MATERIAL DATA SHEET

STEEL GRADE

Last revised: Fri, 31 Jan 2025 15:13:37 GMT

OVAKO

C60E All

General Information

Ovako 061 is an ingot casted steel of BQ (Bearing Quality). High hardness (approx. 60HRC) and high strength can be achieved after hardening due to the relatively high carbon content. The steel is suitable for various type of applications where high strength is needed. The steel grade fulfils most of the C60E standard and have a tighter composition range in order to have consistent properties

BQ-Steel®

BQ-Steel® is a bearing quality clean steel optimized for fatigue strength and is also ideal for new design solutions outside the bearing industry.

Similar designations

1.1221, ASTM/SAE 1060

Chemical composition

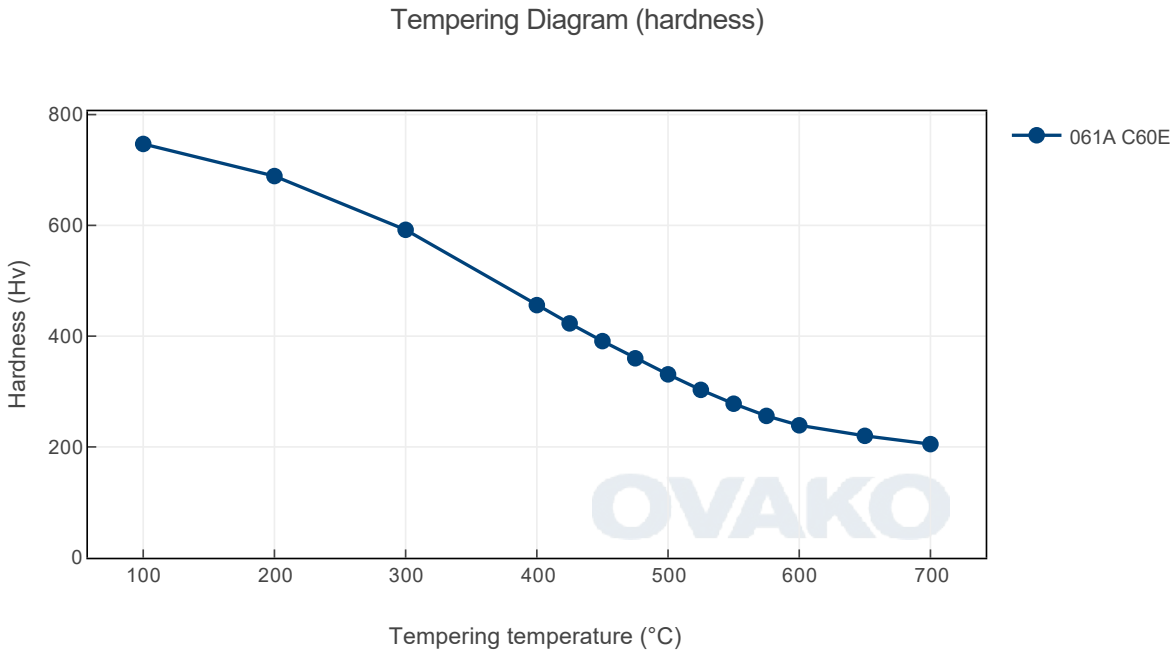
Variant	Cast	Weldability		C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %	DI %
061A	IC	CEV 0.82_{max}	Min	0.58	0.05	0.55	-	-	0.15	-	-	1.40
		Pcm 0.69_{max}	Max	0.61	0.15	0.65	0.020	0.007	0.22	0.15	0.08	1.60
C60E EN 10083-2:2006 ref	Std	CEV_{max}	Min	0.57	-	0.60	-	-	-	-	-	-
		Pcm_{max}	Max	0.65	0.40	0.90	0.030	0.035	0.40	0.40	0.10	-

