

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®

(Isotropic Quality) is an isotropic quality ultra clean steel. IQ-Steel is optimized for fatigue strength by a strict control of steel cleanliness. IQ-Steel, a further development of BQ-Steel, is an isotropic and ultra clean steel with properties that match re-melted steels. Based on thousands of examinations by Ovako into the effects of defects on fatigue performance, the metallurgy of IQ-Steel is purer and far more consistent than conventional grades, and designed specifically to perform well in multi axial loading. This enables the manufacturing of lighter, slimmed down components like gears, bearings and other critical parts. The steels are helping our customers to achieve new design solutions and implement higher standards of finished product performance. Key to these practical advantages are Ovako's own unique, clean and consistent modern steelmaking processes that remove harmful inclusions and impurities from within the steel. IQ-Steels contain smaller and more fragmented inclusions and can handle much higher mechanical forces in all directions than conventional steels. IQ-Steels are newer, but already now well established in high pressure automotive applications. Modern diesel engines, with high and cyclic injection pressures, have proven to be an ideal application. Transmission components are another emerging area of strong interest.

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}	Mn	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}	Mn	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

R_{p0.2} * *R_{eh}*, ** *R_{el}*

Transformation temperatures

	Temperature °C
MS	0
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

Hardenability

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

Steel cleanliness

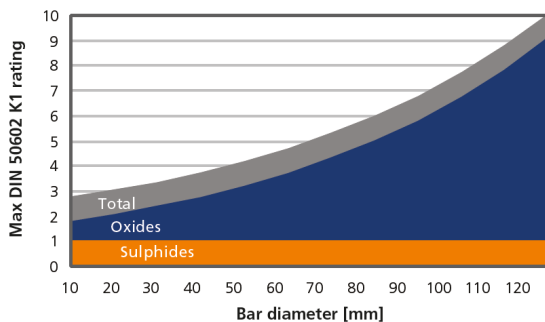
Micro inclusions - 498A									Macro inclusions - 498A	
Applied standard	ASTM 45								Applied standard	ISO 3763 (Blue fracture)
Sampling	ASTM A295								Sampling	Statistical testing on billets
Maximum average limits	A		B		C		D		Limits	<5 mm/dm ²
	Th	He	Th	He	Th	He	Th	He		
	2,0	1,5	1,0	0,5	0	0	0,5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

Micro inclusions - 498Q									Macro inclusions - 498Q	
Applied standard	DIN 50602 K1								Applied standard	10 MHz 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/dm ³ > 0,2 mm FBH

Other properties (typical values)

IQ

Inclusion limits IQ-processed steel



Youngs module (GPa)	Poisson's ratio (-)	Shear module (GPa)	Density (kg/m ³)
210	0.3	80	7800
Average CTE 20-300°C (µm/m ² K)	Specific heat capacity 50/100°C (J/kg ² K)	Thermal conductivity Ambient temperature (W/m ² K)	Electrical resistivity Ambient 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:

Via e-mail: info@ovako.com

Via telephone: +46 8 622 1300

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

Disclaimer

The information in this document is for illustrative purposes only. The data and examples are only general recommendations and not a warranty or a guarantee. The suitability of a product for a specific application can be confirmed only by Ovako once given the actual conditions. The purchaser of an Ovako product has the responsibility to ascertain and control the applicability of the products before using them. Continuous development may necessitate changes in technical data without notice. This document is only valid for Ovako material. Other material, covering the same international specifications, does not necessarily comply with the properties presented in this document.