MATERIAL DATA SHEET

STEEL GRADE

Last revised: Tue, 28 Jan 2025 16:28:16 GMT

OVAKO

30NiCrMo16-6 All

General Information

Ovako 498 is a high strength quench and tempering steel with high hardenability, excellent toughness, high wear resistance and good dimension stability.

498A - Standard variant.
498Q - IQ isotropic quality

IQ-Steel®

IQ-Steel® is an isotropic quality ultra clean steel optimized for high fatigue strength under multi axial loading.

Similar designations

30 NCD 15, En30B

Chemical composition

Variant	Cast	Weldability		C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %	V %
498A	IC	CEV 1.07_{max}	Min	0.28	0.20	0.40	-	-	1.25	3.90	0.20	-
		Pcm 0.54_{max}	Max	0.32	0.35	0.60	0.015	0.005	1.40	4.25	0.25	0.100
498Q	IC	CEV 1.14_{max}	Min	0.28	0.20	0.40	-	-	1.25	3.75	0.15	-
		Pcm 0.57_{max}	Max	0.33	0.35	0.60	0.025	0.002	1.65	4.25	0.25	0.100

Mechanical Properties

Variant	Condition	Format	Dimension [mm]	Yield strength min [MPa]	Tensile strength [MPa]	Elongation A_5 [%]	Reduction of area Z_{min} [%]	Hardness
498A	+SA	Round bar	25 < 90	-	-	-	-	260 HB typical
	+QT	Round bar	25 < 90	900*	1000 typical	19	68	330 HB typical
498Q	+A	Round bar	25 < 90	-	-	-	-	260 HB typical
	+QT	Round bar	25 < 90	900*	1000 typical	19	68	330 HB typical

