

NAS NM15M

NAS Non-Magnetic High-Strength Stainless Steel

A high-manganese austenitic stainless steel, NAS NM15M was developed by Nippon Yakin with a composition of 17Cr-15Mn-4Ni. Providing higher strength than conventional non-magnetic austenitic stainless steels, NAS NM15M does not magnetize even if cold worked with force. Nippon Yakin supplies this product in plate, sheet and strip forms.

Steel Grade/Standard

NAS	JIS	ASTM
NAS NM15M	—	—

Chemical Composition

	C	Si	Mn	P	S	Ni	Cr	N
Specification (NAS NM15M)	0.040~0.090	≤0.90	14.00~15.00	≤0.045	≤0.015	4.00~4.60	16.50~17.50	0.30~0.35

Physical Properties

Density	[g/cm ³]	8.00
Specific heat	[J/kg · K]	480
Electrical resistivity	[μΩ · cm]	77
Thermal conductivity	[W/m · K]	13.2
Average coefficient of thermal expansion [10 ⁻⁶ /°C]	30~100°C	16.0
	30~300°C	17.7
	30~500°C	19.2
	30~700°C	20.3
Young's modulus	[MPa]	19.6 × 10 ⁴
Magnetism		None
Melting range	[°C]	1360~1412



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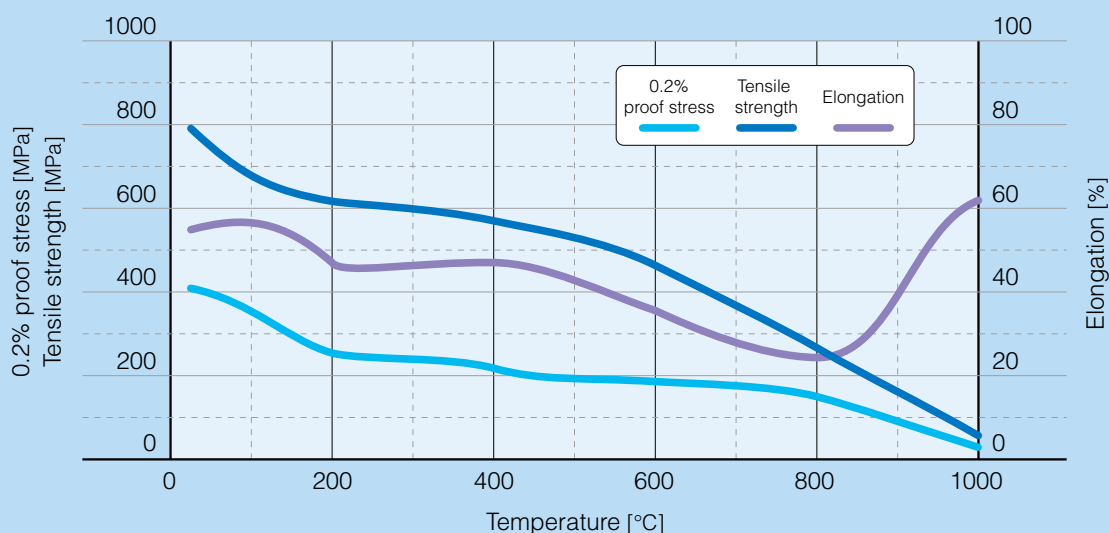
Mechanical Properties

Mechanical Properties at Room Temperature

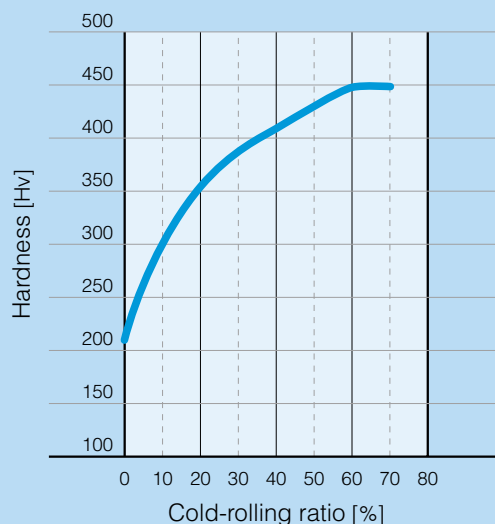
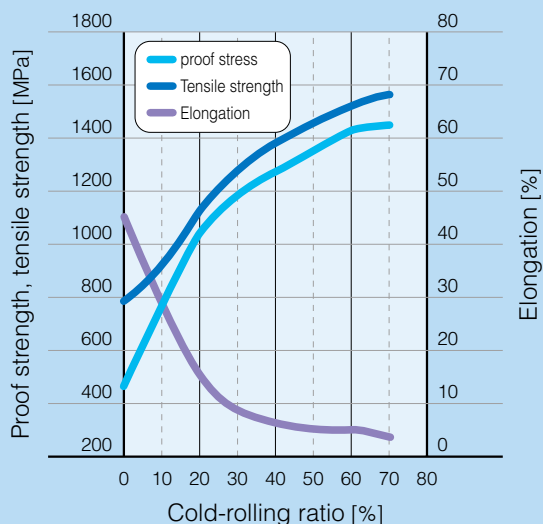
		0.2% proof stress [MPa]	Tensile strength [MPa]	Elongation [%]	Hardness [Hv]
Specification (NAS NM15M)		≥ 390	≥ 690	≥ 30	≤ 240
Example	Cold-rolled sheet	461	789	45	211

