



## SWT 60 Pb

### Free Cutting High Carbon Steel

#### Triebstahl

Material No.	DIN Abbreviation	AFNOR	AISI/SAE/ASTM	ISO	Euro Standard EN	Others
~ 1.0758	~ 60SPb20 (former 60 SPb 22)				60SPb20	

Distinctive feature & main attribute: a temperable, unalloyed free cutting high carbon steel with lead.

Use & application range: this quality is adapted for turned parts and test shafts.

REFERENCE ANALYSIS %	C	Si	Mn	P	S	Cr	Pb	Fe
		<b>0.60</b> <b>0.69</b>	<b>0.10</b> <b>0.30</b>	<b>0.70</b> <b>1.35</b>	<b>0.02</b> <b>0.06</b>	<b>0.18</b> <b>0.25</b>	<b>0.15</b> <b>0.25</b>	<b>0.15</b> <b>0.35</b>

EXECUTION DELIVERY FORM STANDARD SIZES AVAILABILITY	
	<ul style="list-style-type: none"> <li>• Execution in 3 m (2 m) round bars as well as in coils for Escomatic</li> <li>• Standard size in stock: see <a href="#">Product range</a></li> <li>• Other sizes on request</li> </ul>

TOLERANCES	
	<ul style="list-style-type: none"> <li>• <math>\varnothing &lt; 10.00</math> mm, cold drawn; ISO <b>h8</b></li> <li>• <math>\varnothing \geq 13.00</math> mm, cold drawn, ground, polished; ISO <b>h8</b>; surface finish Ra 0.4 (N5)</li> <li>• <math>\varnothing \geq 5.00</math> mm, eddy current checked for fissures</li> <li>• Coil; ISO <b>fg8</b></li> <li>• Tighter tolerances (up to +/- 0.002 mm) on request</li> </ul>

MECHANICAL PROPERTIES	
	At delivery status: <ul style="list-style-type: none"> <li>• Tensile strength (<math>R_m</math>): <b>650 – 900 MPa</b>, size depending</li> <li>• Alternative surface hardness: <b>55 – 61 HRC</b>, after removing the soft skin (surface decarburization)</li> <li>• Core hardening: <b>48 – 52 HRC</b>, (<math>\varnothing &lt; 10</math> mm)</li> </ul>

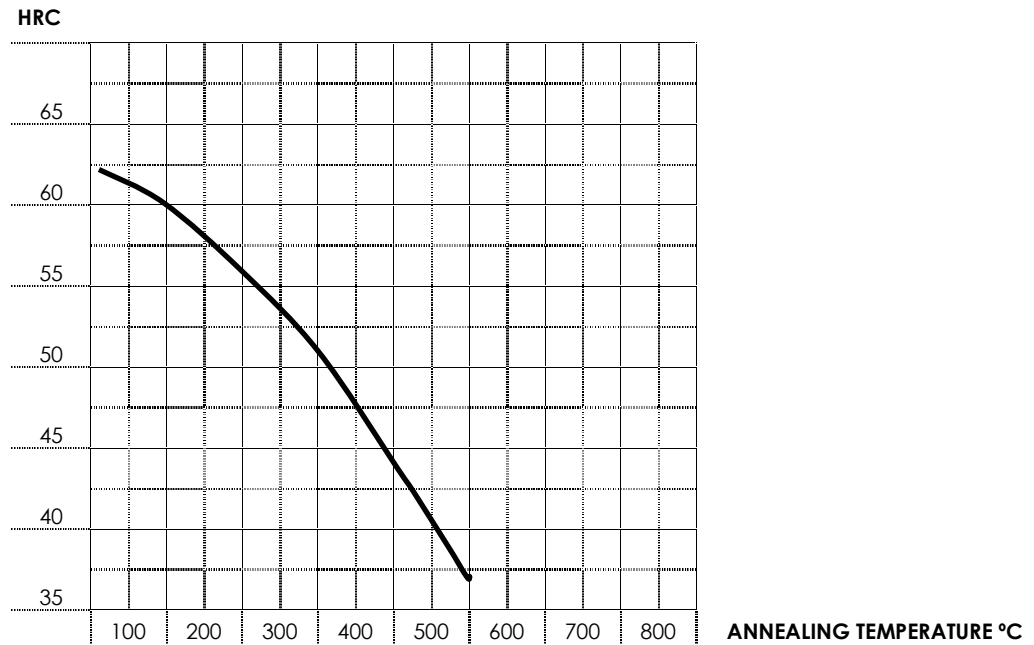
HEAT TREATMENT	
	<ul style="list-style-type: none"> <li>• Tempering in oil: 800 – 840 °C</li> <li>• Soft annealing: 650 – 720 °C</li> </ul> (Annealing as required see chart)

CUTTING RATES	
	<b><math>v_c \sim 40 – 60</math> m/min</b> , value depending on the lubrication oil, cutting tools and shape of parts. <ul style="list-style-type: none"> <li>• Cutting oil: e.g. INOX or ORTHO of Motorex</li> </ul>

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## ANNEALING CURVE

measured at the size of  $\varnothing$  5.5 mm  
tempering at 830 °C/25 min/oil



If you harden in oil, we recommend to not pass over the annealing temperature of 820 °C to avoid cracks. The water should be pre-heated at about 50 °C. The above curve indicates the results of determinate section of a curtain size of 5.50 mm. The result after heat treatment can be slightly different than shown on this curve, depending on the

Modifications will not be adjusted automatically

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