Material data sheet
Steel grade

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OVAKO

38MnVS6 All

General Information

Grade 38MnVS6 is a micro-alloyed medium carbon steel for general purposes. The steel is recommended for applications demanding high mechanical properties and smooth surfaces.

482A - Ingot cast variant

7221 - Continuous cast variant.

SB9857 - Continuous cast variant.

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

Similar designations

39MnV5, 1.1303

Chemical composition

Variant	Cast	Di	Weldability		C%	Si%	Mn%	P%	S%	Cr%	Ni%	Mo%	V%	Cu%	Al%	N%
482A	IC	3.5	CEV 0.75_{max}	Min	0.37	0.35	1.25	-	0.020	0.20	0.15	-	0.110	-	-	-
			Pcm 0.53_{max}	Max	0.40	0.42	1.35	0.025	0.028	0.26	0.20	0.05	0.150	-	-	-
7221	CC	2.81	CEV 0.68_{max}	Min	0.36	0.30	1.00	-	0.010	-	-	0.02	0.100	-	0.010	0.0100
			Pcm 0.498_{max}	Max	0.41	0.50	1.40	0.025	0.025	0.30	-	0.06	0.200	-	0.040	0.0180
SB9857	CC		CEV 0.7_{max}	Min	0.37	0.30	1.20	-	-	-	-	-	0.110	-	-	-
			Pcm 0.51_{max}	Max	0.43	0.50	1.40	0.025	0.030	0.30	-	-	0.160	-	-	-
38MnVS6 EN 10267:1998	Std		CEV 0.72_{max}	Min	0.34	0.15	1.20	-	0.020	-	-	-	0.080	-	-	-
			Pcm 0.5_{max}	Max	0.41	0.80	1.60	0.025	0.060	0.30	-	-	0.200	-	-	-

Mechanical Properties

Variant	Condition	Format	Dimension [mm]	Yield strength min [MPa]	Tensile strength [MPa]	Elongation A_5 [%]	Reduction of area Z_{min} [%]	Hardness	Impact (ISO-V) $strength_{min}$
482A	+AR	Round bar	90 < 140	580*	850-1000	14	-	< 300 HB	20 °C 20 J (long)
7221	+AR	Round bar	22 < 120	580	850-1000	12	25	250-300 HB	-
SB9857	+AR	Round bar	20 < 95	580**	850-1000	14	-	250-300 HB	0 °C 0 J (long)
38MnVS6 EN 10267:1998	+AR	All formats	-	520**	800-950	12	25	-	-

