100CrMo7-3 All

General Information

Ovako 825 is a through hardening bearing steel that is mainly used for medium sized bearing rings, but it can also be used for machine components that require high tensile strength, hardness and toughness.

- Through hardenability corresponding to a ring with approximately 30mm wall thickness (≈Ø50mm bar), quenched in oil
- Suitable for martensitic or banitic hardening
- Good machinability in soft annealed condition
- Good dimensional stability

BQ-Steel®

825B - Standard

825T - With a controlled low sulphur content to minimize the number of sulphide inclusions. Reduced carbon content and tighter chemical composition ranges

IQ-Steel®

825Q - Isotropic properties (IQ) and better fatigue strength due to higher cleanliness levels, and a finer size and distribution of non-metallic inclusions

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

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.

IQ-Steel®

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

Similar designations

A485 (B6)

Chemical composition

Variant	Cast		C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %
825B	IC	Min	0.93	0.20	0.60	-	0.005	1.65	-	0.20
		Max	1.05	0.40	0.80	0.025	0.015	1.95	0.25	0.35
825T	IC	Min	0.93	0.20	0.73	-	0.003	1.74	-	0.25
		Max	0.98	0.35	0.80	0.025	0.008	1.85	0.25	0.35
825Q	IC	Min	0.93	0.20	0.60	-	-	1.65	-	0.20
		Max	1.05	0.40	0.80	0.020	0.001	1.95	0.25	0.35

Mechanical Properties

Variant	Condition	Format	Dimension [mm]	Yield strength min [MPa]	Tensile strength [MPa]	Hardness
825B	+SA	All formats	30 < 190	460	700 typical	180-220 HB
	+Q/T(m)	All formats	< 30	1700	2300 typical	61 HRC typical
	+Q/T(b)	All formats	< 30	2000	2200 typical	59 HRC typical
825T	+SA	All formats	30 < 190	460	700 typical	180-220 HB
	+Q/T(m)	Ring, wall	< 30	1700	2300 typical	61 HRC typical
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825Q	+SA	All formats	30 < 190	460	700 typical	180-220 HB
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$Rp_{0.2}$ * R_{eh}, ** R_{el}

