

# NAS 354N (UNS N08354)

## NAS High Corrosion Resistant Super Stainless Steel

NAS 354N (UNS N08354, ASME Code Case 2585-1) is a super austenitic stainless steel with excellent corrosion resistance in various environments. The high chromium, molybdenum and nitrogen contents provide high resistance to crevice and pitting corrosion in oxidizing chloride environments while the high nickel content enhances resistance to stress corrosion cracking. The corrosion resistance of NAS 354N exceeds the conventional 6 Mo super austenitic stainless steels because of containing 7.5% Mo. Nippon Yakin supplies this product in plate, sheet and strip form.

### Steel Grade/Standard

NAS	JIS	ASTM B625	EN
NAS 354N	—	UNS N08354	—

### Chemical Composition

	C	Si	Mn	P	S	Ni	Cr	Mo	N
Specification (UNS N08354)	≤0.030	≤1.00	≤1.00	≤0.030	≤0.010	34.0~36.0	22.0~24.0	7.0~8.0	0.17~0.24

### Physical Properties

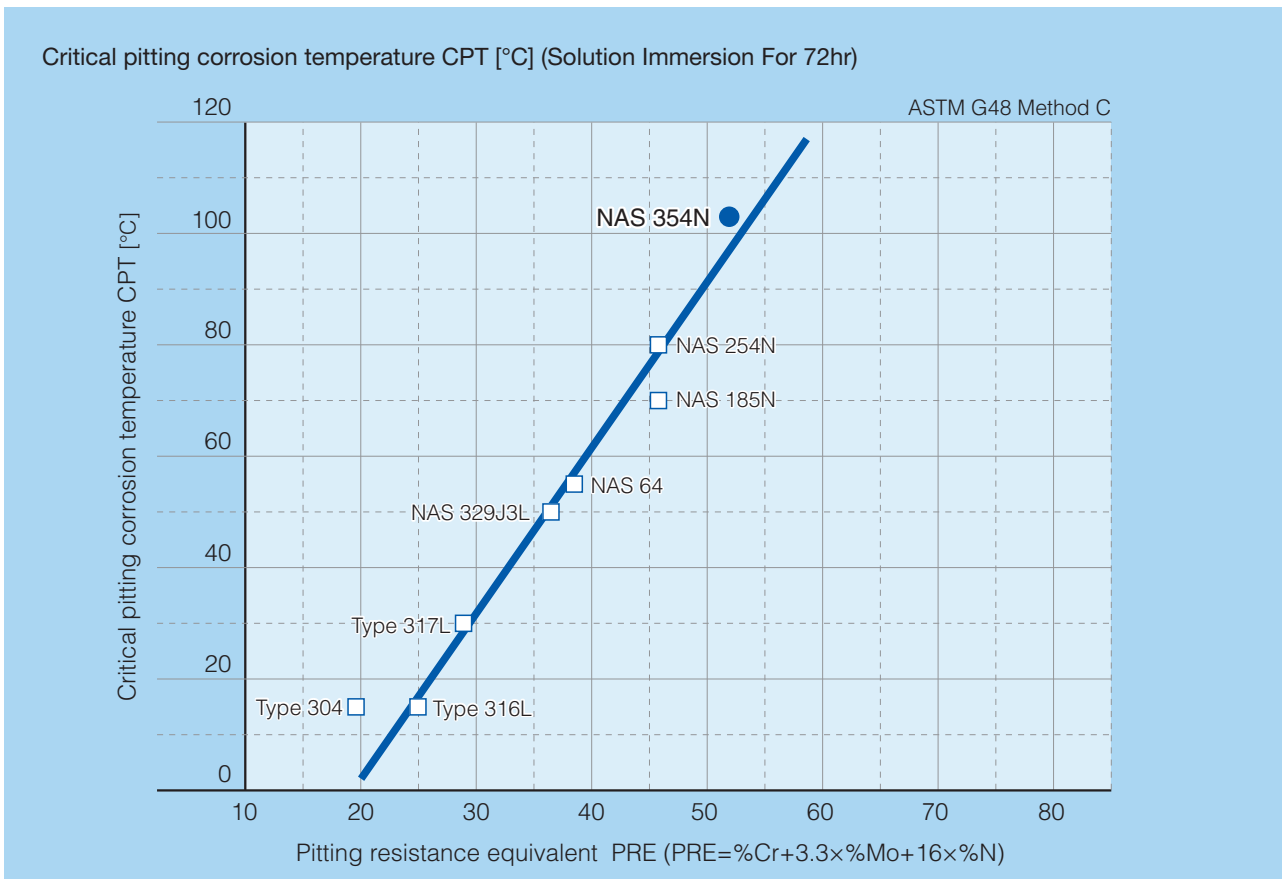
Density	[g/cm <sup>3</sup> ]	8.16
Specific heat	[J/kg · K]	419
Electrical resistivity	[μΩ · cm]	102.6
Thermal conductivity	[W/m · K]	9.8
Average coefficient of thermal expansion [10 <sup>-6</sup> /°C]	30~200°C	14.1
	30~300°C	14.7
	30~400°C	15.2
Young's modulus	[MPa]	19.3 × 10 <sup>4</sup>
Magnetism		None
Melting range	[°C]	1362~1391



**Corrosion Resistance**

NAS 354N is a high Cr, high Mo stainless steel which provides excellent pitting corrosion resistance and crevice corrosion resistance in high Cl environments. As a high Ni steel, it also offers excellent stress corrosion cracking resistance.

