

20NiCrMo7 All

General Information

Ovako 157 is a high cleanliness case hardening steel used for bearing and transmission components. There are three different modifications of the grade.

157C - Bearing quality (BQ) variant with low sulphur content

157D - Bearing quality (BQ) variant with low sulphur content

157G - Regulated sulphur content for improved and consistent machinability

BQ-Steel®

BQ-steel® is a bearing quality clean steel optimized for fatigue strength and is also ideal for new design solutions outside the bearing industry.

Similar designations

ASTM 4320, ASTM 4320H, ASTM 4320RH

Chemical composition

Variant	Cast	Weldability		C%	Si%	Mn%	P%	S%	Cr%	Ni%	Mo%	V%
157C	IC	CEV 0.65 _{max}	Min	0.17	0.20	0.55	-	0.002	0.50	1.65	0.23	-
		Pcm 0.36 _{max}	Max	0.22	0.30	0.65	0.015	0.005	0.60	2.00	0.28	0.014
157D	IC	CEV 0.67 _{max}	Min	0.17	0.20	0.55	-	0.002	0.50	1.65	0.23	-
		Pcm 0.37 _{max}	Max	0.22	0.30	0.65	0.015	0.005	0.60	2.00	0.28	0.100
157G	IC	CEV 0.7 _{max}	Min	0.20	0.20	0.70	-	0.010	0.55	1.70	0.25	-
		Pcm 0.38 _{max}	Max	0.22	0.35	0.80	0.020	0.020	0.65	1.80	0.30	0.100

Mechanical Properties

Variant	Condition	Format	Dimension [mm]	Yield strength min [MPa]	Tensile strength [MPa]	Hardness
157C	+QT	Round bar	25 typical	1200	1300 typical	360 HB typical
157D	+QT	Round bar	25 typical	1200	1300 typical	360 HB typical

