

48CrMoNi4-10* All

General Information

Ovako 495 is a high strength quench and tempering steel with high wear resistance, good toughness and good dimension stability. The steel can be tempered at high temperatures and still maintain a high hardness and high strength. It is microalloyed to obtain a precipitation hardening effect. The through hardenability corresponds to a bar with approximate Ø100mm (oil quenched). Ovako 495 is mainly used for drill heads. Ovako 495 can be supplied as ingot cast (IC) or continuous cast (CC) steel.

For additional Heat Treatment Data, please visit the Heat Treatment Guide.

* Designation followed by "*" is not an official EN standard grade but named according to the rules in EN 10027.

Similar designations

A579 (23)

Chemical composition

Variant	Cast	Di		C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %	V %
495B	IC		Mn	0.47	0.20	0.75	-	0.015	1.05	0.43	0.93	0.100
			Max	0.50	0.30	0.85	0.015	0.020	1.20	0.50	1.00	0.130
6521	CC	16.9	Mn	0.46	0.15	0.70	-	0.010	1.00	0.40	0.90	0.100
			Max	0.50	0.30	0.85	0.015	0.025	1.20	0.50	1.00	0.140

Mechanical Properties

Variant	Condition	Format	Dimension [mm]	Yield strength min [MPa]	Tensile strength [MPa]	Hardness
495B	+QT	Round bar	< 50	1050**	1300 typical	42 HRC typical
6521	+A	Round bar	25 < 160	-	-	< 260 HB

*Rp0.2 * Reh, ** Rel*

Transformation temperatures

	Temperature °C
MS	283
AC1	733
AC3	808

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	+Q	840-890°C	In oil
Tempering	+T	160-700°C	In air

Hardenability

Jominy hardenability of Ovako 495B. Average value with +/- std deviation.

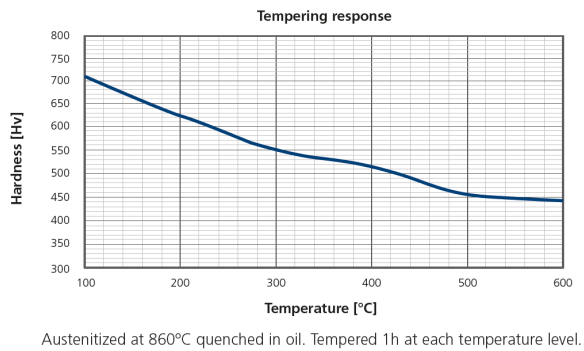
Steel cleanliness - IC

Micro inclusions								Macro inclusions	
Applied standard	ASTME45							Applied standard	ISO 3763 (Blue fracture)
Sampling	ASTMA295							Sampling	Statistical testing on billets
Maximum average limits	A		B		C		D		
	Th	He	Th	He	Th	He	Th	He	
	2,0	1,5	1,0	0,5	0	0	0,5	0,5	
Limits								Limits	< 5 mm/dm ²

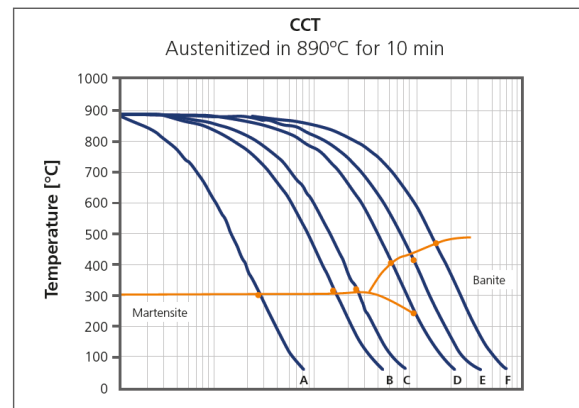
Steel cleanliness - CC

Micro inclusions								Macro inclusions	
Applied standard	ASTME45							Applied standard	ISO 3763 (Blue fracture)
Sampling	ASTMA295							Sampling	Statistical testing on billets
Maximum average limits	A		B		C		D		
	Th	He	Th	He	Th	He	Th	He	
	1,5	1,5	1,0	1,0	0	0	1,0	0,5	
Limits								Limits	< 5 mm/dm ²

Tempering response

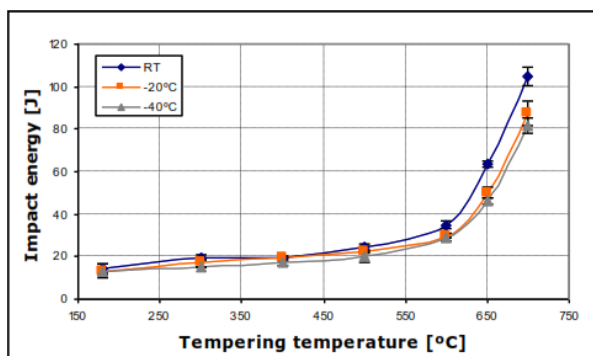


CCT



	A	B	C	D	E	F
t ₈₋₅ [s]	10	60	100	300	500	1000
HV ₃₀	731	686	676	636	552	441

Impact toughness, Ovako 495B (Charpy-V)



Austenitized at 860°C 30 min, quenched in oil. Tempered 1h at each temperature

Other properties (typical values)

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°K)	Specific heat capacity 50/100°C (J/kg°K)	Thermal conductivity Ambient temperature (W/m°K)	Electrical resistivity Ambient temperature (µΩm)
12	460 - 480	40 - 45	0.20 - 0.25

Contact us

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

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