

9MnV5* All

General Information

9MnV5* is also referred to as S355L4. It is a micro-alloyed steel for general purposes where fantastic impact properties at low temperatures as well as defined mechanical properties are demanded. It is especially suitable for this sections. It has a tight chemical composition as well as low levels of residual elements to give small variations in the mechanical properties. The low carbon equivalent CEV makes it suitable for welding.

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

Similar designations

AH36, S355J2

Chemical composition

Variant	Cast	Weldability		C %	Si %	Mn %	P %	S %	Cr %	V %	Al %
S355L4	CC	CEV 0.4 _{max}	Min	0.07	0.25	1.20	-	-	-	0.070	0.020
		Pcm 0.2 _{max}	Max	0.10	0.50	1.40	0.030	0.015	0.15	0.110	0.050

Mechanical Properties

Variant	Condition	Format	Dimension [mm]	Yield strength min [MPa]	Tensile strength [MPa]	Elongation A ₅ [%]	Reduction of area Z _{min} [%]	Impact (ISO-V) strength _{min}
S355L4	+AR	All formats	5 < 16	355**	470-630	23	0	-40 °C 60 J (long)
		All formats	16.1 < 40	345**	470-630	22	-	-40 °C 60 J (long)
		All formats	40.1 < 63	335	470-630	21	-	-40 °C 60 J (long)
		All formats	63.1 < 80	325**	470-630	21	-	-40 °C 60 J (long)

*RP_{0.2} * R_{eh}, ** R_{el}*

Round bars start at 14 mm as minimum dimension. Maximum thickness for flat bar is 80 mm for widths 95-160 mm.

Transformation temperatures

	Temperature °C
MS	461
AC1	719
AC3	840

The grade is not intended for heat treatment operations. Normalizing is not necessary as normalised rolling is performed.

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)
S355L4	Flat bar	+AR	360	172

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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