MATERIAL DATA SHEET

STEEL GRADE

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OVAKO

20NiCrMo2-2 All

General Information

Ovako 152 is a high cleanliness case hardening steel used for bearing, transmission components and other highly stressed applications. There are three versions of the grade.

152A / 20NiCrMoS2 - variant with regulated sulphur content for enhanced machinability

152C / 20NiCrMo2 - variant with enhanced hardenability (BQ)

152G / 20NiCrMo2 - Bearing Steel Quality (BQ) variant

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

20NiCrMo2, 20NiCrMoS2, 8620, 8620H, 1.6522, 1.6523, 1.6526, SS2506, UNS H 86200

Chemical composition

Variant	Cast	Di	Weldability		C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %
152C	IC	2.21	CEV 0.63_{max}	Min	0.21	0.25	0.84	-	0.008	0.56	0.55	0.18
			Pcm 0.37_{max}	Max	0.23	0.35	0.90	0.025	0.015	0.60	0.60	0.21

152C : DI min 2,21.

Transformation temperatures

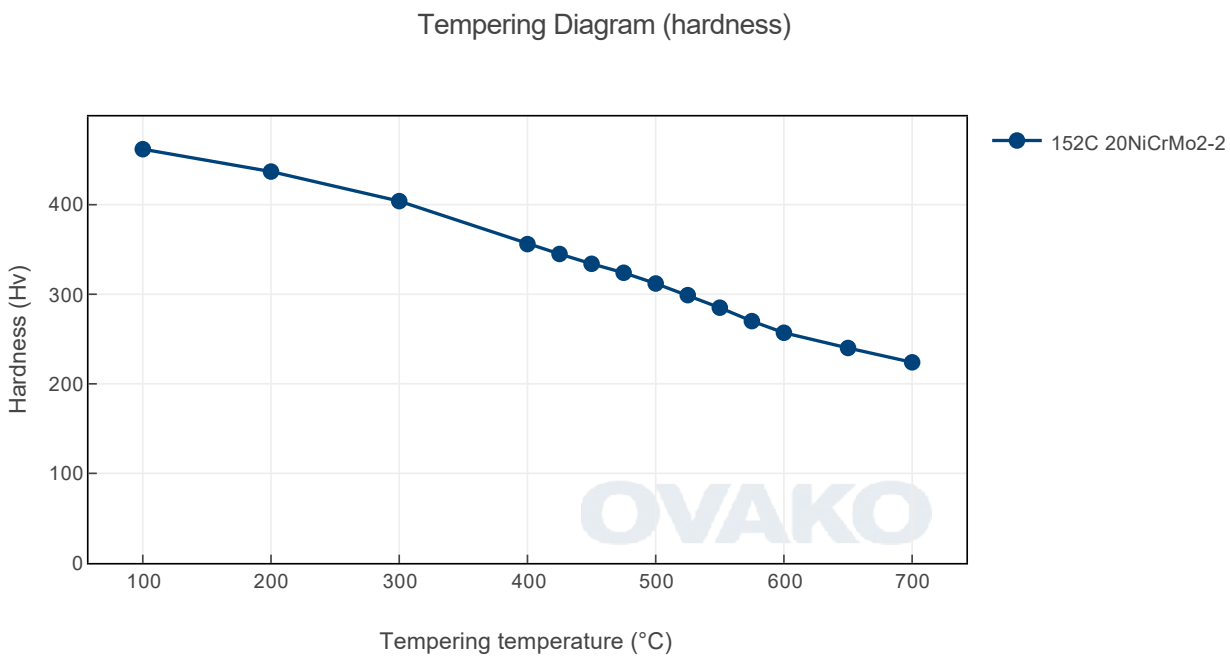
	Temperature °C
MS	405
AC1	723
AC3	812

Heat treatment recommendations

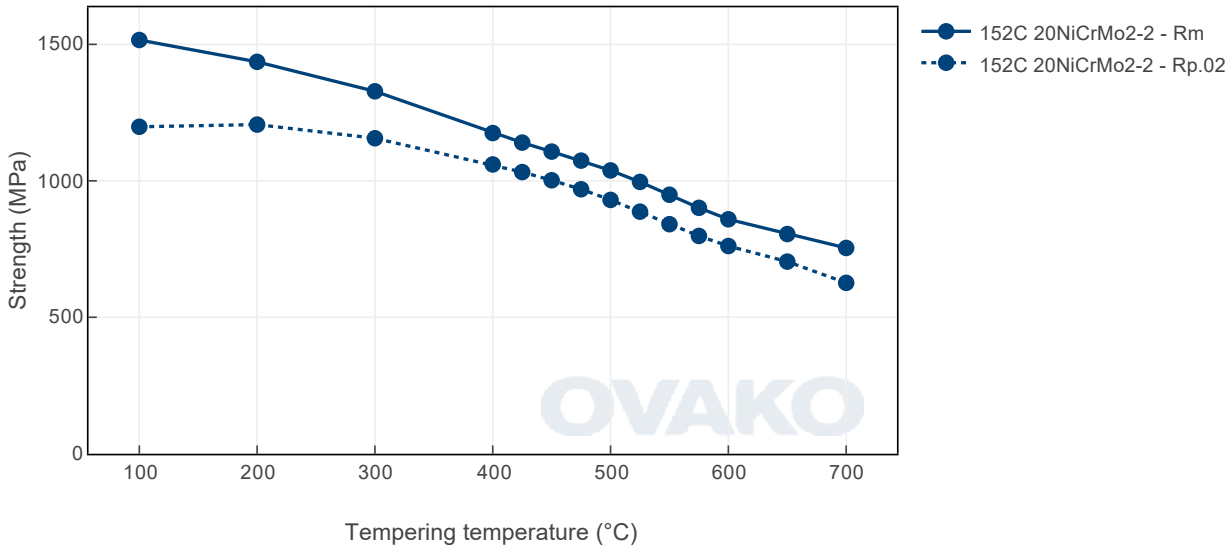
Treatment	Condition	Temperature cycle	Cooling/quenching
Hot forging	+U	800-1200C	In air
Normalizing	+N	860-890C	In air
Soft annealing	+SA	600-670 2h	In air
Carburizing	+C	850-930C Carbon potential se diagram	
Quench & Tempering	+QT	Q/T 840-890C Hardening of as-carburized component 780-830C	In oil
Tempering	+T	160-250C	In air

Heat Treatment Guide generated Graphs

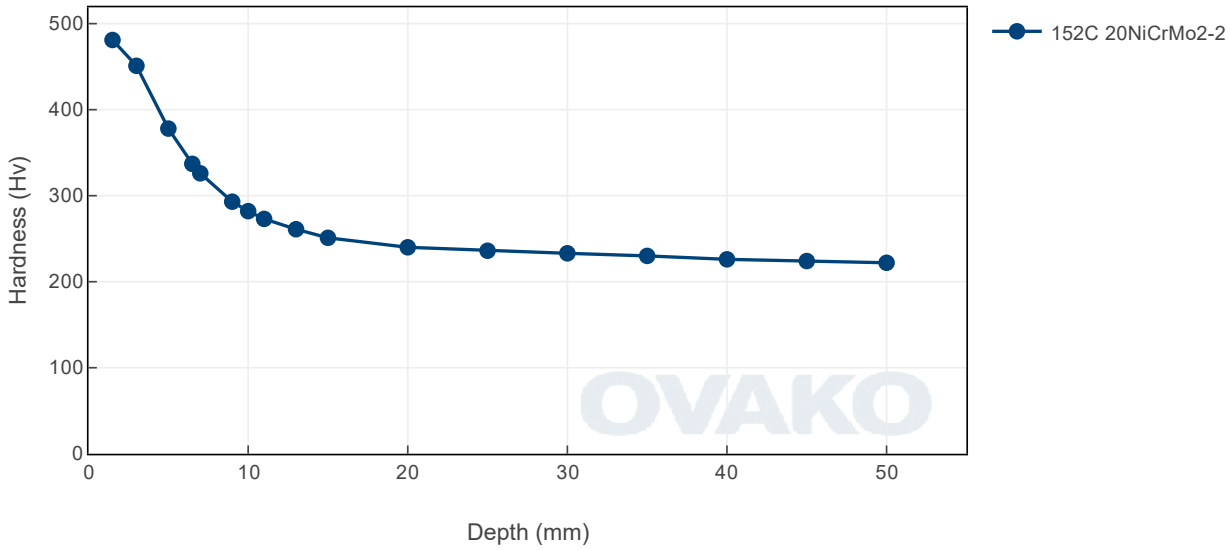
The following graphs are generated from a theoretical model. For further info see the Heat treatment guide module. Select a specific grade version for individual display.



