

33MnCrB5-2 All

General Information

WR-Steel®

(Wear resistant) WR-steel, stands for wear-resistant steel. This group of steel includes a broad range of grades with a wide range of hardness levels 350 – 650 HV, dimensions and steel grades designed to give you a wear-resistant advantage when making product exposed to a high degree of wear and where service life is important. WR-steels are characterised by consistent properties and cost effectiveness due to optimized alloy content for different end applications.

Similar designations

15B35H


Chemical composition

Variant	Cast		C%	Si%	Mn%	P%	S%	Cr%	B%
30MnCrB5* / SB9661	CC	Min	0.27	0.15	1.20	-	-	0.40	0.0015
		Max	0.32	0.35	1.40	0.035	0.035	0.60	0.0040
33M13CB / SB9669	CC	Min	0.30	0.15	1.20	-	-	0.40	0.0020
		Max	0.36	0.35	1.40	0.035	0.035	0.60	0.0050
33MnCrB5-2(EN ISO 683-2)	Std	Min	0.30	-	1.20	-	-	0.30	0.0008
		Max	0.36	0.40	1.50	0.025	0.035	0.60	0.0050

Transformation temperatures

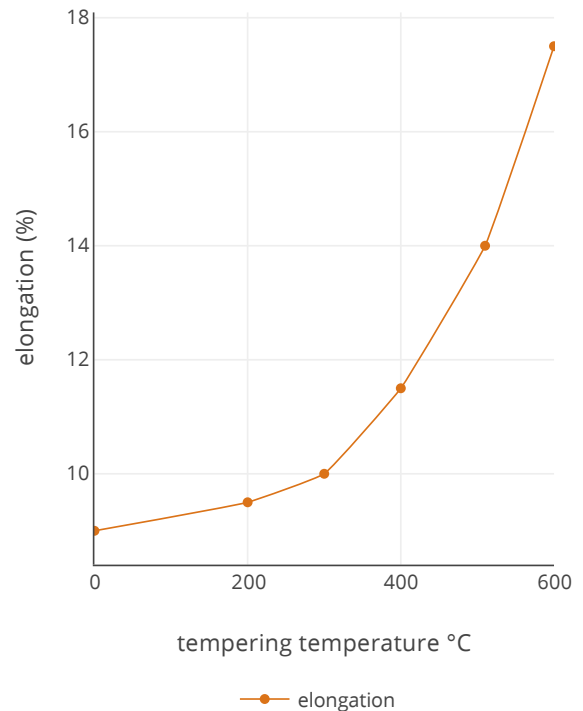
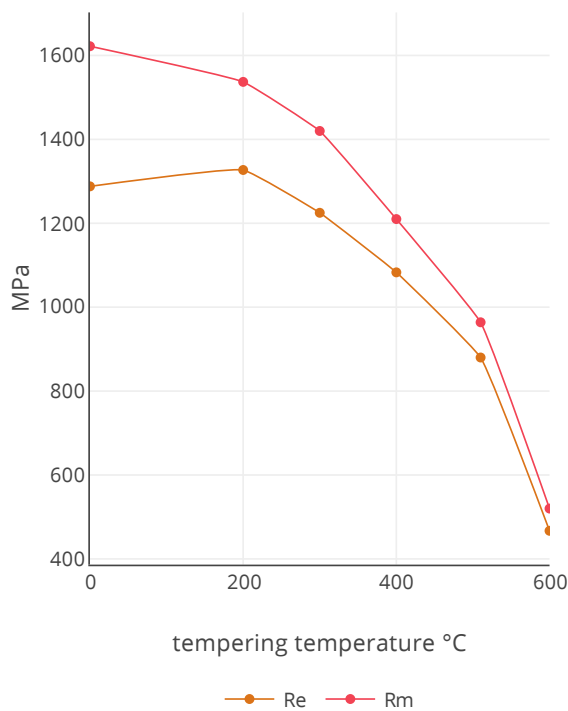
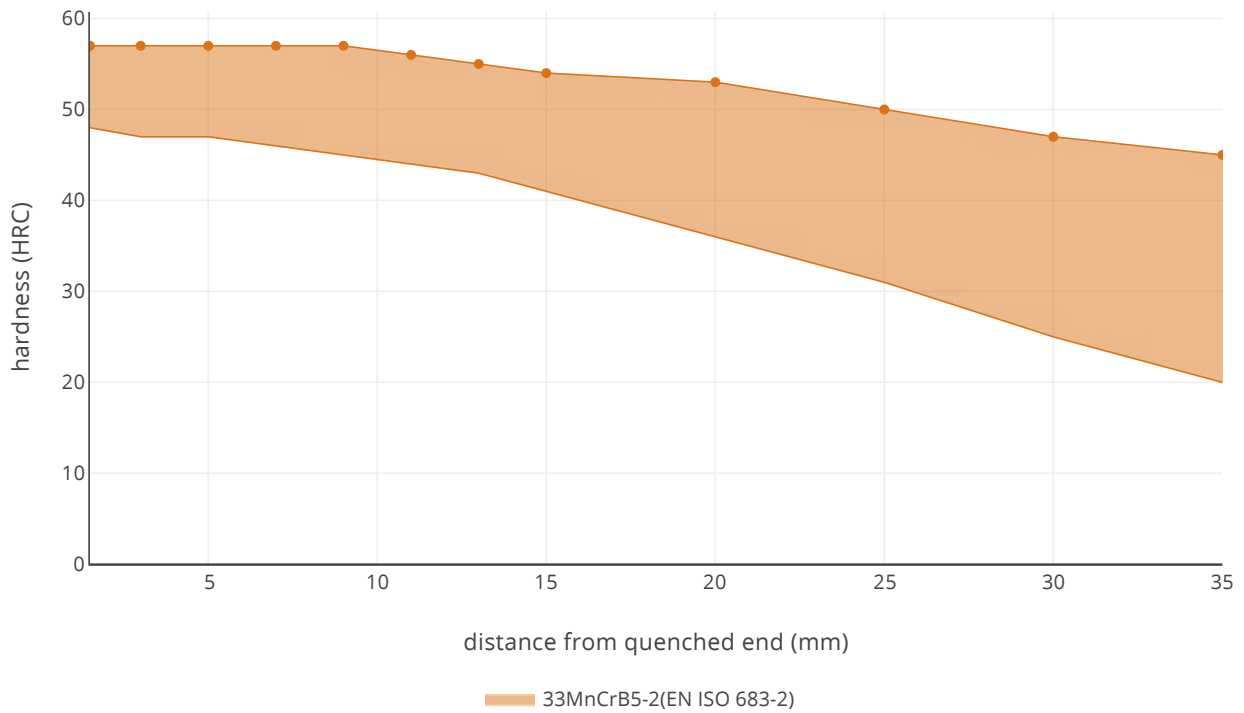
	Temperature °C
MS	368
AC1	720
AC3	781

Heat treatment recommendations

Treatment	Condition 	Temperature cycle	Cooling/quenching
Quench & Tempering	+QT	Heating to 880 - 900	water or in oil

A tempering is recommended after quenching. For maximum hardness the tempering should be 200 °C, for increased toughness the tempering temperature should be higher.

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 CO₂ 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
CO ₂ e/kg	120	62	76

To get the full picture of our products environmental impact we have to look at all of our CO₂ 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)
SB28M13CB/9667	Flat bar	+AR	376	189

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

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