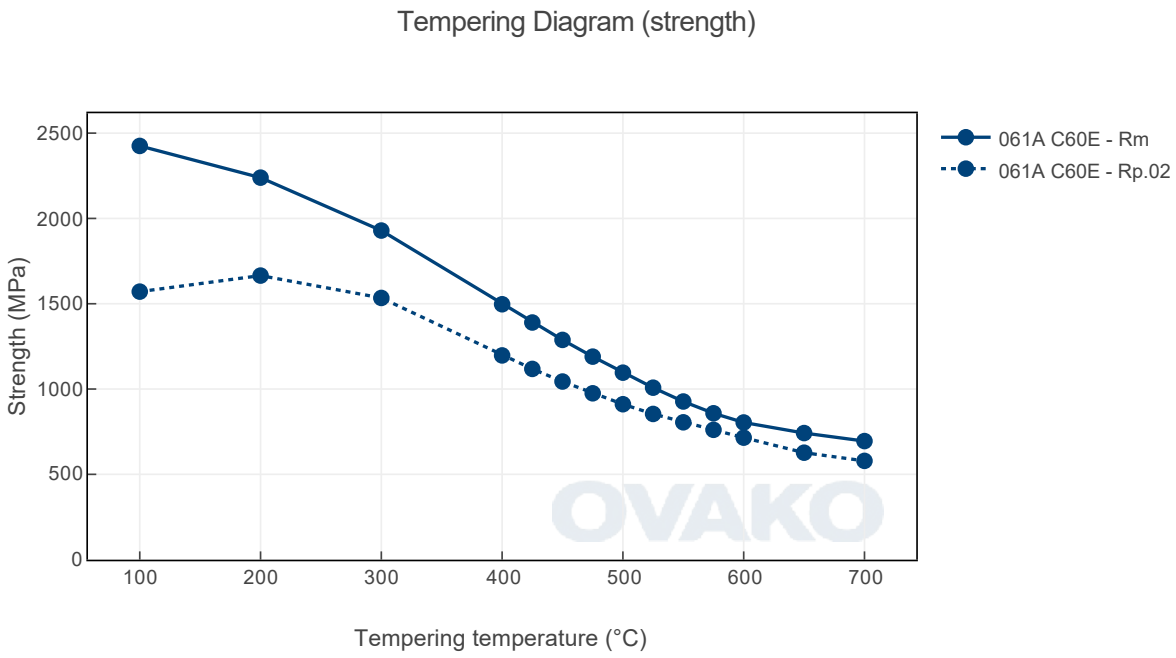
Transformation temperatures

	Temperature °C
MS	271
AC1	720
AC3	746

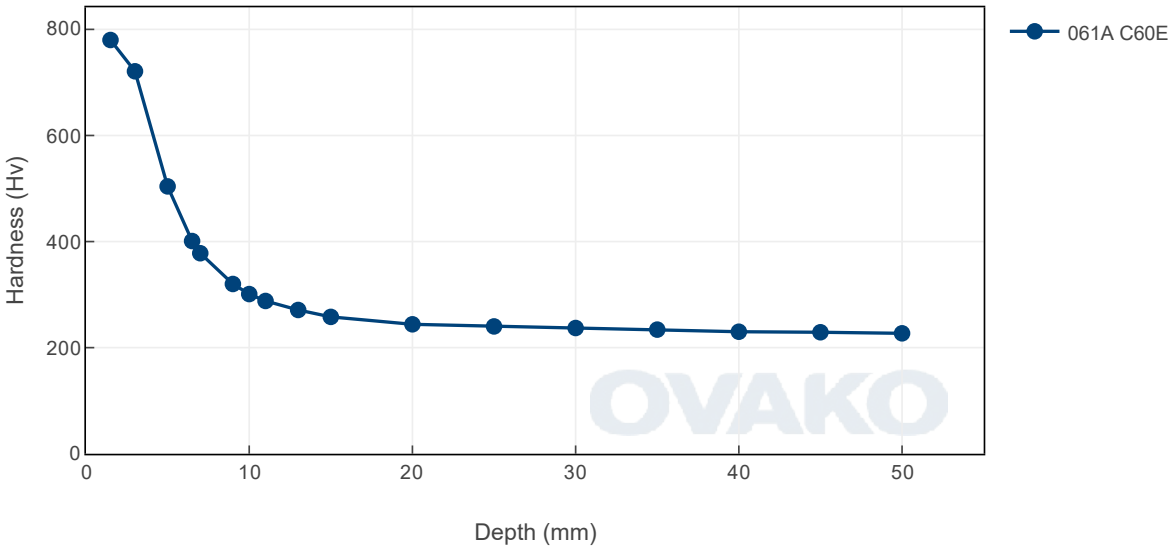
Heat Treatment Guide generated Graphs

The following graphs are generated from a theoretical model. For further info see the Heat treatment guide module. Select a specific grade version for individual display.