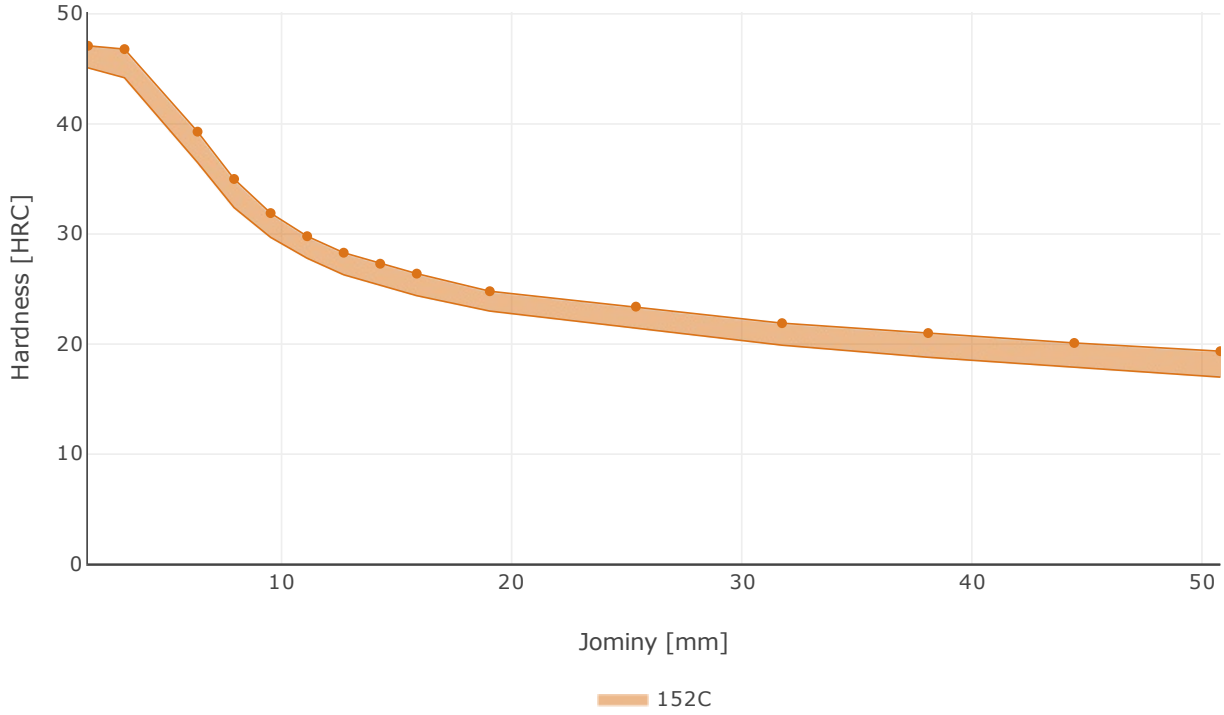
Tempering Diagram (strength)



Jominy

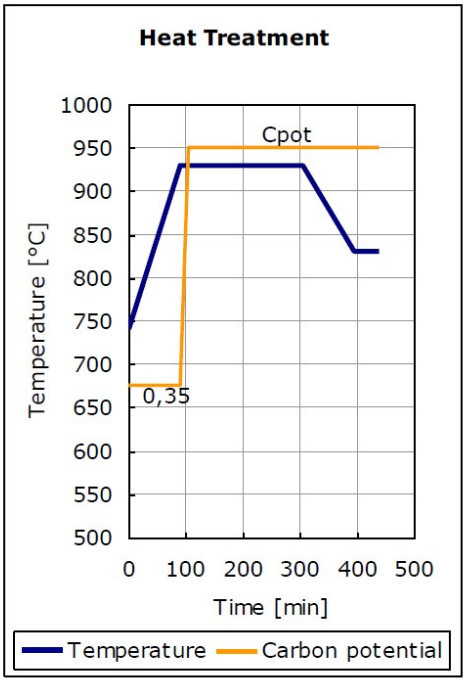

Hardness (Hv)
500
400
300
200
100
0
0
10
20
30
40
50
Depth (mm)
152C 20NiCrMo2-2
OVAKO

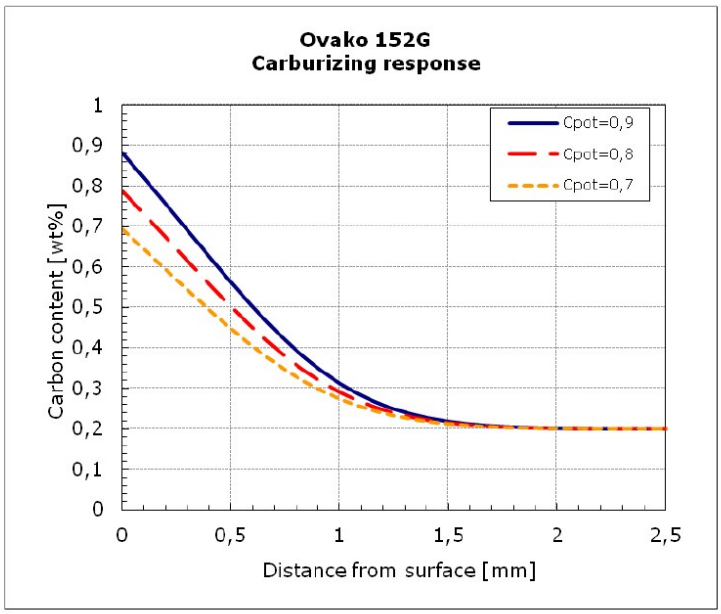
Hardenability



20NiCrMo2-2+H shows the Jominy band accordig to EN ISO 683-3. Jominy hardenability according to ASTM A255. The graph also shows the average values +/- 1 standard deviation for steel grade 152G and 152C.

Carburizing response - Ovako 152G





Carburization response for Ovako 152G for the cycles shown in the left figure. Response of 152A and 152C similar.

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)
152	Round bar	+AR	676
152	Round bar	+FP	681
152	Tube,wall	+AR	704
152	Tube,wall	+FP	707
4542	Round bar	+AR	593
4532	Round bar	+AR	593
4548, MoCN 206 M	Round bar	+AR	584

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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 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/