High Temperatures Strength

Results of high-temperature tensile test

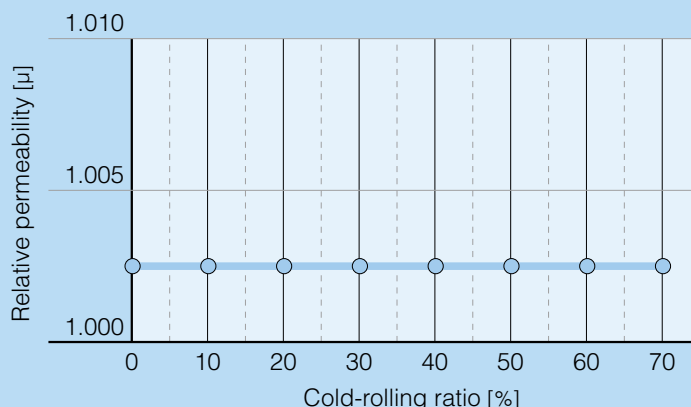


Work Hardening



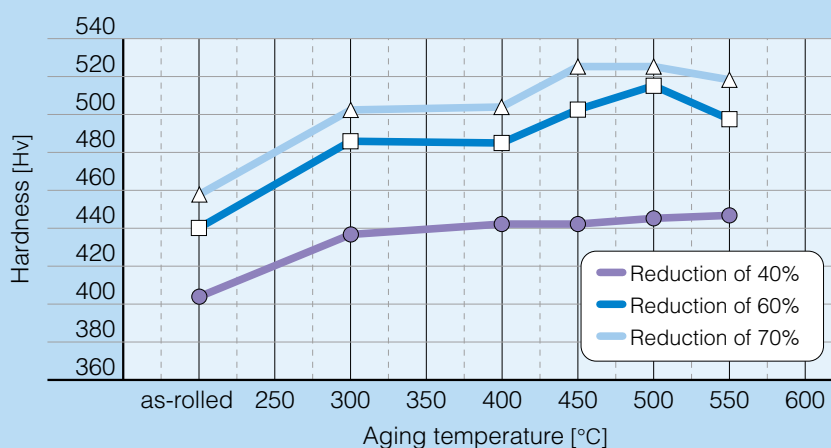
Permeability

Even when cold working is applied, there is no variation in the relative permeability, and NAS NM15M does not become magnetized.



Age Hardening Behavior

After cold-rolling, the hardness of NAS NM15M can be raised to between 50 and 70 Hv with heat treatment between 300 and 500°C.



Corrosion Resistance

Just as with the standard austenitic stainless steel Type 304, the corrosion resistance of NAS NM15M shows no degradation even after strong cold working.

Evaluation of Pitting Corrosion Resistance

Test condition: 5% NaCl, 30°C

Solution-treated NAS NM15M	0.34V
60% cold-rolled NAS NM15M	0.31V

Atmospheric Corrosion Resistance in Salt Spray Test

Test condition: 5% NaCl, 35°C for 7 days

Solution-treated NAS NM15M	No rusting
60% cold-rolled NAS NM15M	No rusting

Workability

The hot and cold workability of NAS NM15M 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.

Heat Treatment

The heat treatment is similar to austenitic stainless steels. The typical heat treatment is as follows:

Solution heat treatment: 1050~1150°C; rapid cooling

Applications

Non-magnetic springs, gaskets, electronic components, and other components where magnetism is not desired

For more information, please contact:
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