MATERIAL DATA SHEET

STEEL GRADE

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OVAKO

16MnCrS5 All

General Information

16MnCrS5 is a grade with improved machinability. It is recommended for applications with high demands on mechanical properties, machinability and surface quality. It is also suitable for case hardening and has good weldability.

M-Steel®

The basis for the concept is that non-metallic inclusions are modified and controlled with calcium treatment in a way to minimize tool wear and to maximize chip control in machining operations. Our M-Steel treatment can be applied to any steel grade.

Similar designations

18MnCr5-4 (EN10027), 16MnCr5, 1.7139, 1.7131, SB9218

Chemical composition

Variant	Cast	Di	Weldability		C %	Si %	Mn %	P %	S %	Cr %	Cu %	Al %
4306	CC	1.85	CEV 0.59_{max}	Min	0.14	0.10	1.00	-	0.020	0.80	-	0.005
			Pcm 0.29_{max}	Max	0.18	0.40	1.35	0.025	0.040	1.10	0.35	0.050
4316	CC	1.85	CEV 0.59_{max}	Min	0.14	0.15	1.10	-	0.025	0.90	-	0.015
			Pcm 0.29_{max}	Max	0.18	0.40	1.35	0.035	0.040	1.10	0.35	0.050
SB16MnCrS5	CC		CEV 0.58_{max}	Min	0.16	0.15	1.15	-	0.025	0.90	-	0.015
			Pcm 0.3_{max}	Max	0.19	0.35	1.30	0.035	0.040	1.10	0.35	0.050
EN ISO 683-3	Std		CEV $_{max}$	Min	0.14	0.15	1.00	-	0.020	0.80	-	-
			Pcm $_{max}$	Max	0.19	0.40	1.30	0.025	0.040	1.10	0.40	-

Mechanical Properties

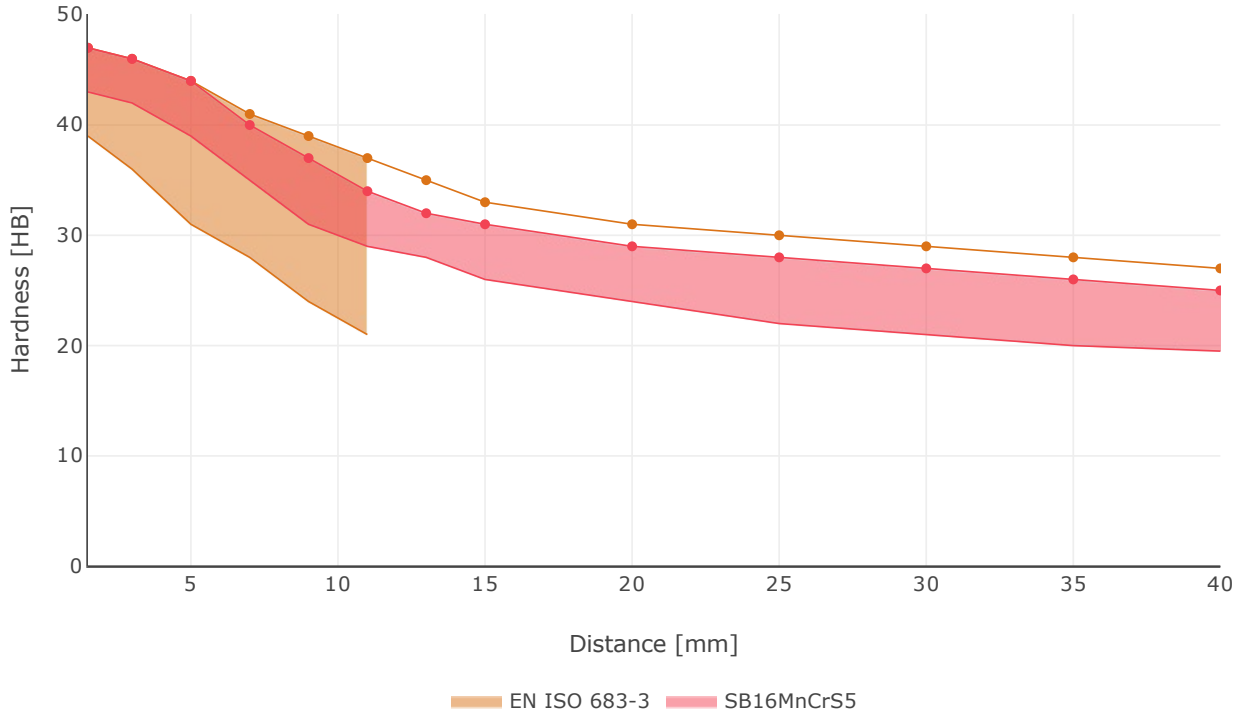
Variant	Condition	Format	Dimension [mm]	Yield strength min [MPa]	Tensile strength [MPa]	Elongation A_5 [%]	Hardness
4306	+AR		25 < 160	-	-	-	< 230 HB
	+A	Round bar	25 < 160	-	-	-	< 150 HB
4316	+AR		25 < 160	-	-	-	< 230 HB
	+A	Round bar	25 < 160	-	-	-	< 150 HB
SB16MnCrS5	+AR	Flat bar	< 100	350**	560-720	15	< 225 HB

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

Transformation temperatures

	Temperature °C
MS	418
AC1	738
AC3	822

Hardenability



EN ISO 683-3 data for +H band

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)
SB16MnCrS5(M)	Round bar	+AR	427	197

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/