

Material data sheet

Steel grade

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 Forsbacka kulverk maintain the same wear resistance from start to finish

Chemical composition

Variant	Cast		C %	Si %	Mn %	P %	S %	Cr %	V %
A810	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	+QT	Round bar	20 < 39	63–66 HRC
		Round bar	40 < 70	62–66 HRC
	+AR	Round bar	20 < 70	290–340 HB

R_{p0.2} * R_{eh} **R_{el}

Transformation temperatures

Variant	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

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:

Via e-mail: sales@kulverket.se

Via telephone: +46 (0)70-287 31 10

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Grinding Media

Forsbacka Kulverk supplies grinding balls for mining and minerals processing industry



Grinding balls

Grinding balls are delivered as rolled/forged, or as quenched and tempered

Standard

Grade: A810 (Q+T)
Surface hardness: 62 - 66 HRC
Core hardness: 60 - 65 HRC
AVH 61 - 65 HRC
(Average volumetric hardness)

The A810 grinding ball maintains the same wear resistance from start to end.

Grinding balls in other steel grades can be supplied upon request.

Following nominal standard diameters are available:

Ø	Weight per ball	Theoretical weight	Number of balls per ton	Surface area per ball	Surface area per m ³
mm	g	kg/m ³	balls	cm ²	cm ²
25	64	4520	~16000	19.6	1390x10 ³
30	110	4520	~9100	28.3	1158x10 ³
35	175	4520	~5700	38.5	993x10 ³
40	261	4520	~4000	50.2	869x10 ³
50	510	4520	~2000	78.5	695x10 ³
60	882	4520	~1100	113	579x10 ³

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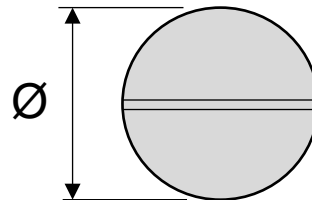
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Diameter Tolerance

Typ	Tolerans
A-810, 25	+/- 1,5mm
SEK 30	+/- 0,7mm
REV 30	+/- 0,7mm
MAL 30	+/- 1,5mm
A-810, 35	+/- 1,5mm
SEK 40	+/- 1,5mm
A-810, 40	+/- 1,5mm
A-810, 50	+/- 2mm
A-810, 60	+/- 2mm



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Forsbacka Kulverk Sustainability – Environmental Impact Data

At Forsbacka Kulverk sustainability and reduction of our environmental impact are 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, i.e.. The CO₂ emission from the steel works itself.

As of January 2022, we carbon offset all our scope 1 and 2 volumes shown below.

Steel Works	Hofors	Smedjebacken	Imatra
C02e/kg	120	62	76

To get the full picture of our product's 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, e.g. alloys, scope 3.

Steel Grade	Format	Condition	Scope 1-3 (C02e kg/ 1000 kg steel)	Climate Compensated Net emission = Scope 3 (C02e kg/1000 kg steel) Scope 1-200 (compensated)
A810	Round bar	+AR	362	176

As of January 2022, we use carbon offset for all of our Scope 1-2 emissions, so in practice, the climate-compensated data is the same as the full Scope 3 level.

All the above data are to be seen as typical values for the specified format and condition. For detailed information about your specific product please contact our team.

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