

NAS H880

NAS Heat Resistant Stainless Steel

NAS H880 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 NAS H880 in sheet and strip forms.

Steel Grade/Standard

NAS	JIS	ASTM	EN
NAS H880	-	-	-

Chemical Composition

	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	Al	Ti	Co	N
Specification	≤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

[wt %]

Physical Properties

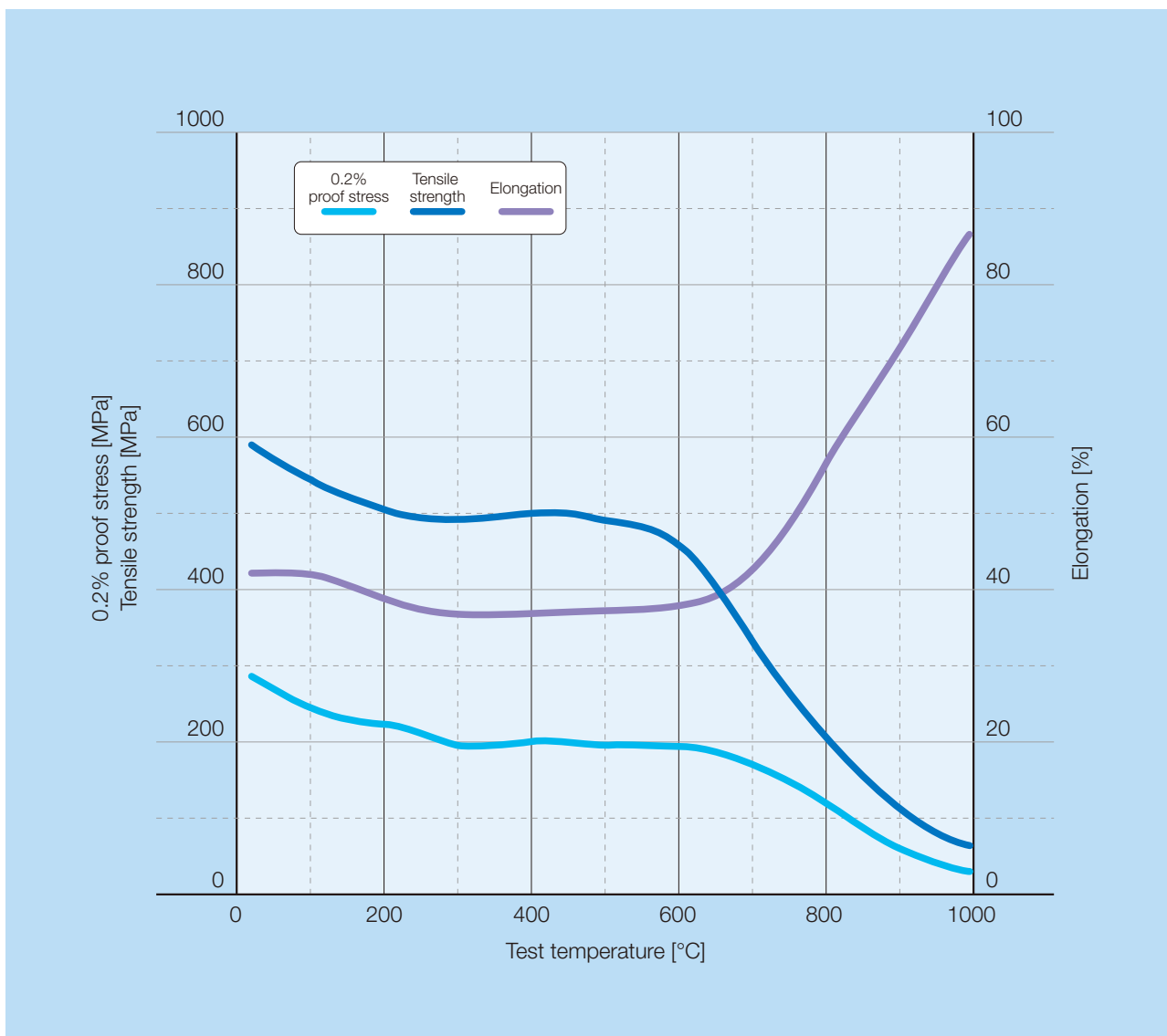
Density	[g/cm ³]	7.92
Specific heat	[J/kg · K]	462
Electrical resistivity	[μΩ · cm]	92.5
Thermal conductivity	[W/m · K]	12.3
Average coefficient of thermal expansion	[10 ⁻⁶ /°C]	25~ 200°C: 15.6 25~ 400°C: 16.4 25~ 600°C: 16.8 25~ 800°C: 17.6 25~1,000°C: 18.4
Young's modulus	[MPa]	19.4×10 ⁴
Magnetism		None
Melting range	[°C]	1,380~1,407