*$Rp_{0.2}$ * R_{eh}, ** R_{el}*

Transformation temperatures

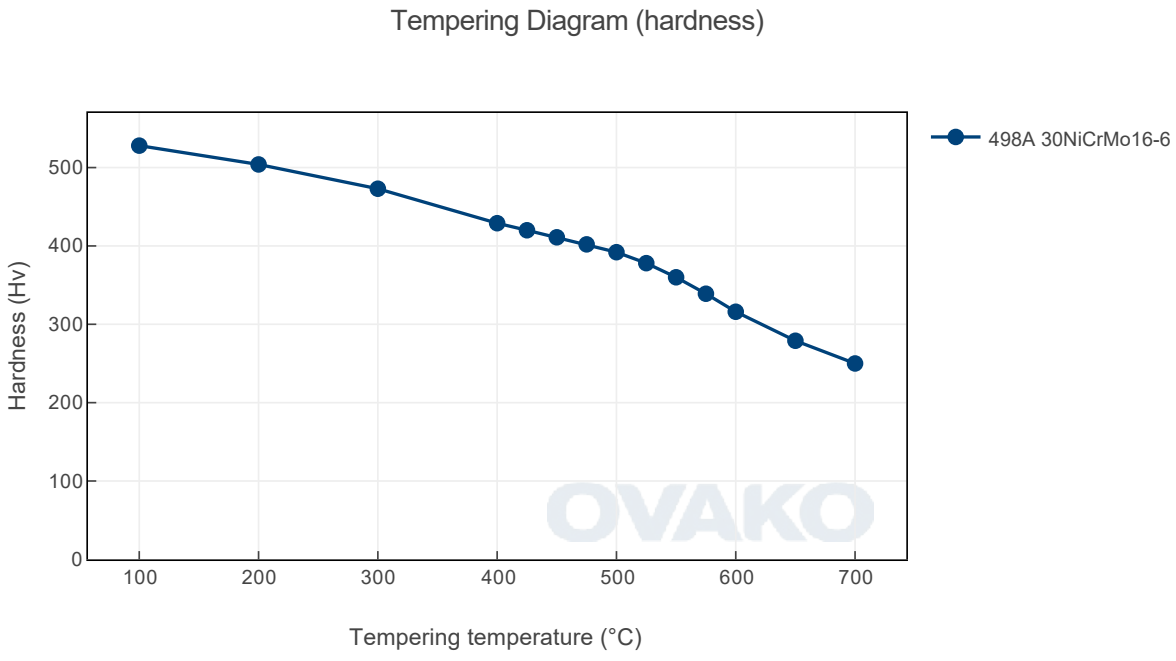
	Temperature °C
AC1	681
AC3	764

Heat treatment recommendations

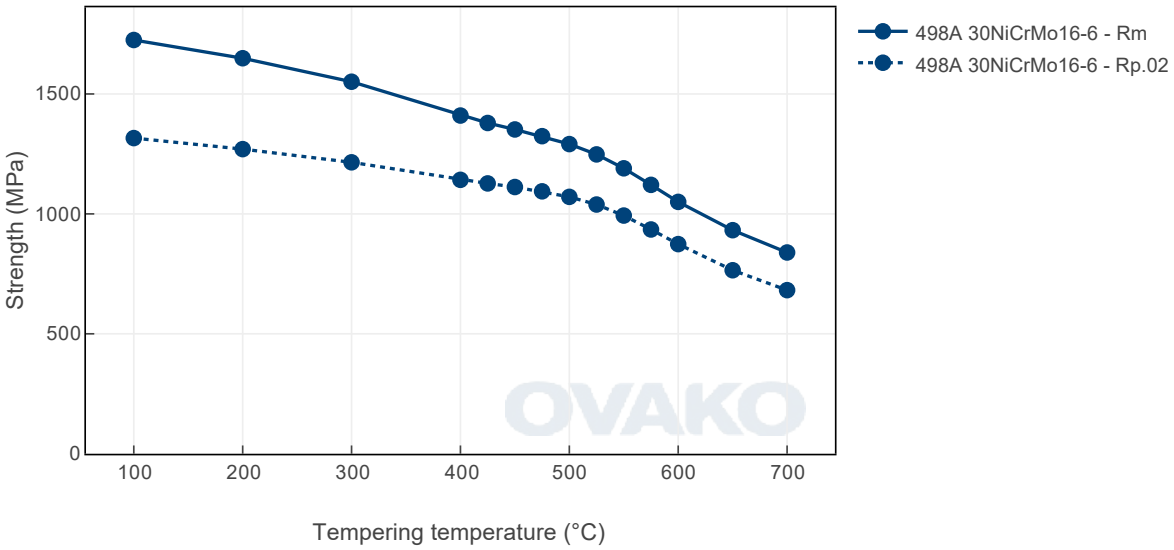
Treatment	Condition	Temperature cycle	Cooling/quenching
Hot forging	+AR	850-1100°C	In air
Normalizing	+N	900-950°C	In air
Annealing	+A	650-730°C	In air
Hardening	+QT	840-890°C	In oil
Tempering	+QT	160-700°C	In air

