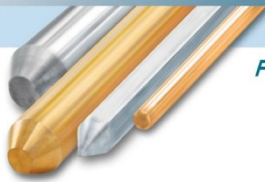


# L. KLEIN SA

ACIERS FINS ET MÉTAUX

EDELSTÄHLE UND METALLE

FINE STEEL AND METALS



## LAW 100 Pb Free Cutting High Carbon Steel

Material No.	DIN Abbreviation	AFNOR	AISI/SAE/ASTM	ISO	Euro Standards	Others
~ 1.1268+Pb A 100 Pb			~ 1095		Mh97+Pb	

Distinctive feature and main attribute: a temperable, unalloyed free cutting steel, singling out by one of the highest elastic limit and fatigue values, offering maximum surface hardness with high strength and wear resistance. It is particularly suitable for high quality intricate shapes that cannot be formed by pre-tempered steel. Generally used where hardening and tempering after forming is desired, but fatigue values and elastic limits are not critical.

Use and application range: this quality is specially designed for small high precision parts in the watch industries due to its microstructure but also for other applications such as edge tools, wear-resistant parts, high-stress flat or hot coiled springs, plow beams and shares, scraper blades, disc, mover knives, harrow teeth, blades, hand tools, bushings, drills, hay rake teeth and shims.

CHEMICAL COMPOSITION IN VOLUME PERCENTAGE	C	Si	Mn	P	Pb	S	Fe
	0.90 1.05	0.15 0.25	0.30 0.50	max. 0.035	0.20 0.30	0.06 0.07	balance

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</li><li>• Size in coils of <math>\varnothing</math> 0.30 – 3.50 mm</li><li>• Size in bars of <math>\varnothing</math> 0.50 – 14.00 mm</li><li>• Other sizes on request</li></ul>

TOLERANCES	
	<ul style="list-style-type: none"><li>• <math>\varnothing &lt; 2.00</math> mm, cold drawn, polished; ISO h7</li><li>• <math>\varnothing \geq 2.00</math> mm, cold drawn, ground, polished; ISO h7; surface finish Ra 0.4 (N5/N6)</li><li>• Coils; ISO fg7</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>): 650 – 900 MPa, size depending</li><li>• Hardness after tempering: 64/66 HRc</li></ul>

HEAT TREATMENT	
	<ul style="list-style-type: none"><li>• Tempering in:<ul style="list-style-type: none"><li>a) oil at <math>\varnothing &lt; 5</math> mm: 800 – 820 °C</li><li>b) water at <math>\varnothing &gt; 5</math> mm: 780 – 800 °C</li></ul></li></ul> (Annealing as required see charts)

CUTTING RATES	
	$v_c \sim 50 - 70$ m/min, value depending on the lubrication oil, cutting tools and shape of parts. <ul style="list-style-type: none"><li>• Cutting oil: e.g. SX15 of Motorex</li></ul>

Modifications will not be adjusted automatically

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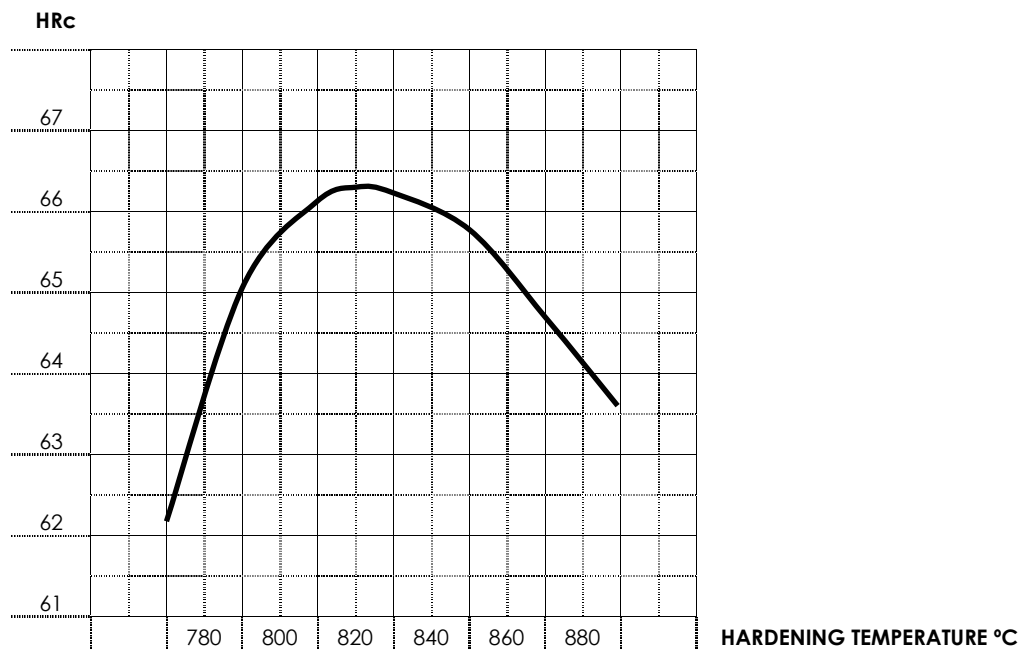
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# LAW 100 Pb

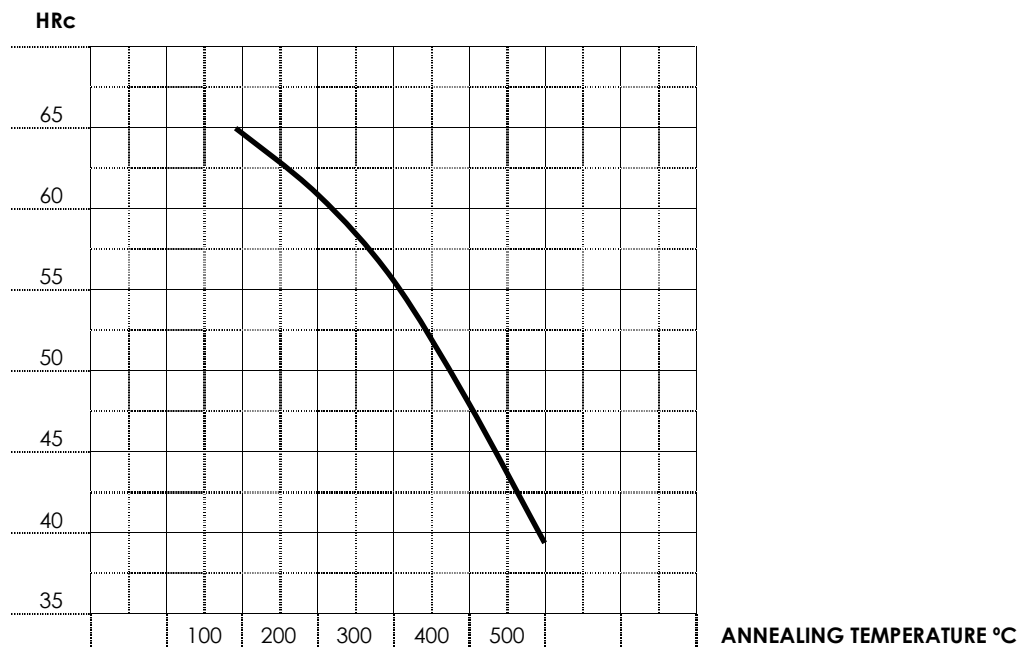
1.1268

## HARDENING CURVE



## ANNEALING CURVE

1/2 hour



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 curves indicate the results of determinate section of a curtain size of 5 mm. The result after heat treatment can be slightly different than shown on this curve, depending on the shape and size of the part.

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