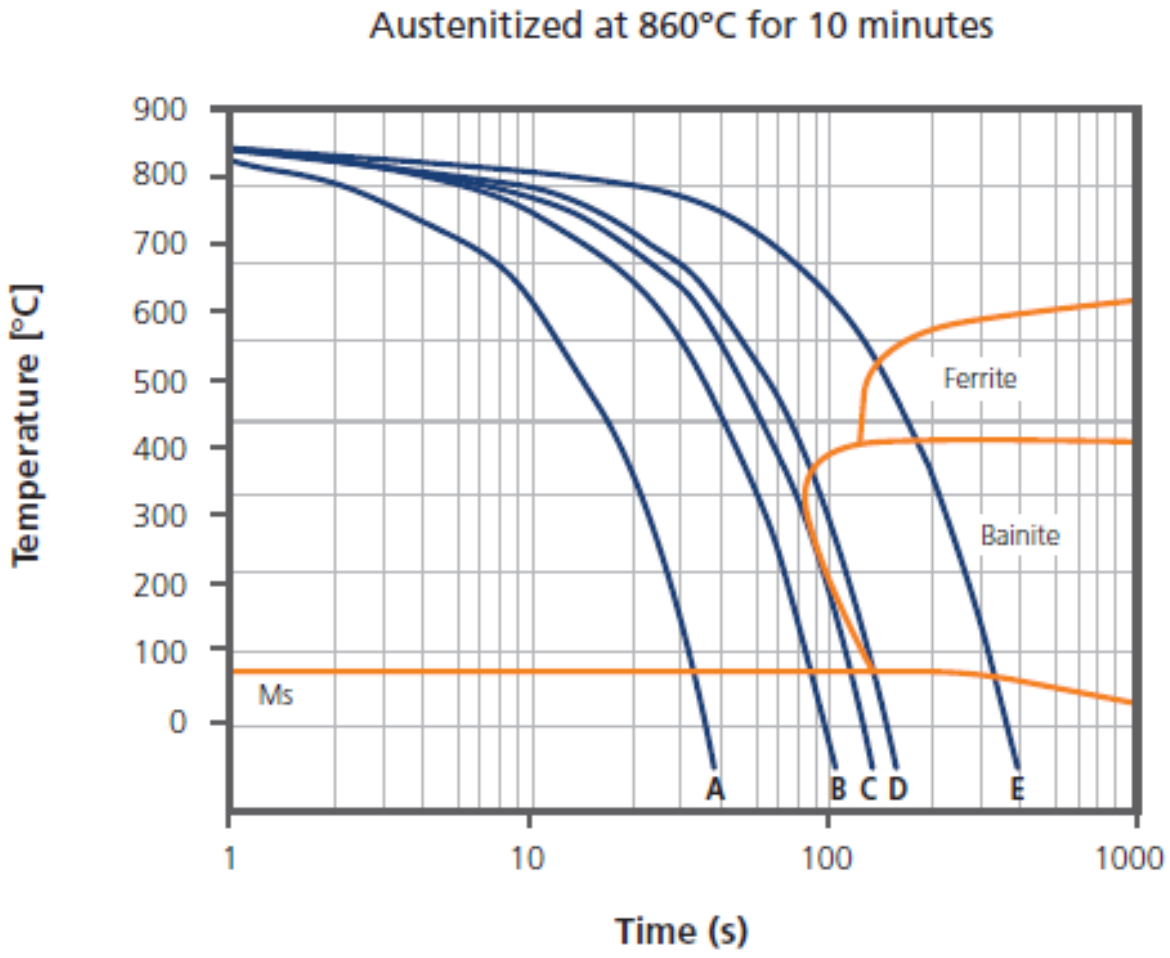
Transformation temperatures

	Temperature °C
MS	183
AC1	750
AC3	750

Heat treatment recommendations

Treatment	Condition	Temperature cycle	Cooling/quenching
Hot forging	+U	800-1100C	In air
Normalizing	+N	880-910C	In air
Spheroidize annealing	+SA	RT-820C 1-2h 820C 2-5h 820-740C 1h 740-690C 12h	In air
Stress relieve annealing	+SRA	550-650C 2h	In air
Q/T (martensite)	+Q/T(m)	830-870C 20-60 min	In oil (tempering within 2h)
Q/T (bainite)	+Q/T(b)	850-875C 20-60min	Salt bath 220-250C 3-9h
Tempering	+T	160-500C, see diagram	In air

CCT



	A	B	C	D	E
t_{8-5} [s]	15	38	50	60	150
Hv_{30}	910	905	905	840	635

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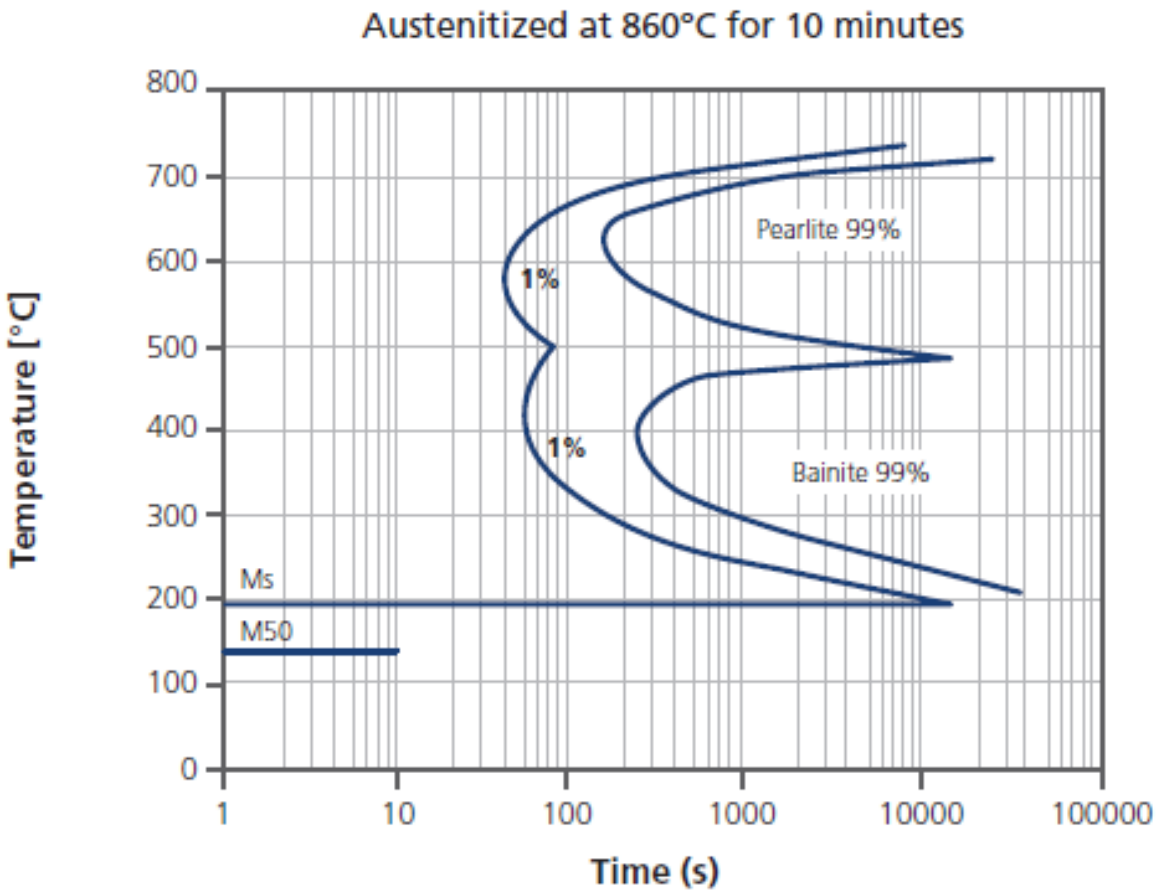
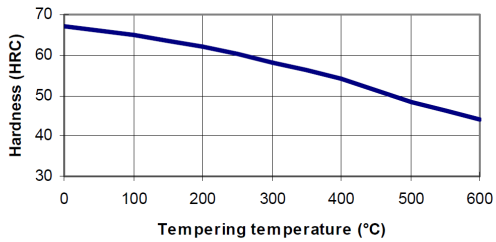
For more detailed information please visit http://www.ovako.com/en/Contact-Ovako/

Disclaimer

TTT



Tempering response



Tempering response for Ovako 825B. Austenitized at 860°C for 30min and quenched in oil. Tempered one hour at each tested temperature

Steel cleanliness

Micro inclusions - Ovako 825B									Macro inclusions - 825B	
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	0,5	0,1	0	0	0,2	0,1		

Micro inclusions - IQ		Macro inclusions - IQ		
Applied standard	DIN 50602 K1	Applied standard	ISO 3763 (Blue fracture)	10 MHz UST (Ovako internal procedure)
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	< 1 mm/dm^2	< 5 defects/dm^3 > 0,2 mm FBH

IQ

Inclusion limits IQ-processed steel