Heat Treatment Guide generated Graphs

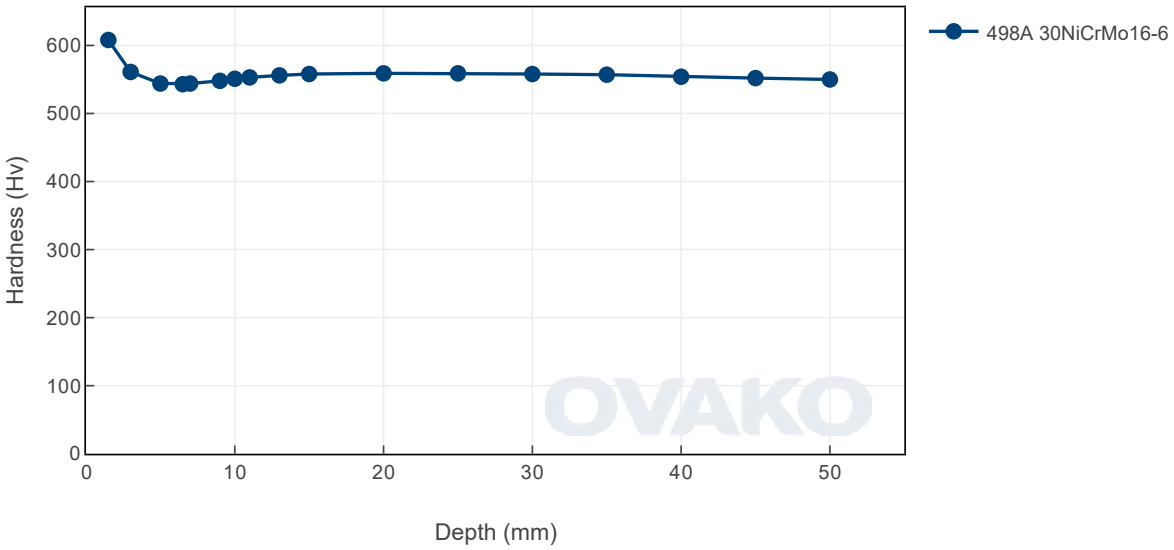
The following graphs are generated from a theoretical model. For further info see the Heat treatment guide module. Select a specific grade version for individual display.



Tempering Diagram (strength)



Jominy


Hardness (Hv)
600
500
400
300
200
100
0
0
10
20
30
40
50
Depth (mm)
498A 30NiCrMo16-6
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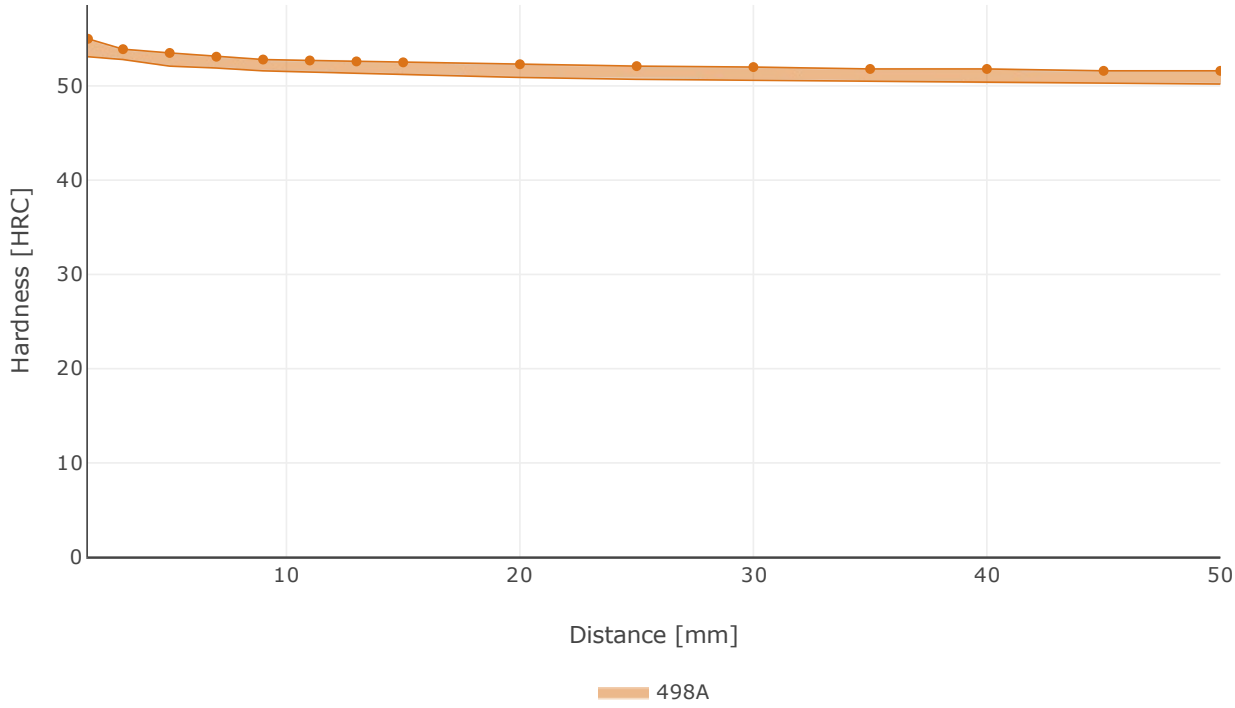
Hardenability



