

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

*R<sub>p0.2</sub> \* R<sub>eh</sub>, \*\* R<sub>el</sub>*

Transformation  
temperatures

	Temperature °C
MS	170
AC1	730
AC3	740

Heat treatment recommendations

Treatment	Condition ⓘ	Temperature cycle	Cooling/quenching
Hot forging	+AR	Soaking 900 - 1050°C	
Tempering	+QW	Tempering at 150 - 200°C	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
CO <sub>2</sub> e/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 (CO <sub>2</sub> e kg /1000 kg steel)	Climate compensated Net emission = Scope 3 (CO <sub>2</sub> e 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/m <sup>3</sup> )
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/>

### Disclaimer

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