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

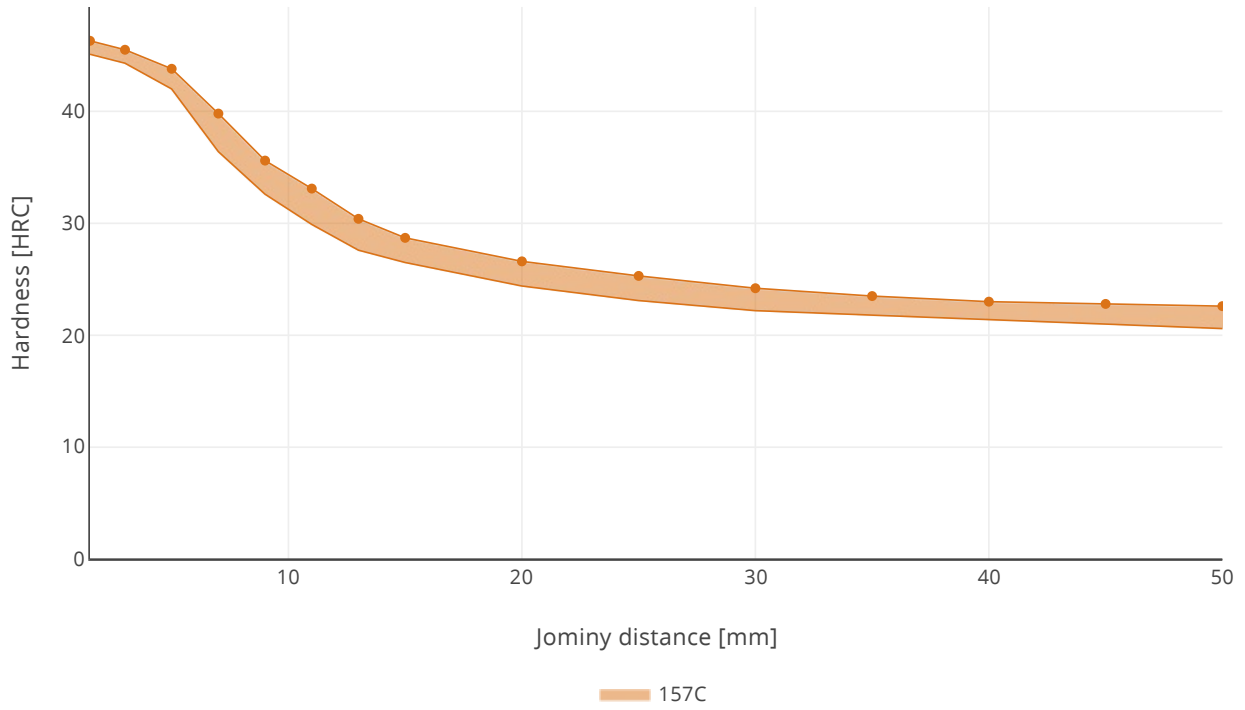
Transformation temperatures

	Temperature °C
MS	400
AC1	704
AC3	806

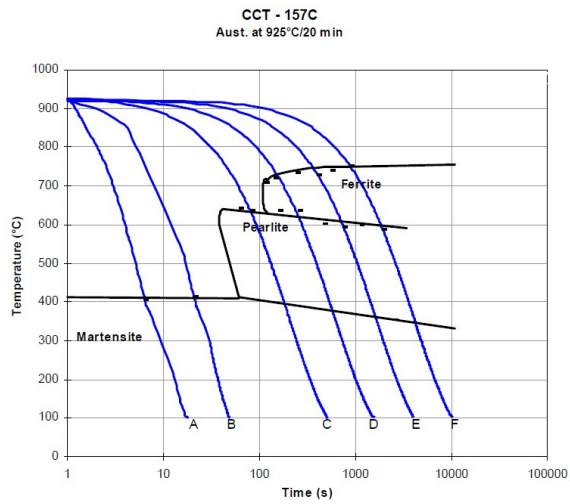
Heat treatment recommendations

Treatment	Condition	Temperature cycle	Cooling/quenching
Hot forging	+U	800-1200C	In air
Normalizing	+N	860-890C	In air
Soft annealing	+A	600-670/2h	In air
Quench & Tempering	+QT	840-890C	In oil
Quench & Tempering	+QT	780-830C Hardening of as-carburized components	In oil
Tempering	+T	160-250C	In air

Hardenability

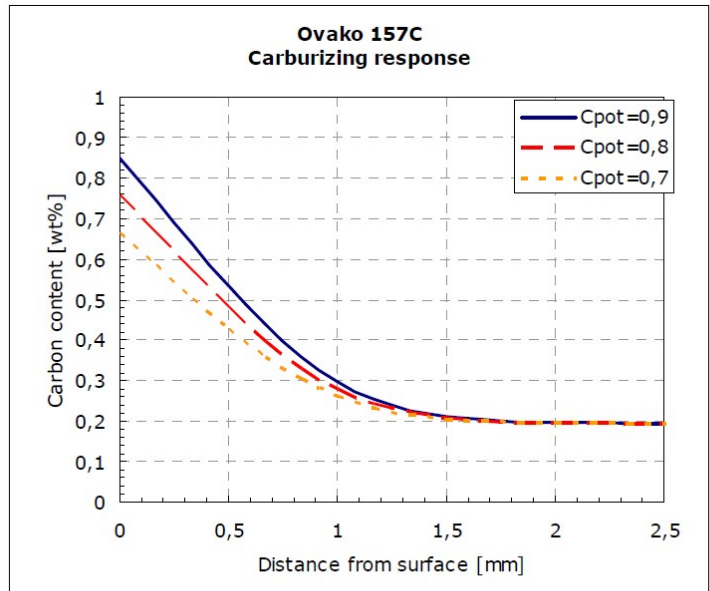
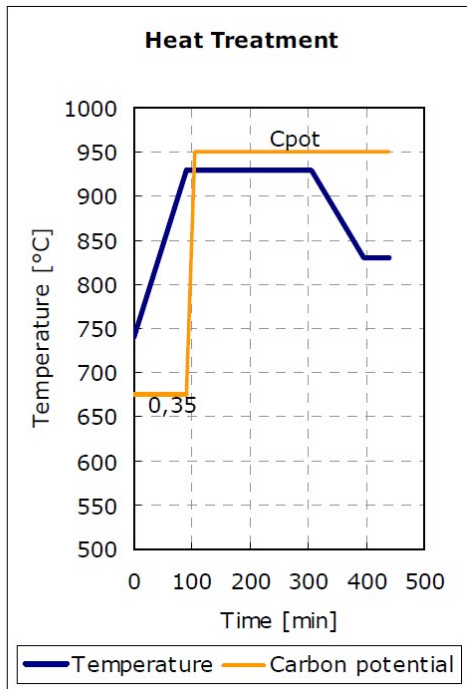


CCT - Ovako 157C



	A	B	C	D	E	F
t_{8-5} [s]	3	10	100	300	800	2000
Hv ₃₀	459	421	256	219	212	192

Carburizing response - Ovako 157C



Carburization response for Ovako 157C for the cycles shown in the left figure. Response of 157D and 157G similar.

Steel cleanliness - Ovako 157D

Micro inclusions - BQ					Macro inclusions - BQ					
Applied standard	ASTM E45				Applied standard	ISO 3763 (Blue fracture)				
Sampling	ASTM A295				Sampling	Statistical testing on billets.				
Maximum average limits	A		B		C		D		Limits	< 2,5 mm/dm ²
	Th	He	Th	He	Th	He	Th	He		
	2,0	1,5	0,8	0,1	0	0	0,5	0,4		

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 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

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