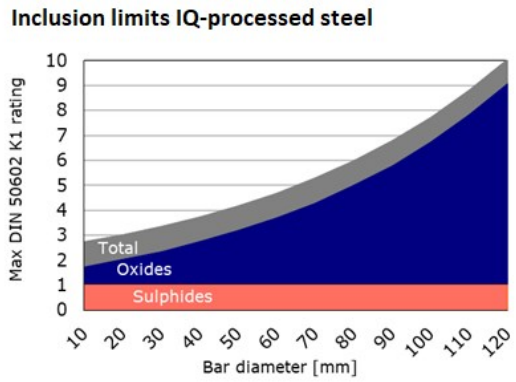
Jominy hardenability of Ovako 498A. Average value with +/-standard deviation.

Steel cleanliness

Micro inclusions - 498A										Macro inclusions - 498A	
Applied standard	ASTM 45									Applied standard	ISO 3763 (Blue fracture)
Sampling	ASTM A295									Sampling	Statistical testing on billets
Maximum average limits	A		B		C		D			Limits	<5 mm/dm^2
	Th	He	Th	He	Th	He	Th	He			
	2,0	1,5	1,0	0,5	0	0	0,5	0,5			

Micro inclusions - 498Q			Macro inclusions - 498Q	
Applied standard	DIN 50602 K1		Applied standard	10 M Hz UST (Ovako internal standard)
Sampling	Six random samples from final product dimension		Sampling	Statistical testing on billets
Limits	The limit is dimension dependent. The average rating of six samples should not exceed the limits given in the graph		Limits	< 10 defects/dm3 > 0,2 mm FBH

IQ



SUSTAINABILITY-ENVIRONMENTAL IMPACT DATA

At Ovako sustainability and reduction of our environmental impact is a major focus in everything we do.
Further information is found here.

Steel works	Hofors	Smedjebacken	Imatra
CO2e/kg	120	62	76

To get the full picture of our products environmental impact we have to look at all of our CO_2 emission sources.
Not only the steel work Scope 1-2 itself, but all operations downstream in our production, heating and heat treatment furnaces etc (full scope 1-2) as well as all the emission from input material, eg. alloys, scope 3.

Steel Grade	Format	Condition	Scope 1-3 (CO2e kg /1000 kg steel)	Climate compensated Net emission = Scope 3 (CO2e kg /1000 kg steel) Scope 1 - 2 = 0 (compensated)
498	Round bar	+AR	1284	885
498	Round bar	+A	1291	890
498	Tube,wall	+AR	1365	967
498	Tube,wall	+A	1367	970

All above data are to be seen as typical values for the specified format and condition. Detailed information about your specific product please contact your sales contact.

Other properties (typical values)

Youngs module (GPa)	Poisson´s ratio (-)	Shear module (GPa)	Density (kg/m3)
210	0.3	80	7800
Average CTE 20-300°C (µm/m°K)	**Specific heat capacity 50/100°C (J/kg °K)**	**Thermal conductivity Ambient temperature (W/m°K)**	**Electrical resistivityAmbient temperature (µΩm)**
12	460 - 480	40 - 45	0.20 - 0.25

Contact us

Would you like to know more about our offers? Don´t hesitate to contact us:

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Via telephone: +46 8 622 1300

For more detailed information please visit http://www.ovako.com/en/Contact-Ovako/

Disclaimer