

NAS 630 (UNS S17400)

NAS High Strength Stainless Steel

NAS 630 is a precipitation hardening type of high strength stainless steel. It has excellent corrosion resistance equivalent to that of 18-8 austenitic stainless steels, and also provides high strength equivalent to chromium stainless steels which have a quench-hardening capacity. NAS 630 is used in various parts in which high strength is required, such as steel belts, high strength mechanical parts, etc. Nippon Yakin supplies NAS 630 in plate, sheet and strip forms.

Steel Grade/Standard

NAS	JIS	ASTM A693	EN 10088-2*
NAS 630	SUS 630	UNS S17400	1.4542

* If following is the EN standard, please consult with Nippon Yakin in advance.

Chemical Composition

	C	Si	Mn	P	S	Ni	Cr	Cu	Nb
Specification (SUS 630)	≦0.07	≦1.00	≦1.00	≦0.040	≦0.030	3.00~5.00	15.00~17.50	3.00~5.00	0.15~0.45
Specification (UNS S17400)	≦0.07	≦1.00	≦1.00	≦0.040	≦0.030	3.0~5.0	15.0~17.5	3.0~5.0	0.15~0.45**

** Nb+Ta

Physical Properties

Density	[g/cm ³]	7.80
Electrical resistivity	[μΩ · cm]	98
Thermal conductivity	[W/m · K]	13.7
Average coefficient of thermal expansion [10 ⁻⁶ /°C]	0~100°C	10.8
	0~400°C	11.3
Young's modulus	[MPa]	19.6 × 10 ⁴
Magnetism		Ferromagnetic
Melting range	[°C]	1430~1477

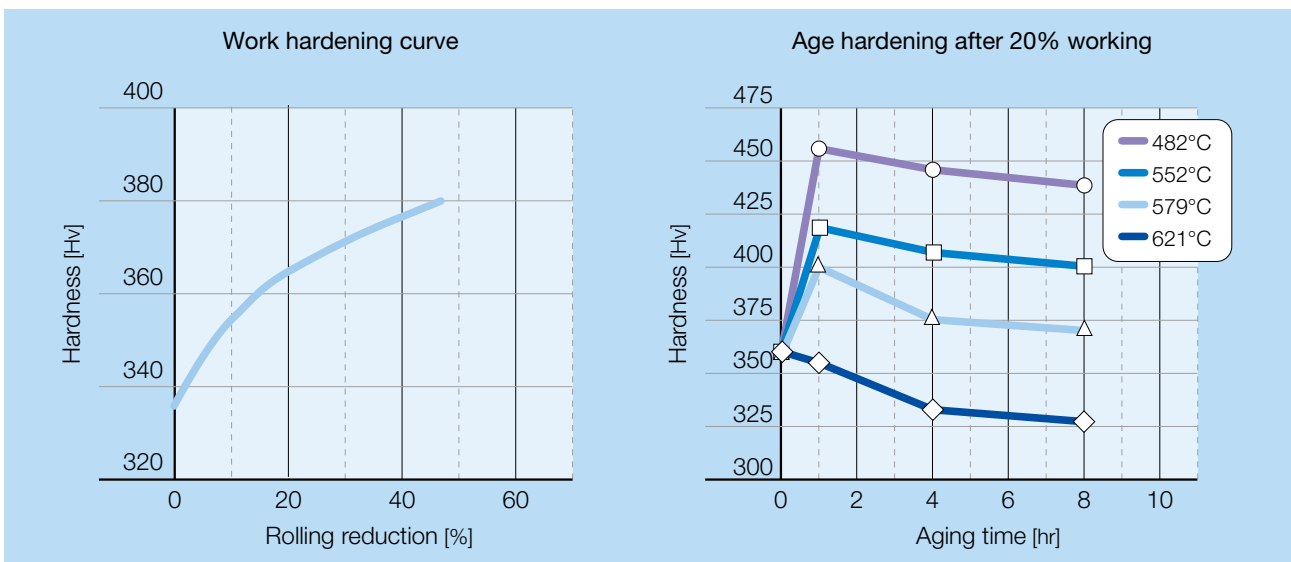
<After solution treatment>

Mechanical Properties

Mechanical Properties at Room Temperature

	Heat treatment	Thickness [mm]	Proof stress [MPa]	Tensile strength [MPa]	Elongation [%]	Hardness [HB]
ASTM A693 UNS S17400	Solution treatment	0.38~102	≤1105	≤1255	≥3	≤363
	H900 treatment	4.762~15.88	≥1170	≥1310	≥8	388~477
	H1150 treatment		≥725	≥930	≥10	269~352
NAS 630	Solution treatment	12.7	762	1041	12.0	311
	H900 treatment		1257	1412	16.3	429
	H1150 treatment		894	1014	23.0	331

Work Hardening and Age Hardening



Corrosion Resistance

Measurements of pitting potential conformed to JIS G 0577 (2005) (test solution: 1kmol · m⁻³ NaCl solution, 30°C)

	Heat treatment	Pitting potential	
		Potential (Vc'=10)	Potential (Vc'=100)
NAS 630	Solution treatment	0.115	0.124
	H900 treatment	0.124	0.131
	H1150 treatment	0.087	0.095

Heat Treatment

NAS 630 is normally supplied in a solution-treated condition. However, in order to obtain the maximum mechanical properties, it is necessary to perform H900 precipitation hardening heat treatment after working. If ductility is required, we recommend using H1150 precipitation hardening heat treatment. In this case, it is possible to perform precipitation hardening heat treatment of the base material, as working is also possible after precipitation hardening.

[Heat treatment conditions]

H900 precipitation hardening: 470~490°C; air cooling

H1150 precipitation hardening: 610~630°C; air cooling

Weldability

Welding of NAS 630 can be performed using various welding methods in the same manner as with standard type austenitic stainless steels. Maximum welding efficiency can be obtained by performing normal solution treatment + H900 treatment after welding.

Pickling

In pickling of comparatively thick scale after solution treatment or hot working, the methods used with austenitic stainless steels can be used.

Applications

Press plates, steel belts, high strength mechanical parts

For more information, please contact:
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