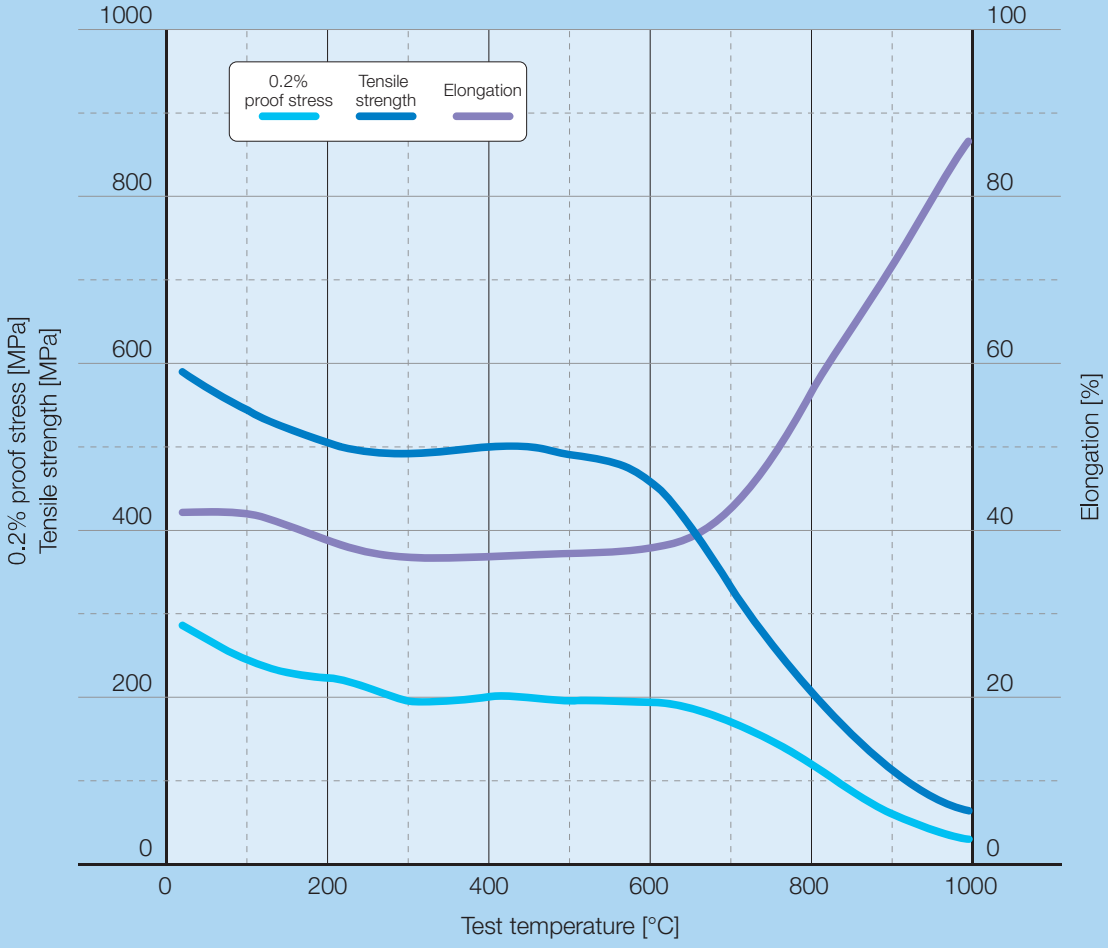
Mechanical Properties

Mechanical Properties at Room Temperature

		0.2% proof stress [MPa]	Tensile strength [MPa]	Elongation [%]
Specification (NASH880)		≧205	≧520	≧30
Example	Cold-rolled sheet 0.5 mmt	280	587	42

High Temperature Strength

Results of high temperature tensile test



Corrosion Resistance

1. Crevice Corrosion Resistance

Test condition
① Multicrevice test piece
② Test temperature: 80°C
③ Test time 24 hr

NaCl	5%	10%
alloy825	○	○
NASH880	○	×
alloy 800 (Low C%)	×	×

○: No corrosion ×: Corrosion

2. Stress Corrosion Cracking Resistance

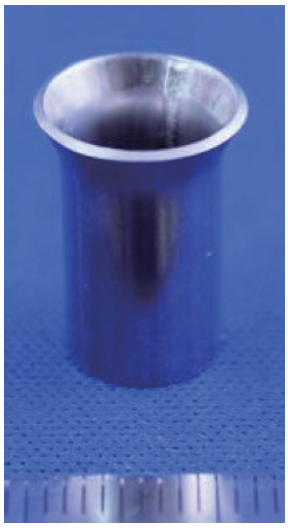
Test condition
① U-bend test piece
② Liquid solution: 10% NaCl
③ Test time 74 hr

Temperature	180°C	200°C	220°C
alloy825	○	○	○
NASH880	○	○	×
alloy 800 (Low C%)	○	×	–

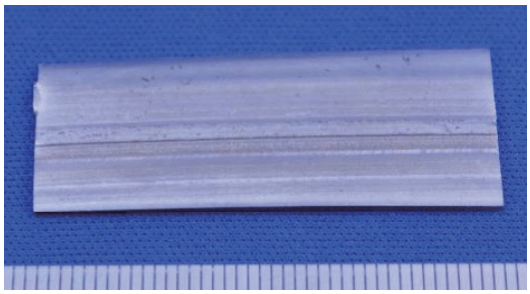
○: No SCC ×: SCC

Weldability

NASH880 welded tube has good formability.
There is no crack on the bead after several forming tests.



① Flaring test



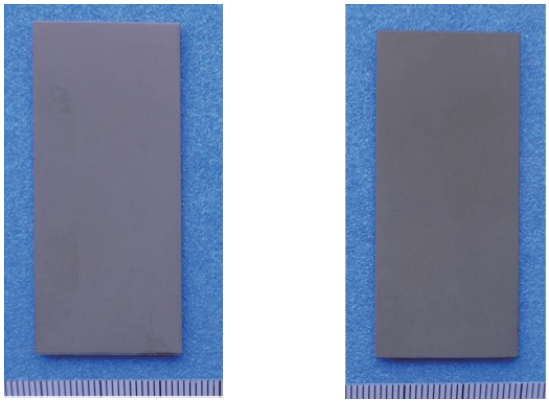
② Flattening test

③ 180° Bending test (R=14mm)

Formability of NASH880 welded tubes (8mmϕ × 0.5mmt)

Blackening Property

Emissivity of NASH880 after blackening heat treatment is the same level as alloy 800 (Low C%).



NASH880　　Alloy 800 (Low C%)

Appearance after blackening test

Heat Treatment

Heat treatment of NASH880 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: 1,000~1,100°C; water cooling

Applications

Sheathed heater, Furnace parts.

For more information, please contact:
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