

100CrMnMoSi8-4-6 All

General Information

Ovako 827 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.

827B - Bearing quality (BQ) variant

- Through hardenability corresponding to a ring with approximately 75mm wall thickness ($\approx \varnothing 130$ mm bar), quenched in oil
- Suitable for martensitic or bainitic hardening
- Good machinability in soft annealed condition
- Good dimensional stability

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

BQ-Steel®

(Bearing Quality) is a bearing quality clean steel optimized for fatigue strength by a strict control of steel cleanliness. BQ-steel is also ideal for new design solutions in a wide array of demanding applications outside the bearing industry that require longer performance and higher loads. The BQ-steel offer is the result of the Ovako clean steel program. Purity of production means that the material has significantly smaller inclusions compared to conventional steel and, as a result, the fatigue strength of the steel is increased dramatically. Use of the material allows components to be manufactured in smaller sizes. The BQ-steel has for decades been the problem-solver.

Similar designations

A485 (B8)

Chemical composition

Variant	Cast		C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %
827B	IC	Mn	0.93	0.40	0.90	-	0.005	1.85	-	0.54
		Max	1.00	0.60	1.10	0.025	0.010	2.05	0.25	0.60

Mechanical Properties

Variant	Condition	Format	Dimension [mm]	Yield strength min [MPa]	Tensile strength [MPa]	Hardness
827B	+SA	All formats	30 < 190	-	-	220 HB typical
	+Q/T(m)	Ring, wall	< 75	1700	2300 typical	61 HRC typical
	+Q/T(b)	Ring, wall	< 75	2000	2200 typical	59 HRC typical

RP0.2 * R_{eh}, ** R_{el}

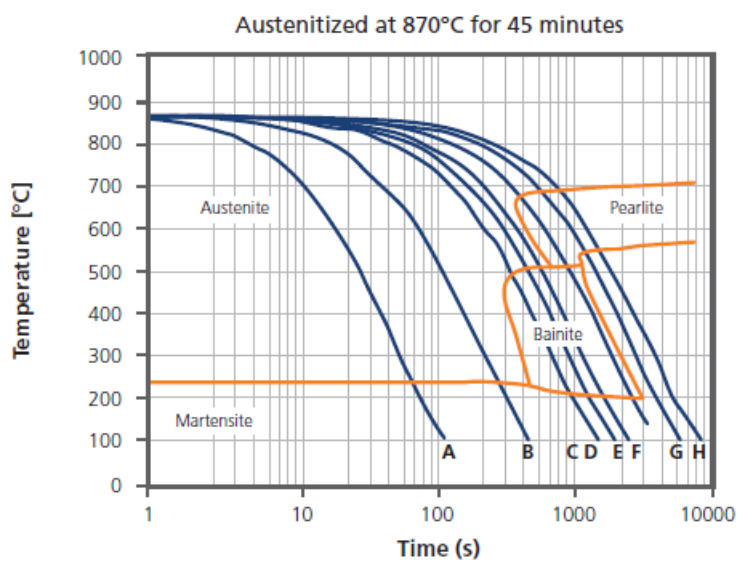
Transformation temperatures

	Temperature °C
MS	233
AC1	750
AC3	750

Heat treatment recommendations

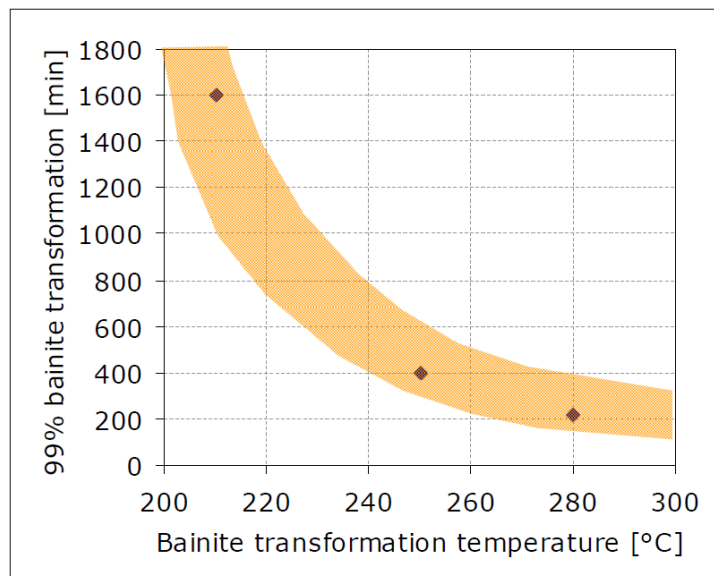
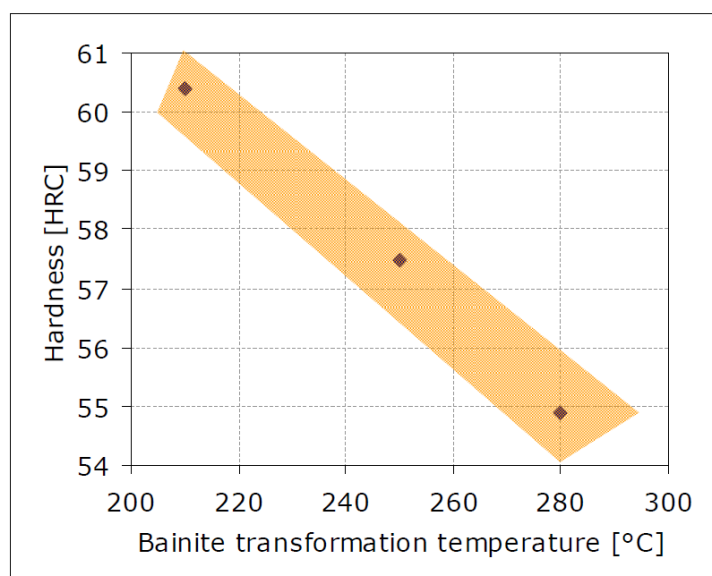
Treatment	Condition	Temperature cycle	Cooling/quenching
Hot forging	+U	850-1100C	In air
Normalizing	+N	880-910C	In air
Spheroidize annealing	+SA	*Normalizing is recommended prior to Soft Annealing, RT-820C 1-2h, 820C 2-5 h, 820-740C 1h, 740-690C 16h	In air
Stress relieve annealing	+SRA	550-650C 2h	In air
Q/T (martensite)	+Q/T(m)	830-880C 20-60min	In oil (temper within 2h)
Q/T (bainite)	+Q/T(b)	850-880C 20-60min	Salt bath 220-250C 10-20h (see diagram)
Tempering	+T	160-500C 1-3h	In air

CCT



	A	B	C	D	E	F	G	H
t_{6-5} [s]	25	100	300	400	500	800	1200	1600
Hv ₃₀	862	856	726	706	533	463	423	392

Bainite transformation



Steel cleanliness

Micro inclusions - Ovako 827B									Macro inclusions - Ovako 827B	
Applied standard	ASTME45								Applied standard	ISO 3763 (Blue fracture)
Sampling	ASTMA295								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		

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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