

# 16MnCrS5 All

## General Information

16MnCr5(M) 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.

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

## Similar designations

18MnCr5-4 (EN10027)

## Chemical composition

Variant	Cast	Di	Weldability		C %	Si %	Mn %	P %	S %	Cr %	Cu %	Al %
16MnCr5, 4306 (M)	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
16MnCr5, 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(M)	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
16MnCrS5 EN 10084:2008(ref)	Std		CEV 0.56 <sub>max</sub>	Min	0.14	-	1.00	-	0.020	0.80	-	0.015
			Pcm 0.29 <sub>max</sub>	Max	0.19	0.40	1.30	0.025	0.040	1.10	-	0.080

## Mechanical Properties

Variant	Condition	Format	Dimension [mm]	Yield strength min [MPa]	Tensile strength [MPa]	Elongation A <sub>5</sub> [%]	Hardness
16MnCr5, 4306 (M)	+AR		25 < 160	-	-	-	< 230 HB
	+A	Round bar	25 < 160	-	-	-	< 150 HB
16MnCr5, 4316	+AR		25 < 160	-	-	-	< 230 HB
	+A	Round bar	25 < 160	-	-	-	< 150 HB
SB16MnCrS5(M)	+AR	Flat bar	< 100	350**	560-720	15	< 225 HB
16MnCrS5 EN 10084:2008(ref)	+AR	Flat bar	-	-	-	-	< 250 HB

*R<sub>p0.2</sub>* \* *R<sub>eh</sub>*, \*\* *R<sub>el</sub>*

## Transformation temperatures

	Temperature °C
MS	418
AC1	738
AC3	822

## Hardenability

### Other properties (typical values)

Youngs module (GPa)	Poisson's ratio (-)	Shear module (GPa)	Density (kg/m <sup>3</sup> )
210	0.3	80	7800
Average CTE 20-300°C (µm/m°C)	Specific heat capacity 50/100°C (J/kg°C)	Thermal conductivity Ambient temperature (W/m°C)	Electrical resistivity Ambient temperature (µΩm)
12	460 - 480	40 - 45	0.20 - 0.25

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