

4CrMn16-4* All

General Information

9259, also known as **Imacro EL700**, is a grade with a low carbon content which gives the steel a very good toughness in as rolled condition.

8302, also know as **Imacro M**, is a weldable quenched and tempered steel with good toughness. The structure in the hardened condition is lath martensite.

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

M-Steel®

The basis for the concept is that non-metallic inclusions are modified and controlled with calcium treatment in a way to minimize tool wear and to maximize chip control in machining operations. Our M-Steel treatment can be applied to any steel grade.

Chemical composition

Variant	Cast	Di	Weldability		C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %	Cu %	Al %	Nb %	N %
9259	CC		CEV 1.03 _{max}	Min	0.04	0.10	0.85	-	-	3.75	-	-	-	0.020	0.040	-
			Pcm 0.27 _{max}	Max	0.06	0.40	1.15	0.025	0.020	4.25	0.40	0.12	0.30	0.035	0.080	0.0150
8302	CC	1.44	CEV 1.05 _{max}	Min	0.03	0.10	0.85	-	-	3.75	-	-	-	-	0.040	-
			Pcm 0.32 _{max}	Max	0.06	0.40	1.15	0.025	0.035	4.40	-	-	-	-	0.080	-

Mechanical Properties

Variant	Condition	Format	Dimension [mm]	Yield strength min [MPa]	Tensile strength [MPa]	Elongation A ₅ [%]	Reduction of area Z _{min} [%]	Hardness	Impact (ISO-V) strength _{min}
9259	+AR	Flat bar	< 20	650**	800-1140	12	-	240-345 HV	-20 °C 27 J (long)
		Flat bar	20 < 50	600**	800-1140	8	-	240-345 HV	-20 °C 27 J (long)
8302	+AR	Round bar	25 < 140	-	-	-	-	< 320 HB	-
	+QT	Round bar	25 < 140	700	800-1000	12	55	< 290 HB	-40 °C 35 J (long)

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

Transformation temperatures

	Temperature °C
MS	452
AC1	773
AC3	926

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)
Imacro M, 8302	Round bar	+AR	579	297
Imacro M, 8302	Round bar	+QT	843	256

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:

Via e-mail: info@ovako.com

Via telephone: +46 8 622 1300

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

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