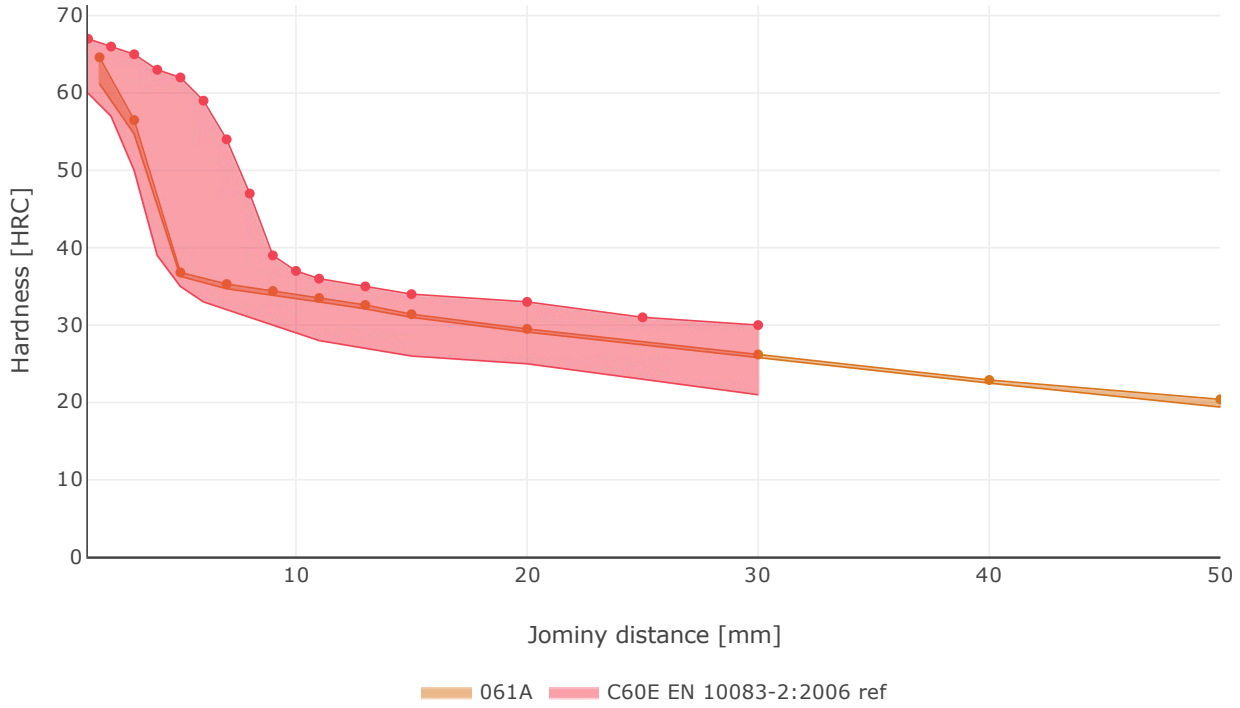




Jominy


Hardness (Hv)
800
600
400
200
0
0
10
20
30
40
50
Depth (mm)
061A C60E
OVAKO

Hardenability



Steel cleanliness

Micro inclusions									Macro inclusions	
Applied standard	ASTM E45								Applied standard	ISO 3763 (Blue fracture)
Sampling	ASTM A295								Sampling	Statistical testing on billets
Maximum average limits	A		B		C		D		Limits	< 2,5 mm/dm^2
	Th	He	Th	He	Th	He	Th	He		
	2,0	1,5	0,5	0,1	0	0	0,2	0,1		

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)
061A	Round bar	+AR	569	170
061A	Round bar	+QT	574	173
061A	Tube,wall	+AR	587	190
061A	Tube,wall	+QT	596	196

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/