Material data sheet
Steel grade

Last revised: Thu, 23 Feb 2023 16:19:41 GMT

OVAKO

20MnCrNiMo4-2-2* All

General Information

20MnCrNiMo4-2-2* or 8720 as it is also named in US standards, is a case hardening steel used in forgings to eg rock drilling tools.

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

** Designation followed by "*" is not an official EN standard grade but named according to the rules in EN 10027.*

Similar designations

AISI 8720

Chemical composition

Variant	Cast	Di		C%	Si%	Mn%	P%	S%	Cr%	Ni%	Mo%	Cu%
4524	CC		Min	0.20	0.20	0.78	0.000	0.000	0.57	0.58	0.21	0.00
			Max	0.22	0.30	0.90	0.020	0.015	0.65	0.65	0.25	0.25
4766	CC	3	Min	0.19	0.20	0.80	0.000	0.000	0.45	0.45	0.40	0.00
			Max	0.23	0.35	1.00	0.025	0.015	0.65	0.65	0.55	0.25
152E	IC		Min	0.20	0.20	0.80	0.000	0.000	0.50	0.50	0.20	0.00
			Max	0.22	0.30	0.90	0.020	0.010	0.65	0.65	0.30	0.25
8720H	Std		Min	0.17	0.15	0.60	-	-	0.35	0.35	0.20	-
			Max	0.23	0.35	0.95	-	-	0.65	0.75	0.30	-

Mechanical Properties

Variant	Condition	Format	Dimension [mm]	Hardness
4766	+AR	Round bar	25 < 160	< 250 HB