**Pitting Corrosion Resistance**



**SCC Resistance**

Test method: U-bending test piece, 2mm', #500 finish

Conditions		Occurrence of SCC
MgCl <sub>2</sub>	20% Boil, 300hr	No SCC
	25% Boil, 300hr	No SCC
	30% Boil, 300hr	No SCC
	35% Boil, 300hr	No SCC
	42% Boil, 300hr	No SCC

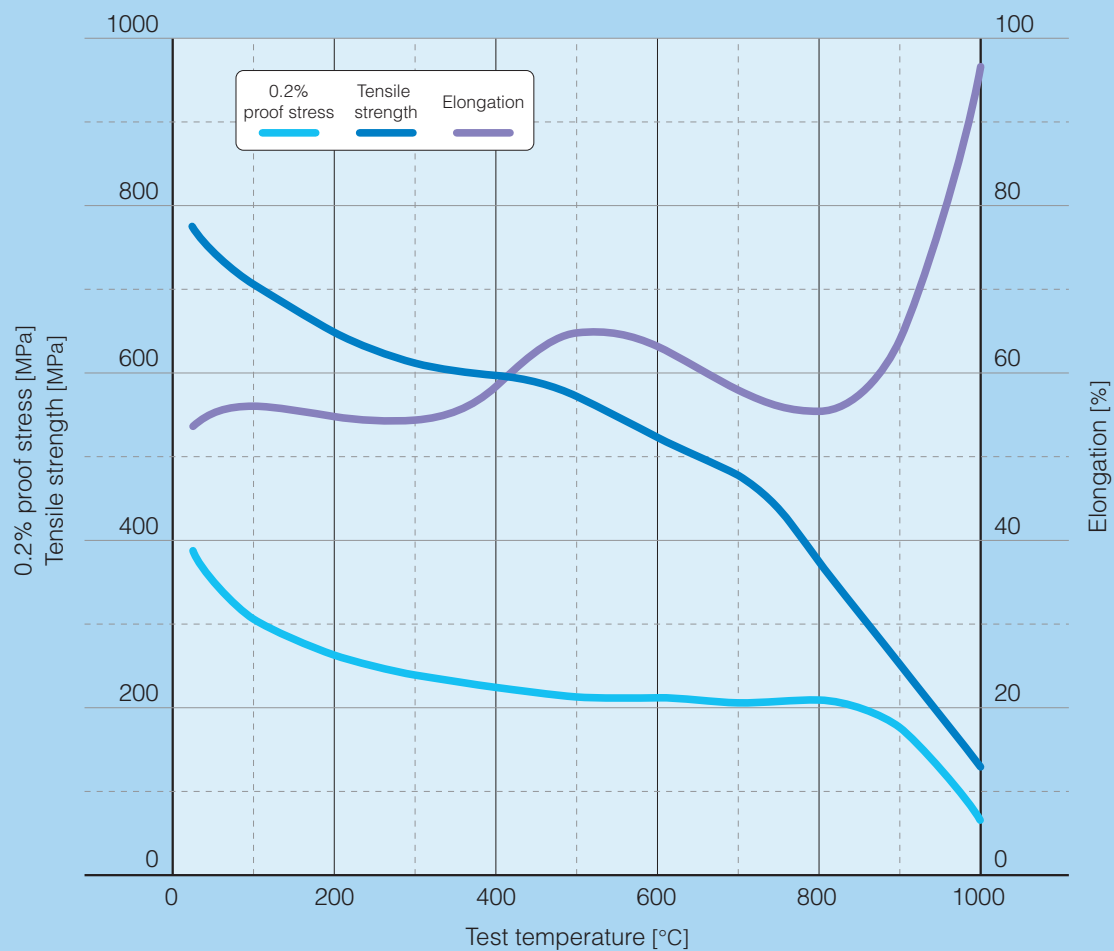
## Mechanical Properties

### Mechanical Properties at Room Temperature

		0.2% proof stress [MPa]	Tensile strength [MPa]	Elongation [%]	Hardness	
					[Hv]	[HRB]
Specification (UNS N08354)		≥ 295	≥ 640	≥ 40	—	—
Example	Cold-rolled sheet 2mm <sup>t</sup>	393	795	52	188	89

### High Temperature Strength

Results of high temperature tensile test



### Workability

The hot and cold workability of NAS 354N is basically the same as that of standard austenitic stainless steels such as Type 304, Type 316, etc. However, the fact that this is a high strength material must be considered in both cold and hot working.

### Weldability

Various welding methods are applicable in the same manner as with the standard austenitic stainless steels, including shielded metal arc welding, TIG welding, and plasma welding. Alloy 276 welding consumable should be used.

### Machinability

As a feature of high Ni stainless steels, although machining is difficult in comparison with the standard austenitic stainless steels, it is easier than with Ni-based alloys. A ultrahard tool should be used in machining if at all possible. It is also advisable to use a slower feed rate and deeper cutting depth.

### Heat Treatment

Because NAS 354N is an austenitic stainless steel, heat treatment is equivalent to that with the standard austenitic stainless steels. The following heat treatment conditions are normally used:

Solution heat treatment: 1125~1175°C; Water cooling

### Pickling

A mixture of nitric acid and hydrofluoric acid is used in pickling. However, due to the high corrosion resistance of NAS 354N, scale is somewhat difficult to remove in comparison with Type 304. Therefore, the material should be immersed in an alkaline solution before pickling, or if possible, shot blasting is extremely effective.

### Applications

- Seawater environments: Marine structures, heat exchangers using seawater etc.
- Food product plants: Dressing manufacturing equipment, etc.
- Incinerator: Waste gasification plant

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#### For more information, please contact:

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#### 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. This information is also subject to change in the future without notice. To obtain the most recent information, please contact Nippon Yakin.