

STEEL GRADE

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100CrMnSi6-4

All

General Information

Ovako 837 is a through hardening bearing steel that is mainly used for medium sized bearing rings, but can also be used for machine components that require high tensile strength and high hardness.

30 mm maximum wall thickness for through hardening

Used for martensitic hardening

Can be induction hardened

Good machinability in soft annealed condition

Machinable in hardened condition using hard-turning techniques (CBN tools)

Very good dimension stability

837R - Bearing quality (BQ) variant

837S - Variant with a controlled high sulphur content for enhanced low speed machining

5625 / 837Z - A continuous cast variant (BQ)

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 A485 grade B3, 100 CM 6

Chemical composition

Variant	Cast		C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %
837R	IC	Min	0.93	0.50	1.00	-	0.003	1.40	-	-
		Max	0.98	0.70	1.20	0.025	0.006	1.55	0.25	0.10

Transformation
temperatures

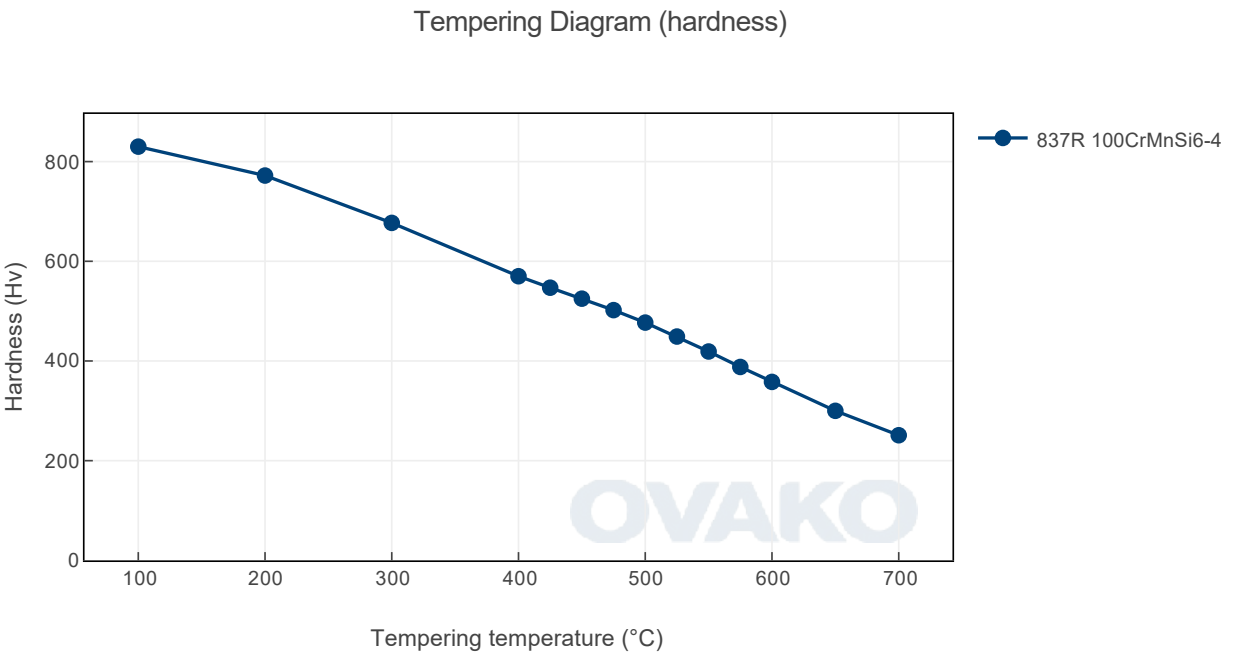
	Temperature °C
MS	229
AC1	750
AC3	750

Heat treatment recommendations

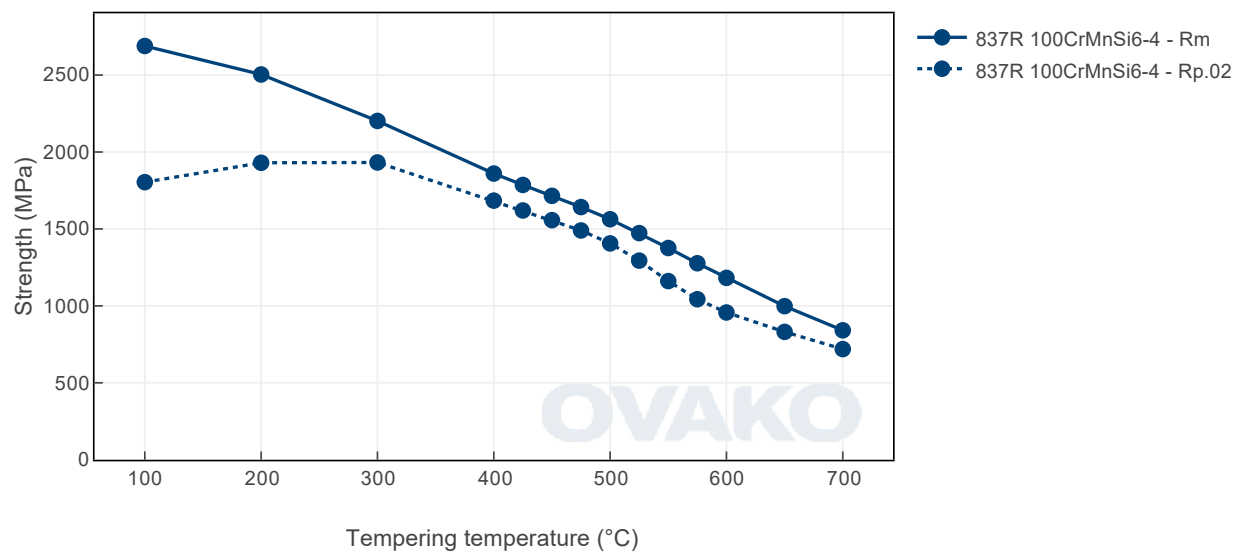
Treatment	Condition ⓘ	Temperature cycle	Cooling/quenching
Hot forging	+U	800-1100C	In air
Normalizing	+N	880-910C	In air
Spheroidize annealing	+SA	RT-810°C 1h, 810°C 2h, 810-740°C 1h, 740-650°C 10h	In air
Stress relieve annealing	+SRA	550-650C 2h	In air
Q/T (martensite)	+Q/T(m)	830-870C 20-60min,	In oil (temper within 2h)
Tempering	+T	160-500C (see diagram)	In air

