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

Similar designations

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

Chemical composition

Variant	Cast		C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %
20NiCrMo2-2 +H EN ISO 683-3	Std	Min	0.17	-	0.65	-	0.020	0.35	0.40	0.15
		Max	0.23	0.40	0.95	0.025	0.040	0.70	0.70	0.25

152C : DI min 2,21.

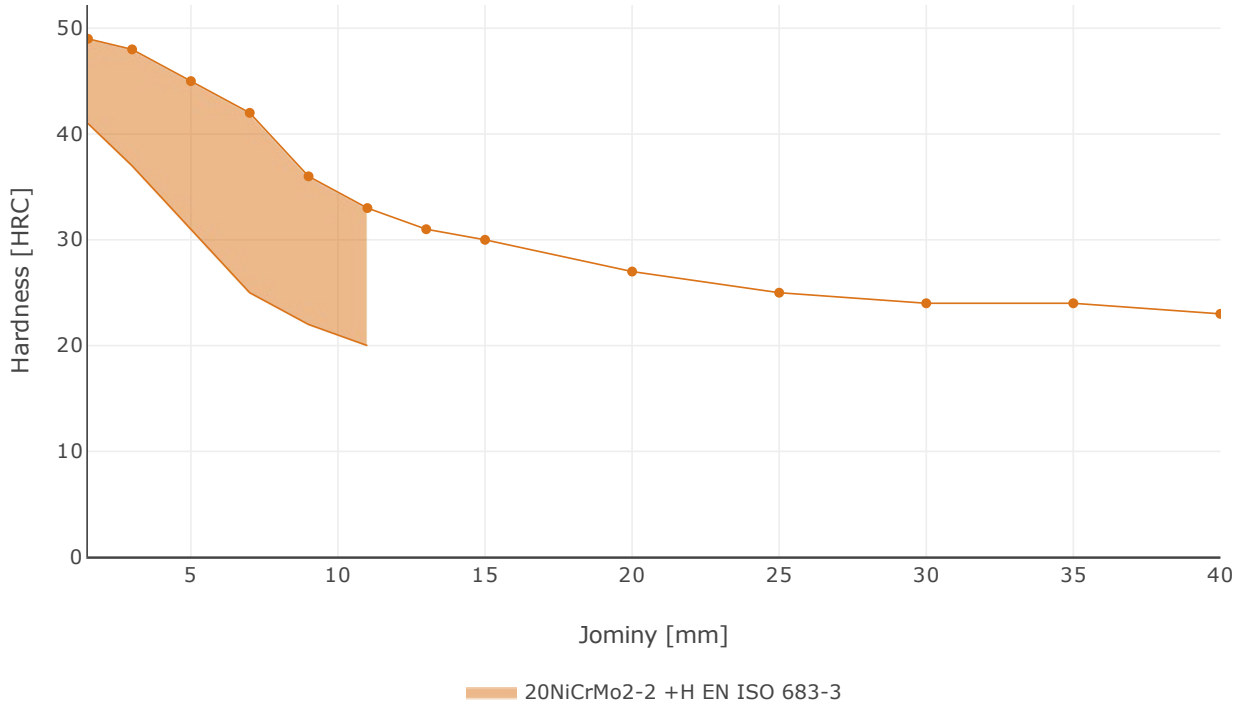
Transformation temperatures

	Temperature °C
MS	405
AC1	723
AC3	812

Heat treatment recommendations

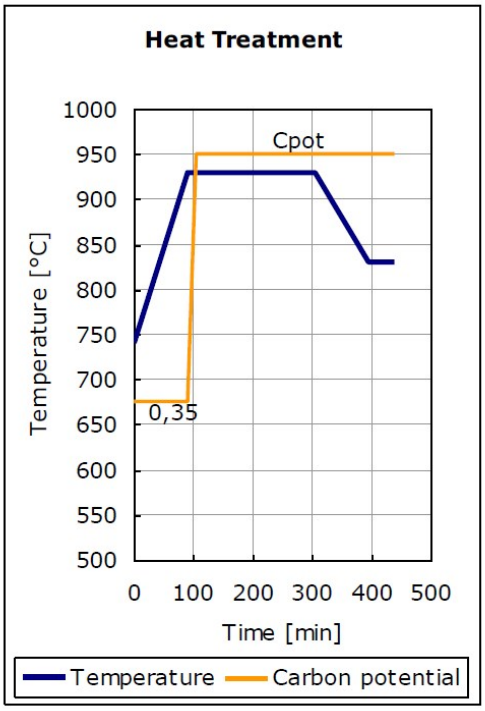
Treatment	Condition	Temperature cycle	Cooling/quenching
Hot forging	+U	800-1200C	In air
Normalizing	+N	860-890C	In air
Soft annealing	+SA	600-670 2h	In air
Carburizing	+C	850-930C Carbon potential se diagram	
Quench & Tempering	+QT	Q/T 840-890C Hardening of as-carburized component 780-830C	In oil
Tempering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

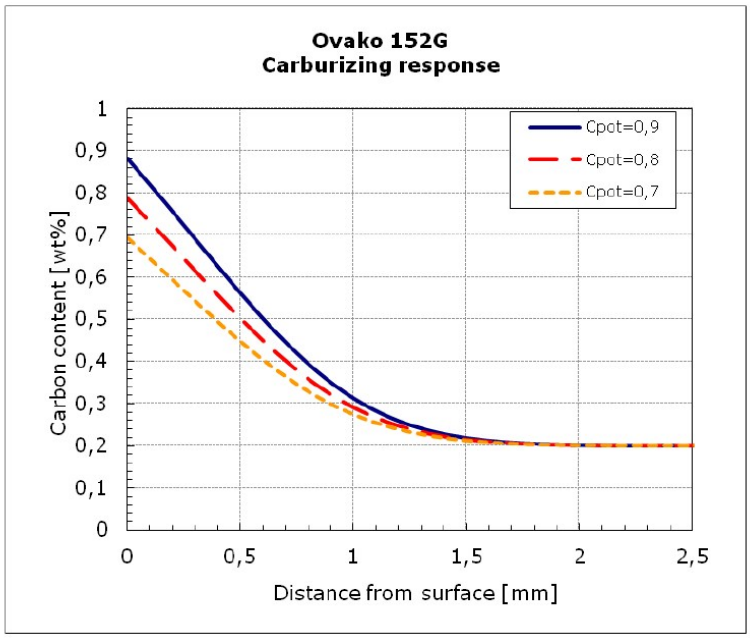
Hardenability



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)	Climate compensated Net emission = Scope 3 (CO2e kg /1000 kg steel) Scope 1 - 2 = 0 (compensated)
152	Round bar	+AR	676	277
152	Round bar	+FP	681	280
152	Tube,wall	+AR	704	307
152	Tube,wall	+FP	707	309
4542	Round bar	+AR	593	290
4532	Round bar	+AR	593	290
4548, MoCN 206 M	Round bar	+AR	584	281

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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

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