

## STEEL GRADE

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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 <sub>max</sub>	Min	0.07	0.25	1.20	-	-	-	0.070	0.020
		Pcm 0.2 <sub>max</sub>	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 <sub>5</sub> [%]	Reduction of area Z <sub>min</sub> [%]	Impact (ISO-V) strength <sub>min</sub>
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<sub>0.2</sub> \* R<sub>eh</sub> \*\* R<sub>el</sub>*

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](#).

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)
S355L4	Flat bar	+AR	393

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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