MATERIAL DATA SHEET

STEEL GRADE

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OVAKO

42CrMo4 All

General Information

42CrMo4 is a steel for quenching and tempering, which has a good combination of strength and toughness in the quenched and tempered condition. After the oil quenching, the steel will be through hardened up to ø60 mm bar diameter. The microstructure of larger dimensions is not fully martensite. The steel is applicable to induction hardening. The surface hardness will exceed min. 53 HRC. 42CrMo4 can be delivered M-treated in order to optimize the machinability.

Variant 6082 is offered under the name MoC410M

Variant 6115 conform with SAE 4140 and ISO 898 Grade 10.9 up to 60 mm bar diameter

Variant 6137 conform with L7 ASTM A320 and ISO 898 Grade 10.9 up to 50 mm bar diameter

Variant SB4288 is offered under the name SB42CrMo4

Variant 327S is a continuous cast variant with slightly increased hardenability, similar to the ingot casted variant 327A

Variant 327A is an ingot cast variant with slightly increased hardenability.

Variant 326C is a BQ-steel variant which fulfils SAE 4140 standard but has a restricted sulphur content for improved cleanliness and a lower maximum allowed phosphorus content for improved mechanical properties

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

AISI 4140, 42CD4(AFNOR), 708M40(B.S.), SS 2244, SS142244, SAE 4140H, ASTM A193 B7, 41Cr4, 42CrMoS4, 1.7225

Chemical composition

Variant	Cast	Weldability		C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %
326C	IC	CEV 0.9_{max}	Min	0.38	0.20	0.80	-	0.005	0.90	-	0.15
		Pcm 0.58_{max}	Max	0.43	0.30	1.00	0.014	0.010	1.10	0.20	0.25

Mechanical Properties

Variant	Condition	Format	Dimension [mm]	Yield strength min [MPa]	Tensile strength [MPa]	Elongation A_5 [%]	Reduction of area Z_{min} [%]	Hardness
326C	+A	Round bar	25 < 180	-	-	-	-	200 HB typical
	+QT	Round bar	25 < 180	600	700-1050	17	65	230-330 HB