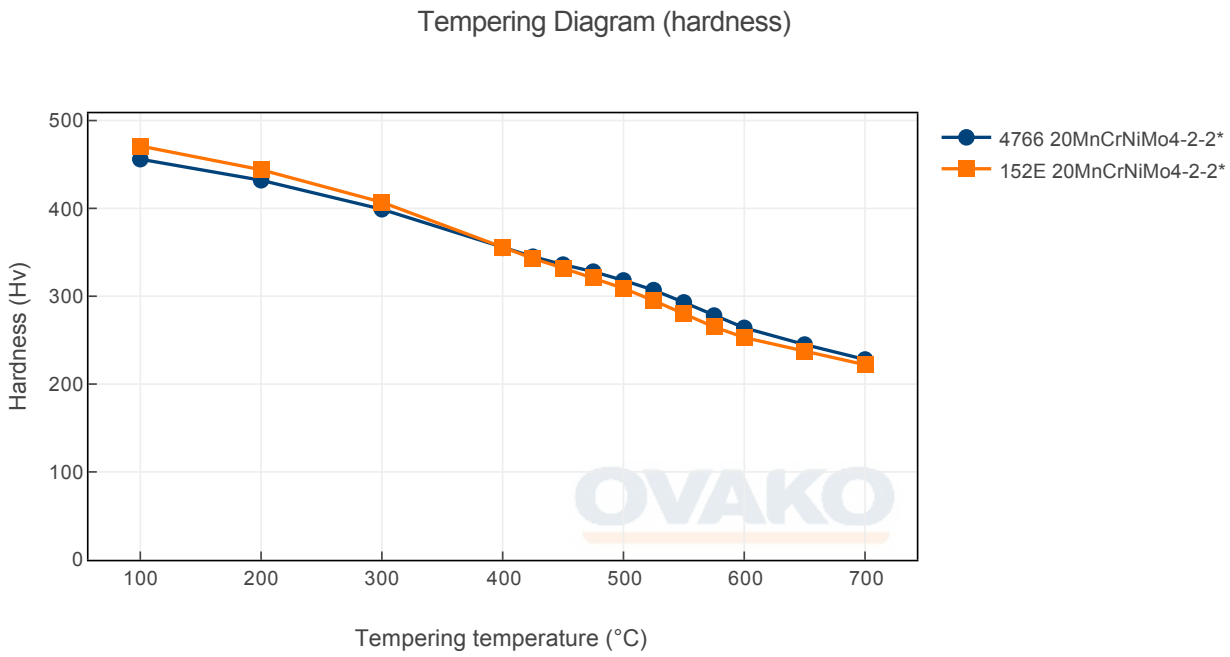
$Rp_{0.2}$ * R_{eh}, ** R_{el}

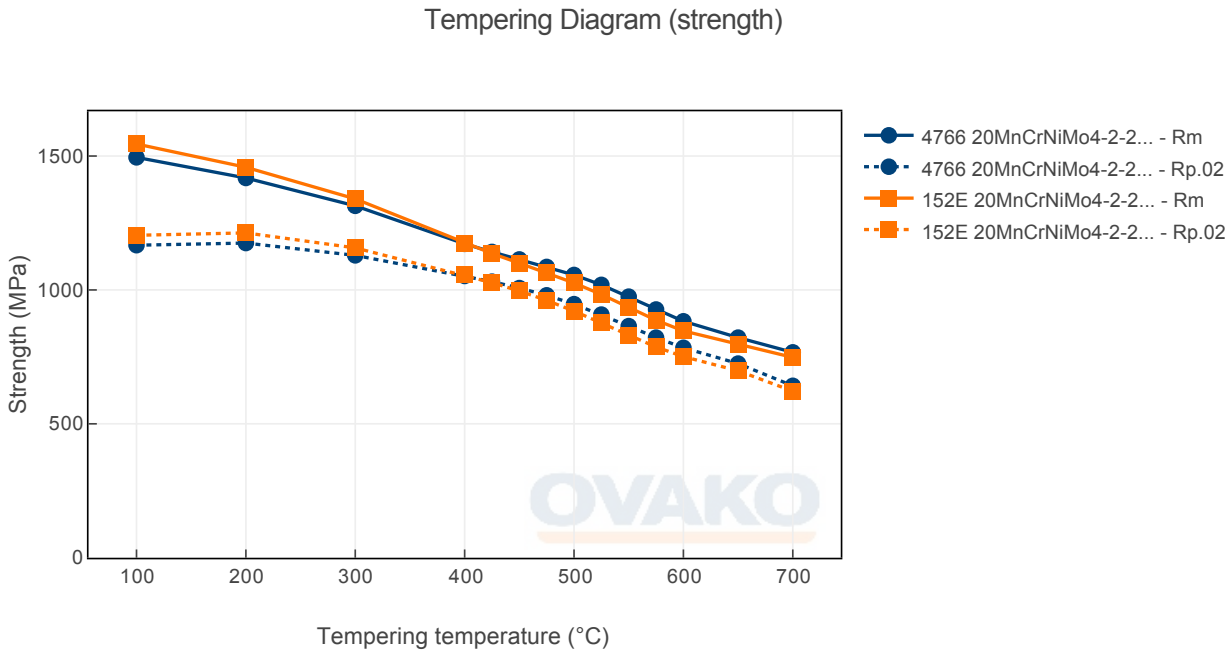
Transformation temperatures

	Temperature °C
MS	397
AC1	725
AC3	828

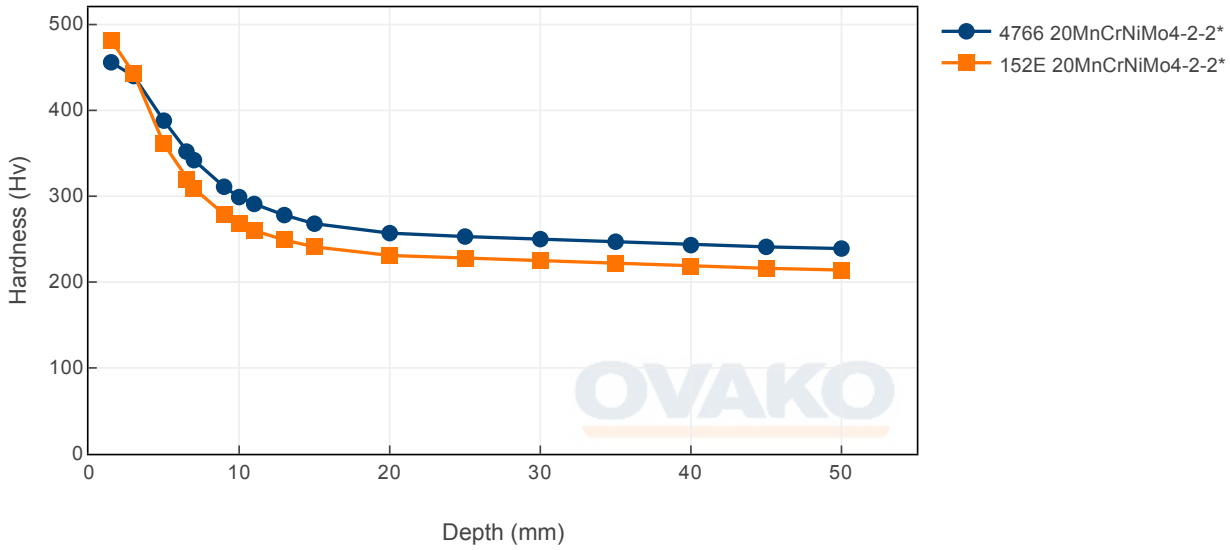
Heat Treatment Guide generated Graphs

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.