Heat Treatment Guide generated Graphs

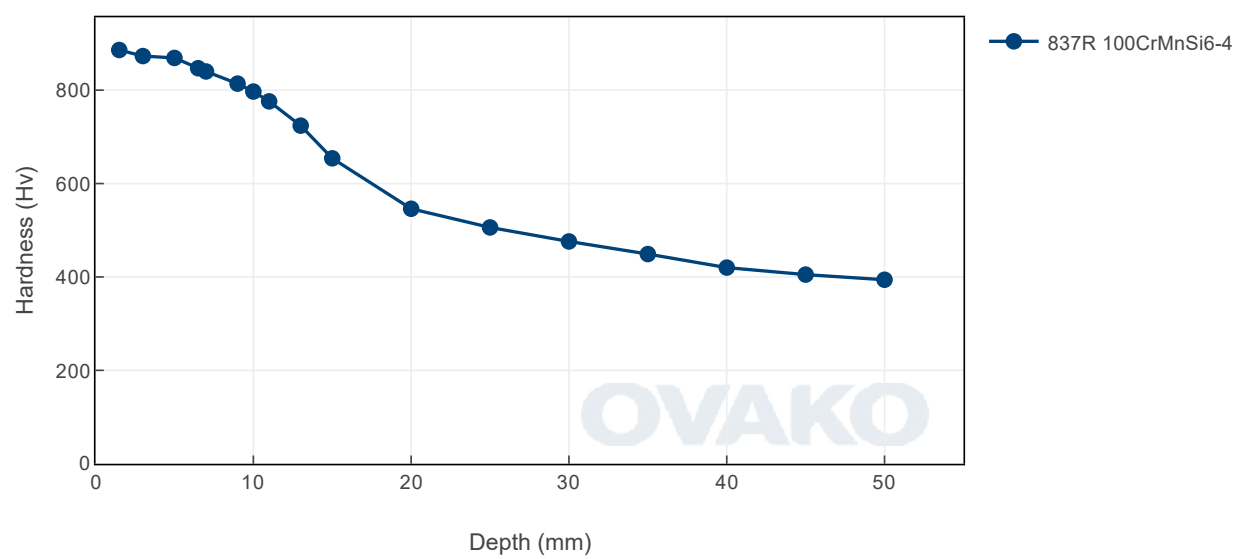
The following graphs are generated from a theoretical model. For further info see the Heat treatment guide module. Select a specific grade version for individual display.



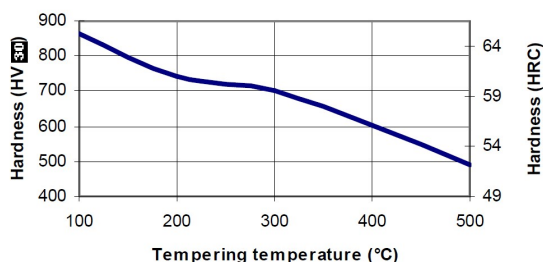
Tempering Diagram (strength)



Jominy



Tempering response



Tempering response for Ovako 837R. Austenitized at 850°C for 30min and quenched in oil. Tempered one hour at each tested temperature level

Steel cleanliness

Micro inclusions - Ovako 837R								Macro inclusions - Ovako 837R	
Applied standard	ASTM E45							Applied standard	ISO 3763 (Blue fracture)
Sampling	ASTM A295							Sampling	Statistical testing on billets
Maximum average	A		B		C		D	Limits	< 2,5 mm/dm ²
limits	Th	He	Th	He	Th	He	Th	He	
	2,0	1,5	0,8	0,1	0	0	0,5	0,3	

SUSTAINABILITY-ENVIRONMENTAL IMPACT DATA

At Ovako sustainability and reduction of our environmental impact is a major focus in everything we do.

Further information is found [here](#).

Steel works	Hofors	Smedjebacken	Imatra
CO ₂ e/kg	120	62	76

To get the full picture of our products environmental impact we have to look at all of our CO₂ emission sources.

Not only the steel work Scope 1-2 itself, but all operations downstream in our production, heating and heat treatment furnaces etc (full scope 1-2) as well as all the emission from input material, eg. alloys, scope 3.

Steel Grade	Format	Condition ⓘ	Scope 1-3 (CO ₂ e kg /1000 kg steel)	Climate compensated Net emission = Scope 3 (CO ₂ e kg /1000 kg steel) Scope 1 - 2 = 0 (compensated)
837	Round bar	+SA	628	227
837	Tube, wall	+SA	650	253
5625 / 837Z	Round bar	+SA	572	269

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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 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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