MATERIAL DATA SHEET

STEEL GRADE

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Imacro OVAKO

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.

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_2 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)
Imacro M, 8302	Round bar	+AR	579	297
Imacro M, 8302	Round bar	+QT	843	256

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 resistivityAmbient 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/