Jominy


Hardness (Hv)
500
400
300
200
100
0
0
10
20
30
40
50
Depth (mm)
4766 20MnCrNiMo4-2-2*
152E 20MnCrNiMo4-2-2*
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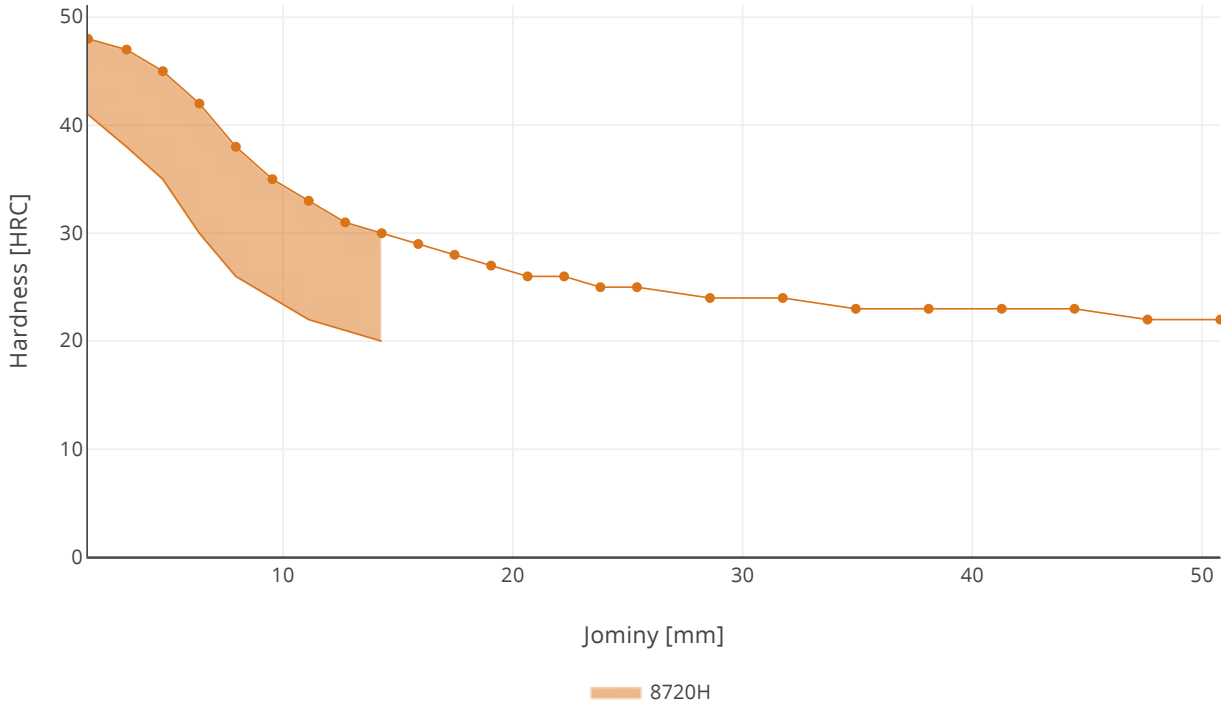
Hardenability



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.

In many international comparisons the crude steel Scope 1-2 emission is a key parameter, ie. the CO_2 emission from the steel works itself.
As of 1 January 2022 we carbon offset all our scope 1 and 2 volume shown below.

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)
152E	Round bar	+AR	686	290
152E	Round bar	+SA	690	291
152E	Tube,wall	+AR	708	306
152E	Tube,wall	+SA	710	306
4766	Round bar	+AR	590	288
4524	Round bar	+AR	609	307

As of 1 January 2022 we use carbon offset for all our scope 1- 2 emissions, so in practice the climate compensated data is the same as the full Scope 3 level.
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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