MATERIAL DATA SHEET

STEEL GRADE

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OVAKO

85MnCrV5* All

General Information

Steel grade A810 is our standard grinding ball steel steel with a hardness in quenched and tempered condition between 62 - 66 HRC.

Grinding balls manufactured by Ovako maintain the same wear resistance from start to finish

Chemical composition

Variant	Cast		C %	Si %	Mn %	P %	S %	Cr %	V %
A810 / 9888	CC	Min	0.79	0.15	0.65	-	-	0.15	0.050
		Max	0.88	0.35	0.95	0.030	0.030	0.30	0.110

Mechanical Properties

Variant	Condition	Format	Dimension [mm]	Hardness
A810 / 9888	+QT	Round bar	20 < 39	63-66 HRC
		Round bar	40 < 70	62-66 HRC
	+AR	Round bar	20 < 70	290-340 HB

*$Rp_{0.2}$ * R_{eh}, ** R_{el}*

Transformation temperatures

	Temperature °C
MS	170
AC1	730
AC3	740

Heat treatment recommendations

Treatment	Condition	Temperature cycle	Cooling/quenching
Hot forging	+AR	Soaking 900 - 1050ºC	
Tempering	+QW	Tempering at 150 - 200ºC	In air

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)
A810	Round bar	+AR	395	175

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/