

## STEEL GRADE

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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 <sub>max</sub>	Min	0.14	0.10	1.00	-	0.020	0.80	-	0.005
			Pcm 0.29 <sub>max</sub>	Max	0.18	0.40	1.35	0.025	0.040	1.10	0.35	0.050
4316	CC	1.85	CEV 0.59 <sub>max</sub>	Min	0.14	0.15	1.10	-	0.025	0.90	-	0.015
			Pcm 0.29 <sub>max</sub>	Max	0.18	0.40	1.35	0.035	0.040	1.10	0.35	0.050
SB16MnCrS5	CC		CEV 0.58 <sub>max</sub>	Min	0.16	0.15	1.15	-	0.025	0.90	-	0.015
			Pcm 0.3 <sub>max</sub>	Max	0.19	0.35	1.30	0.035	0.040	1.10	0.35	0.050
EN ISO 683-3	Std		CEV <sub>max</sub>	Min	0.14	0.15	1.00	-	0.020	0.80	-	-
			Pcm <sub>max</sub>	Max	0.19	0.40	1.30	0.025	0.040	1.10	0.40	-

## Mechanical Properties

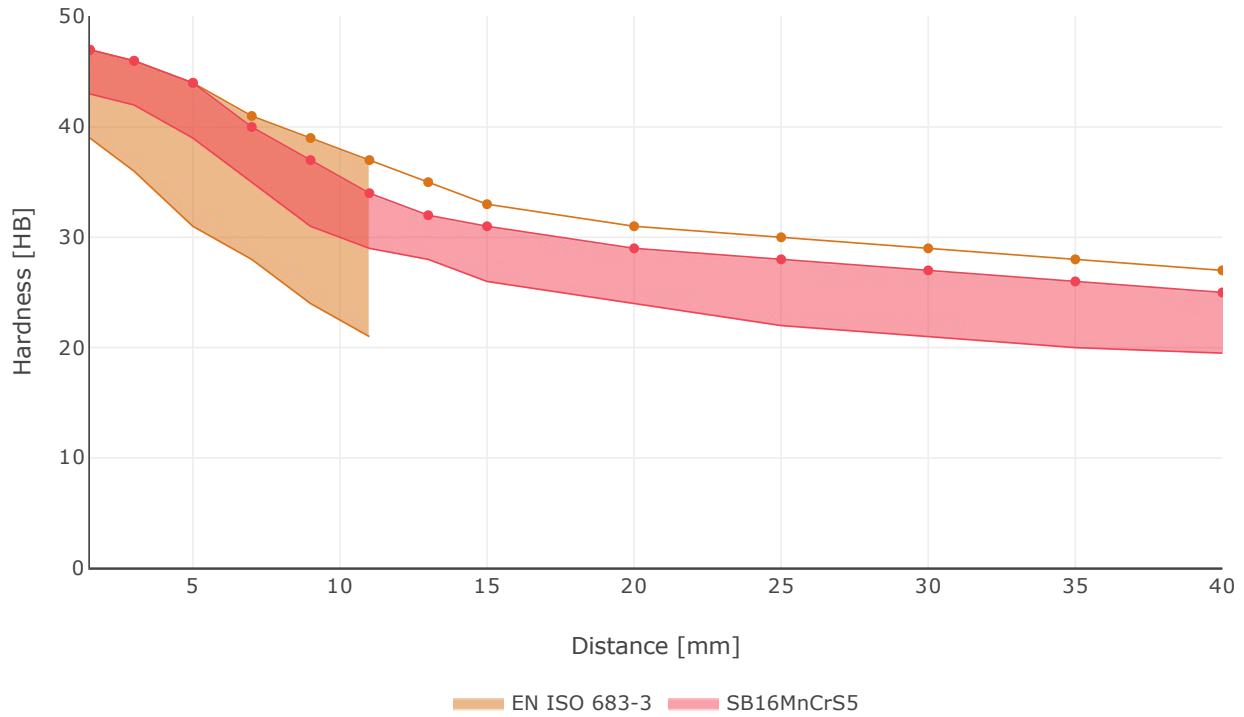
Variant	Condition	Format	Dimension [mm]	Yield strength min [MPa]	Tensile strength [MPa]	Elongation A <sub>5</sub> [%]	Hardness
4306	+AR		25 < 160	-	-	-	< 230 HB
	+A	Round bar	25 < 160	-	-	-	< 150 HB
4316	+AR		25 < 160	-	-	-	< 230 HB
	+A	Round bar	25 < 160	-	-	-	< 150 HB
SB16MnCrS5	+AR	Flat bar	< 100	350**	560-720	15	< 225 HB

*RP<sub>0.2</sub> \* R<sub>eh</sub> \*\* R<sub>el</sub>*

## 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<sub>2</sub> 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 resistivity Ambient 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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Via telephone: +46 8 622 1300

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

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