Mechanical Properties

Mechanical Properties at Room Temperature

		0.2% proof stress [MPa]	Tensile strength [MPa]	Elongation [%]
Specification (NAS H880)		≥205	≥520	≥30
Example	Cold-rolled sheet 0.5 mmt	280	587	42

High Temperature Strength



Corrosion Resistance

1. Crevice Corrosion Resistance

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

NaCl	5%	10%
alloy825	○	○
NAS H880	○	×
alloy 800 (Low C%)	×	×

○: No corrosion X: 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	○	○	○
NAS H880	○	○	×
alloy 800 (Low C%)	○	×	—

○: No SCC X: SCC

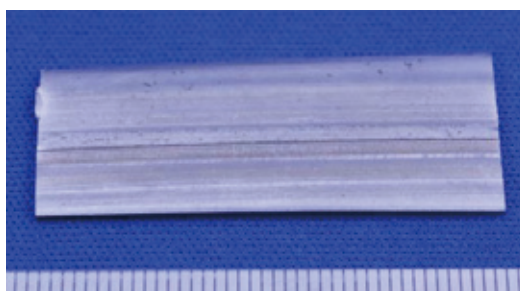
Weldability

NAS H880 welded tube has good formability.

There is no crack on the bead after several forming tests.



① Flaring test



② Flattening test

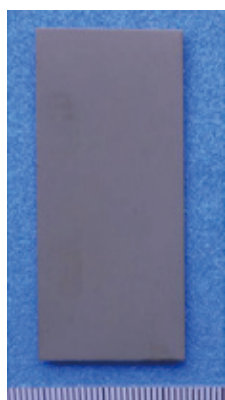


③ 180° Bending test (R=14mm)

Formability of NAS H880 welded tubes (8mmφ × 0.5mmt)

Blackening Property

Emissivity of NAS H880 after blackening heat treatment is the same level as alloy 800 (Low C%).



NAS H880



Alloy 800 (Low C%)

Appearance after blackening test

Heat Treatment

Heat treatment of NAS H880 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 tubes, various types of heat resistant parts

For more information, please contact:

Nippon Yakin Kogyo Co., Ltd.

Material Solutions Sales Department

San-Ei Bldg., 5-8, 1-chome Kyobashi, Chuo-ku,

Tokyo 104-8365 Japan

TEL: +81-3-3273-4649 FAX: +81-3-3273-4642

E-Mail: inquiry@nyk.jp

URL: <http://www.nyk.co.jp/en/>

Note regarding the handling of property data:

The technical information contained in this product guide is representative values obtained in property tests and other items used to explain the performance of the product. With the exception of items specifically mentioned as provisions of a "Standard," the contents do not represent guaranteed upper limit or lower limit values. The respective data given on this technical information are typical examples and may be different in some cases from the data obtained from the actual product. No responsibility shall, therefore, be assumed for damages arising from using the technical information data. This information is also subject to change in the future without notice. To obtain the most recent information, please contact Nippon Yakin.