*$Rp_{0.2}$ * R_{eh}, ** R_{el}*

Transformation temperatures

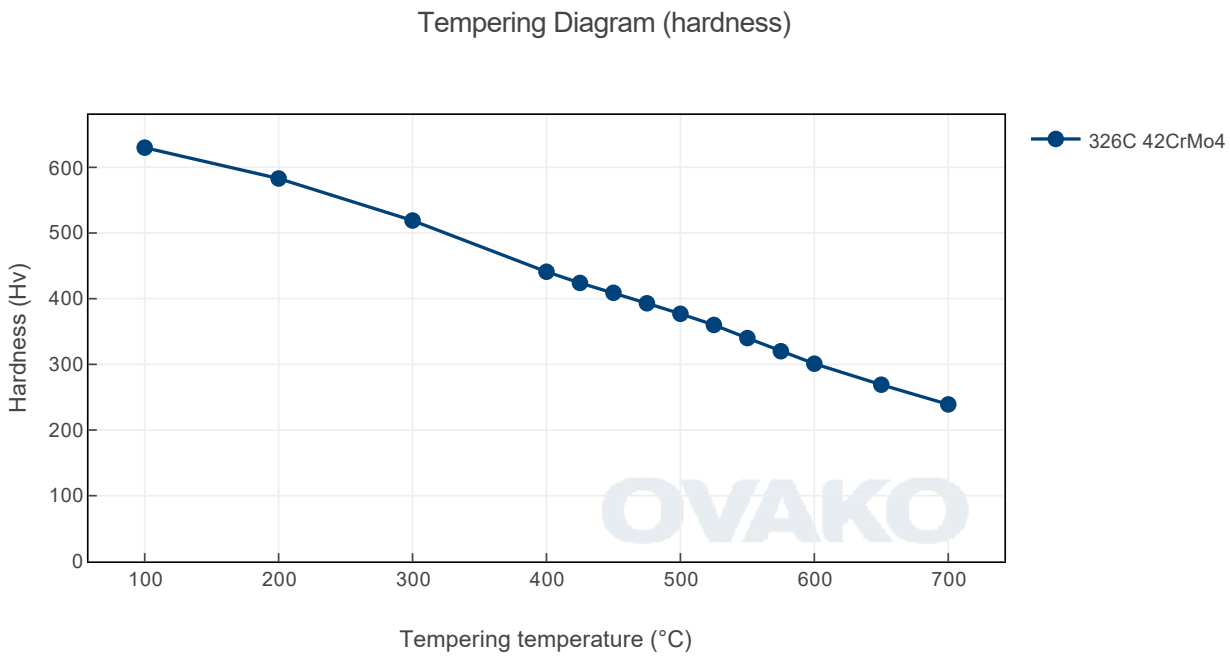
	Temperature °C
MS	320
AC1	740
AC3	770

Heat treatment recommendations

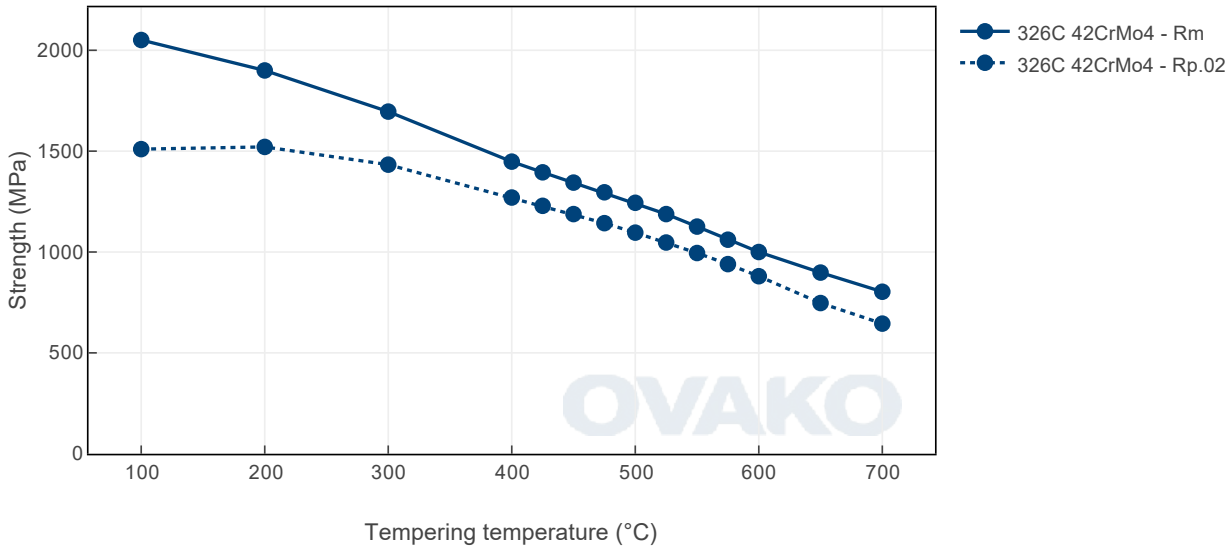
Treatment	Condition	Temperature cycle	Cooling/quenching
Hot forging	+U	850-1050°C	In air
Soft annealing	+A	680-720°C	Slowly (15°C/h) until 600°C
Stress relieve annealing	+SRA	450-650°C	In air
Quench & Tempering	+QT	840-880°C	In oil or water. Temper in 540-680°C
Stress relieve annealing	+SRA	150-180°C (after Induction Hardening)	In air

Heat Treatment Guide generated Graphs

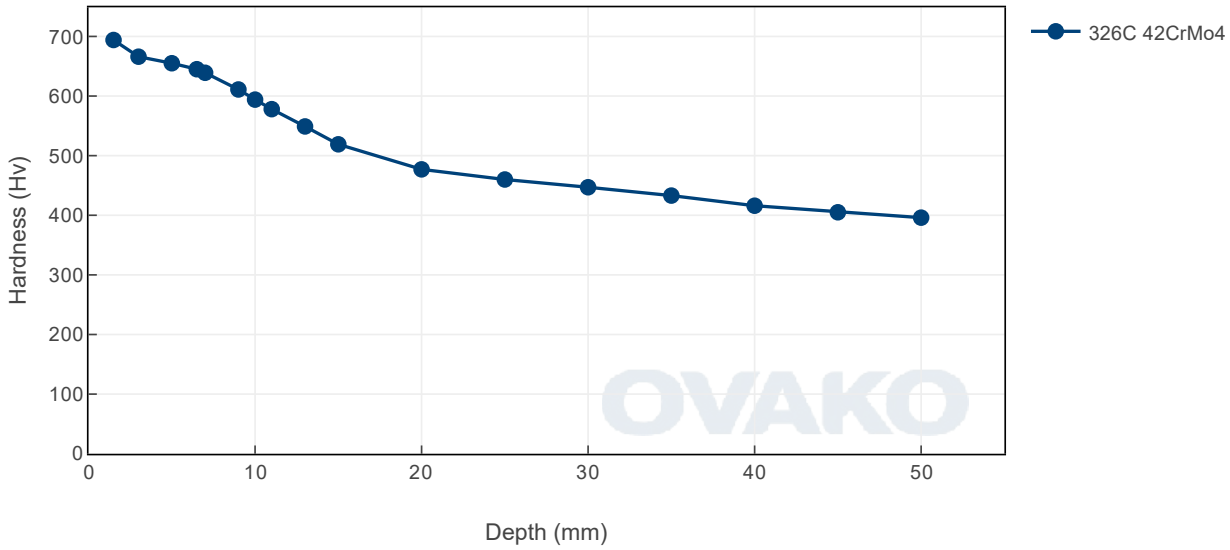
The following graphs are generated from a theoretical model. For further info see the Heat treatment guide module. Select a specific grade version for individual display.



