
# LABOR Pb

## Free Cutting High Carbon Steel

| *Material No.* | *DIN Abbreviation* | *AFNOR* | *AISI/SAE/ASTM* | *ISO* | *Euro Standard EN* | *Others* |
|---|---|---|---|---|---|---|
| 1.0759<br>A 60 Pb | ~ 70SPb20 | | AISI ~ 1065 (+S)<br>AISI ~ 1075 (+S) | | | |

Distinctive feature & main attribute: a temperable, unalloyed free cutting high carbon steel, added with lead and sulphur, showing an excellent machinability.

Use & application range: this quality is particularly designed for the production of small high precision parts such as automotive, watch and micro-motor industries, the jig construction or settings.

| **REFERENCE ANALYSIS %** | **C** | **Si** | **Mn** | **P** | **S** | **Pb** | **Fe** |
|---|---|---|---|---|---|---|---|
| | **0.65<br>0.75** | **max.<br>0.20** | **0.70<br>1.00** | **max.<br>0.04** | **0.15<br>0.25** | **0.15<br>0.25** | **balance** |

| | |
|---|---|
| **EXECUTION<br>DELIVERY FORM<br>STANDARD SIZES<br>AVAILABILITY** | • Execution in 3 m (2 m) round bars as well as in coils<br>• Standard size in stock: see **Product range**<br>• Other sizes on request |
| **TOLERANCES** | • Ø < 2.00 mm, cold drawn, polished; ISO **h8**<br>• Ø ≥ 2.00 mm, cold drawn, ground, polished; ISO **h7** & **fg7**; surface finish Ra 0.4 (N5)<br>• Coil, drawn; ISO **fg8**<br>• Tighter tolerances (up to +/- 0.002 mm) on request |
| **MECHANICAL PROPERTIES** | At delivery status:<br>• Tensile strength ($R_m$): **650 – 900 MPa**, size depending<br>• Hardness after tempering: **63/65 HRC** |
| **HEAT TREATMENT** | • Tempering in:<br>a) oil at Ø < 5.00 mm: 810 – 830 °C<br>b) water at Ø > 5.00 mm: 790 – 810 °C<br>• Soft annealing: 660 – 700 °C, to achieve $R_m$ ~ 600 MPa/mm²<br>(Annealing as required see charts) |
| **CUTTING RATES** | **$v_c$ ~ 50 – 70 m/min**, value depending on the lubrication oil, cutting tools and shape of parts.<br>• Cutting oil: e.g. INOX of Motorex |



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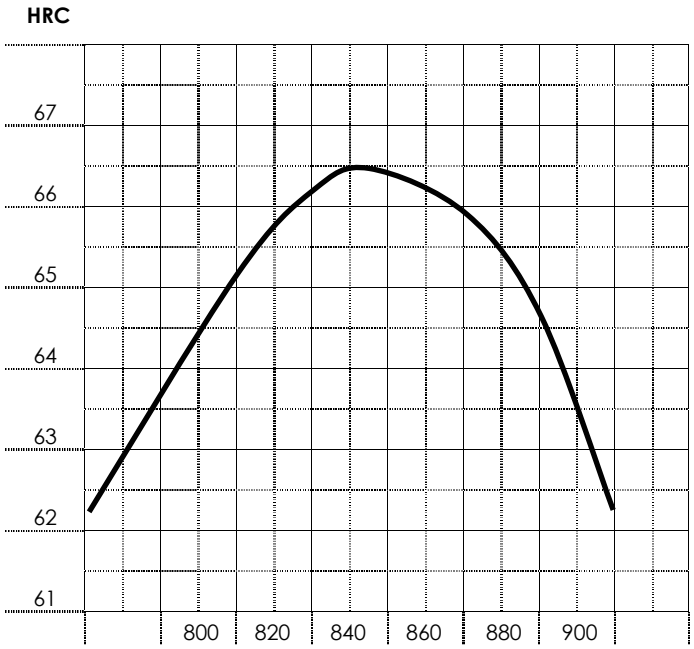
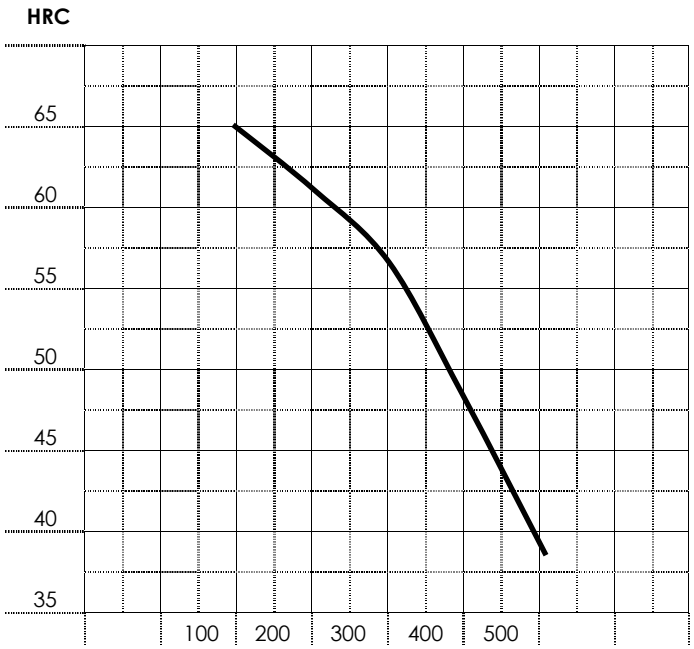
**1.0759**

## HARDENING CURVE




## ANNEALING CURVE

**½ hour**




If your 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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