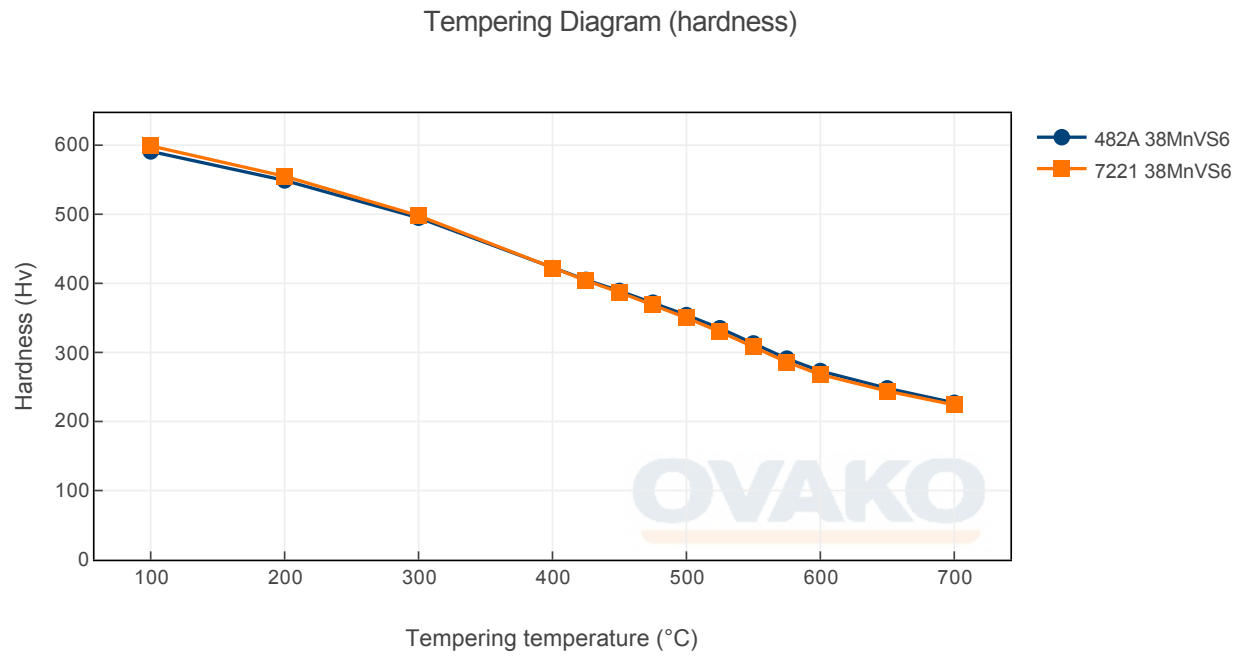
$Rp_{0.2}$ * R_{eh}, ** R_{el}

Transformation temperatures

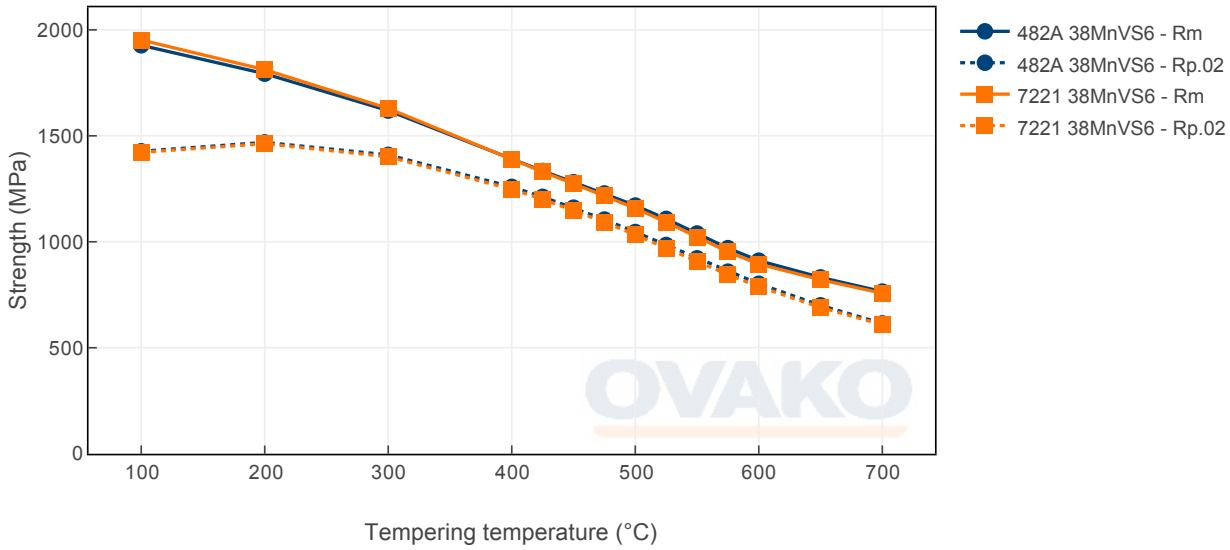
	Temperature °C
MS	330
AC1	720
AC3	780

Heat Treatment Guide generated Graphs

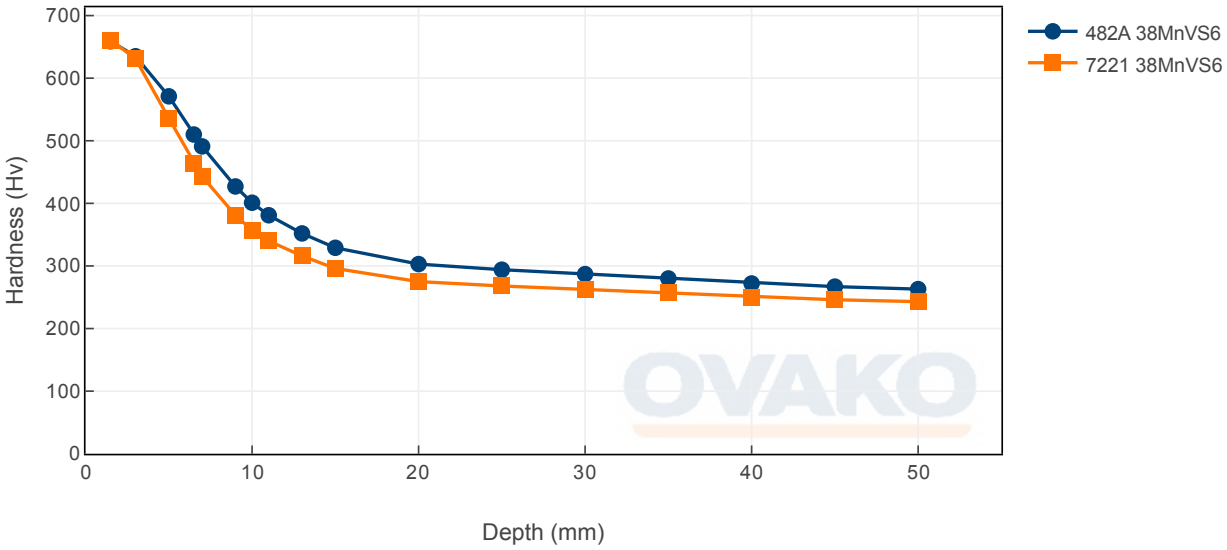
The following graphs are generated from a theoretical model. For further info see the Heat treatment guide module. Select a specific grade version for individual display.



Tempering Diagram (strength)



Jominy


Hardness (Hv)
700
600
500
400
300
200
100
0
0
10
20
30
40
50
Depth (mm)
482A 38MnVS6
7221 38MnVS6

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)
482A	Round bar	+AR	610	214
482A	Round bar	+N	616	215
482A	Tube,wall	+AR	627	244
482A	Tube,wall	+N	638	225
SB9857	Round bar	+AR	407	187
7221	Round bar	+AR	499	215

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:

Via e-mail: info@ovako.com

Via telephone: +46 8 622 1300

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

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