

# NAS 254NM (UNS N08367)

## NAS High Corrosion Resistant Super Stainless Steel

NAS 254NM (UNS N08367 equivalent) is a high corrosion resistant stainless steel with high contents of chromium and molybdenum, and provides excellent corrosion resistance under severe environments such as high temperature seawater and flue gas desulfurization plants. Depending on the environment, it is a highly economical stainless steel with corrosion resistance comparable to that of Nickel alloy and pure titanium. Nippon Yakin supplies this product in plate, sheet and strip form.

### Steel Grade/Standard

NAS	JIS	ASTM A240/B688	EN
NAS 254NM	—	UNS N08367	—

### Chemical Composition

	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	N
Specification* (UNS N08367)	≤0.030	≤1.00	≤2.00	≤0.040	≤0.030	23.5~ 25.5	20.0~ 22.0	6.0~ 7.0	≤0.75	0.18~ 0.25

\*ASTM A240

### Physical Properties

Density	[g/cm <sup>3</sup> ]	8.1	
Specific heat	[J/kg · K]	450	
Electrical resistivity	[μΩ · cm]	94.4	
Thermal conductivity	[W/m · K]	20°C	11.9
		100°C	13.0
Average coefficient of thermal expansion	[10 <sup>-6</sup> /°C]	20~200°C	15.3
		20~300°C	15.6
		20~400°C	15.9
		20~500°C	16.2
Young's modulus	[MPa]	19.8 × 10 <sup>4</sup>	
Magnetism		None	
Melting range	[°C]	1360~1394	

### Workability

Cold and hot workability are approximately equal to those of Type 304, 316, and other standard austenitic stainless steels. However, care is necessary for both cold and hot worked materials because they have high strength.

### Weldability

Possible welding methods include shielded metal arc welding, TIG welding, and plasma welding, in the same manner as with standard austenitic stainless steels. As welding consumables, Alloy 276 should be used. Preheating and post-welding heat treatment are not necessary.

### Machinability

As a distinctive feature of high Ni stainless steels, machinability is difficult in comparison with the austenitic stainless steels, but is easier than with Ni-based alloys. Use of a superhard tool whenever possible, together with a slow feed speed and large cut depth, is advised.

### Heat Treatment

Because NAS 254NM is an austenitic stainless steel, heat treatment also conforms to that of standard austenitic stainless steels. The heat treatment conditions normally used with this material are as follows:

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 254NM, 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: Seawater desalination equipment, heat exchangers using seawater, condenser tubes, etc.
- High concentration chlorine ion environments: Flue gas desulfurization systems, pulp and papermaking industries, various types of bleaching equipment, etc.
- High concentration salt-containing environments: Resin manufacturing equipment, chemical reactors and piping, etc.

## Mechanical Properties

### Mechanical Properties at Room Temperature

		0.2% proof stress [MPa]	Tensile strength [MPa]	Elongation [%]	Hardness [HRB]
Specification* (UNS N08367)	Sheet and strip	≥310	≥690	≥30	≤100
	Plate	≥310	≥655	≥30	≤241 (HB)
Example	Hot-rolled plate 6.0mm <sup>t</sup>	422	770	49	207 (HB)

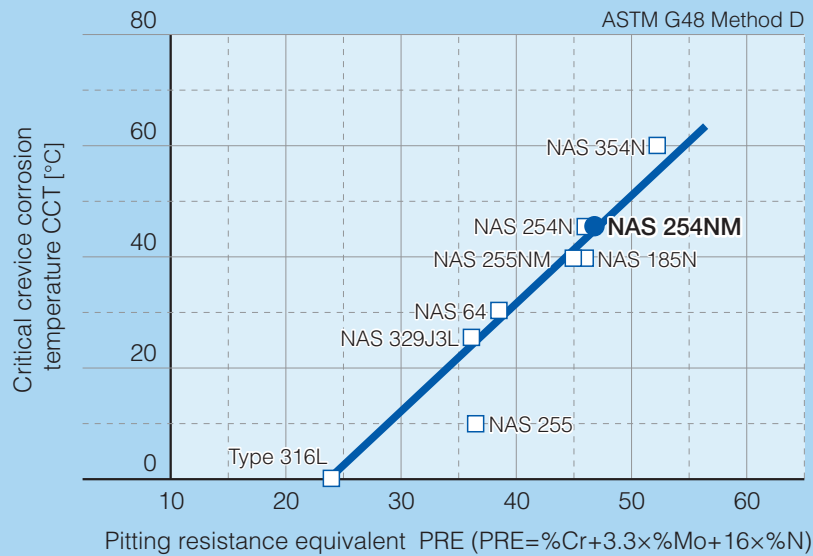
\*ASTM A240

## Corrosion Resistance

Because NAS 254NM contains high concentrations of chromium and molybdenum and also contains nitrogen, it offers excellent pitting corrosion resistance and crevice corrosion resistance in chloride environments. NAS 254NM demonstrates excellent corrosion resistance under corrosion environments where it had been difficult to maintain corrosion resistance with conventional duplex stainless steels.

### Pitting and Crevice Corrosion Resistance

Crevice corrosion resistance (6%FeCl<sub>3</sub> + 1%HCl, Solution Immersion For 72hr)



**For more information, please contact:**

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