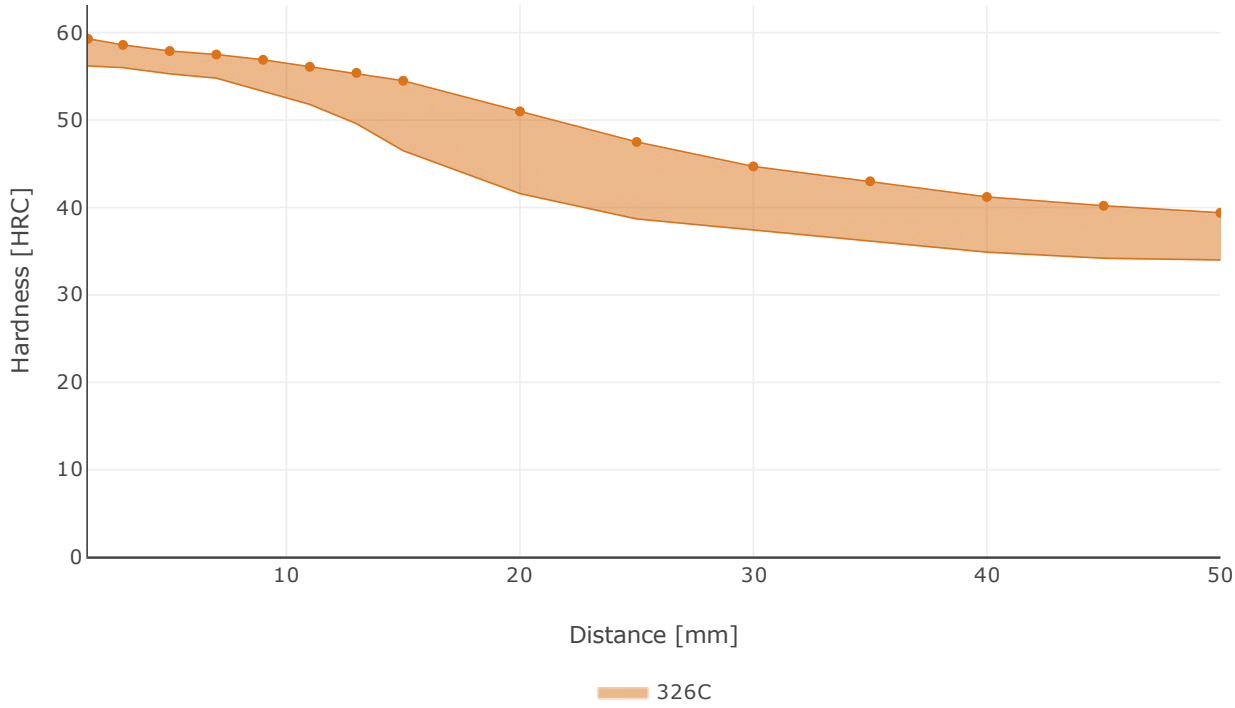
Tempering Diagram (strength)



Jominy


Hardness (Hv)
700
600
500
400
300
200
100
0
0
10
20
30
40
50
Depth (mm)
326C 42CrMo4
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Hardenability



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
CO2e/kg	120	62	76

To get the full picture of our products environmental impact we have to look at all of our CO_2 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 (CO2e kg /1000 kg steel)
327	Round bar	+AR	621
327	Round bar	+QT	627
327	Tube,wall	+AR	643
327	Tube,wall	+QT	651
326C	Round bar	+AR	615
326C	Round bar	+QT	621
326C	Tube,wall	+AR	638
326C	Tube,wall	+QT	646
SB 4288	Flat bar	+A	433
L7 ASTM A320 (6137)	Round bar	+AR	531
L7 ASTM A320 (6137)	Round bar	+QT	786
6082	Round bar	+AR	524
6082	Round bar	+QT	778
42CrMnMo4-3, ASTM A 320 L7	Round bar	+AR	531
42CrMnMo4-3, ASTM A 320 L7	Round bar	+QT	786
42CrMnMo4-4,SAE 4140	Round bar	+AR	530
42CrMnMo4-4,SAE 4140	Round bar	+QT	783

All above data are to be seen as typical values for the specified format and condition. Detailed

information about your specific product please contact your sales contact.

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/

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