

S400* All

General Information

Grade SB400D is a micro-alloyed steel for general purposes with specified mechanical properties and impact requirements. The material is delivered as rolled and suitable for welding. The mechanical properties may change if the material is heat-treated.

Grade SB420 is a micro-alloyed steel for general purposes with specified mechanical properties and impact requirements. The material is delivered as rolled. The mechanical properties may change if the material is heat-treated.

** Designation followed by "" is not an official EN standard grade but named according to the rules in EN 10027.*

Similar designations

2142

Chemical composition

Variant	Cast	Weldability		C %	Si %	Mn %	P %	S %	Ni %	Mo %	V %	Ti %	Cu %	Al %	N %
SB400D / 9883	CC	CEV 0.48 _{max}	Min	-	-	-	-	-	-	-	-	-	-	-	-
		Pcm 0.31 _{max}	Max	0.20	0.50	1.60	0.035	0.035	-	-	-	-	-	-	0.0200
S420N	CC	CEV 0.6 _{max}	Min	-	-	1.00	-	-	-	-	-	-	-	-	-
		Pcm 0.35 _{max}	Max	0.20	0.60	1.70	0.035	0.030	0.08	0.10	0.200	0.030	0.55	0.020	0.0250
SB400	CC	CEV 0.5 _{max}	Min	-	-	-	-	-	-	-	0.070	-	-	-	-
		Pcm 0.32 _{max}	Max	0.20	0.50	1.60	0.035	0.035	-	-	0.150	-	-	-	0.0200

Mechanical Properties

Variant	Condition ⓘ	Format	Dimension [mm]	Yield strength min [MPa]	Tensile strength [MPa]	Elongation A ₅ [%]	Hardness	Impact (ISO-V) strength _{min}
SB400D / 9883	+AR	Flat bar	10 < 15	420**	530-600	20	160-180 HB	-20 °C 27 J (long)
		Flat bar	15 < 30	400**	530-660	20	160-200 HB	-20 °C 27 J (long)
		Flat bar	> 30	400**	530-660	20	160-200 HB	-20 °C 27 J (long)
	+N	Flat bar	> 30	330**	450-580	25	135-175 HB	-20 °C 60 J (long)
S420N	+AR	Flat bar	< 16	420**	520-680	19	160-205 HB	-20 °C 40 J (long)
		Flat bar	16 < 40	400**	520-680	19	160-205 HB	-20 °C 40 J (long)
		Flat bar	40 < 63	390**	520-680	19	160-205 HB	-20 °C 40 J (long)
		Flat bar	63 < 80	370**	520-680	18	160-205 HB	-20 °C 40 J (long)
		Flat bar	80 < 100	360**	520-680	18	160-205 HB	-20 °C 40 J (long)
SB400	+AR		-	400**	< 530	20	< 160 HB	-

R_{p0.2} * *R_{eh}*, ** *R_{el}*

Transformation temperatures

	Temperature °C
MS	400
AC1	720
AC3	820

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 (CO ₂ e kg /1000 kg steel)	Climate compensated Net emission = Scope 3 (CO ₂ e kg /1000 kg steel) Scope 1 - 2 = 0 (compensated)
SB400	Flat bar	+AR	376	189
S420N	Flat bar	+N	387	190

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/m ³)
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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