

**CHRONIFER®**  
**M-4028**  
martensitic  
Hardenable Stainless Steel

Material No.	DIN Abbreviation	AFNOR	AISI/SAE/ASTM	ISO	Euro Standard EN	Others
1.4028	X30Cr13	X30Cr13 (former Z 30 C 13)	AISI 420B ASTM F 899	7153-1 (C)	X30Cr13	NF S 94-090 JIS ~ SUS 420J2

Distinctive feature & main attribute: a heat treatable chromium steel, precedingly refined by an electroslag remelting process (ESR), with good resistance in moderately aggressive, chlorine-free environments and also in oxidizing atmosphere. The best corrosion resistance can be achieved by quenching and tempering. A well polished surface is a pre-requisite.

Use & application range: this quality is suitable for mechanical engineering, transportation, automotive engineering, electrical installations, dental and surgical instruments, pump shafts, gears pinions, various hand tools, decoration and kitchen fittings, cutlery etc.

REFERENCE ANALYSIS %	C	Si	Mn	P	S	Cr	Ni	Fe
		<b>0.26</b> <b>0.35</b>	<b>max.</b> <b>1.00</b>	<b>max.</b> <b>1.00</b>	<b>max.</b> <b>0.04</b>	<b>max.</b> <b>0.03</b>	<b>12.00</b> <b>14.00</b>	<b>max.</b> <b>1.00</b>

<b>EXECUTION DELIVERY FORM STANDARD SIZES AVAILABILITY</b>	<ul style="list-style-type: none"> <li>Execution in 3 m round bars as well as in coils</li> <li>Standard size in stock: see <a href="#">Product range</a></li> <li>Other sizes on request</li> </ul>
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<b>TOLERANCES</b>	<ul style="list-style-type: none"> <li>∅ &lt; 2.00 mm; ISO <b>h8</b></li> <li>∅ ≥ 2.00 mm; ISO <b>h7 (h6)</b></li> <li>Tighter tolerances on request</li> </ul>
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<b>MECANICAL PROPERTIES</b>	At delivery status: <ul style="list-style-type: none"> <li>Tensile strength (<math>R_m</math>): <b>800 – 1000 MPa</b></li> <li>Hardness after tempering: <b>~ ≥ 49 HRC</b></li> </ul>
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<b>HEAT TREATMENT</b>	<ul style="list-style-type: none"> <li>Tempering: 950 – 1050 °C, cooling in oil</li> <li>Soft annealing: 745 – 825 °C</li> </ul>
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<b>CUTTING RATES</b>	$v_c \sim 25 - 40 \text{ m/min}$ , value depending on the lubrication oil, cutting tools and shape of parts. <ul style="list-style-type: none"> <li>Cutting oil: e.g. INOX or ORTHO NFX of Motorex</li> </ul>
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Modifications will not be adjusted automatically

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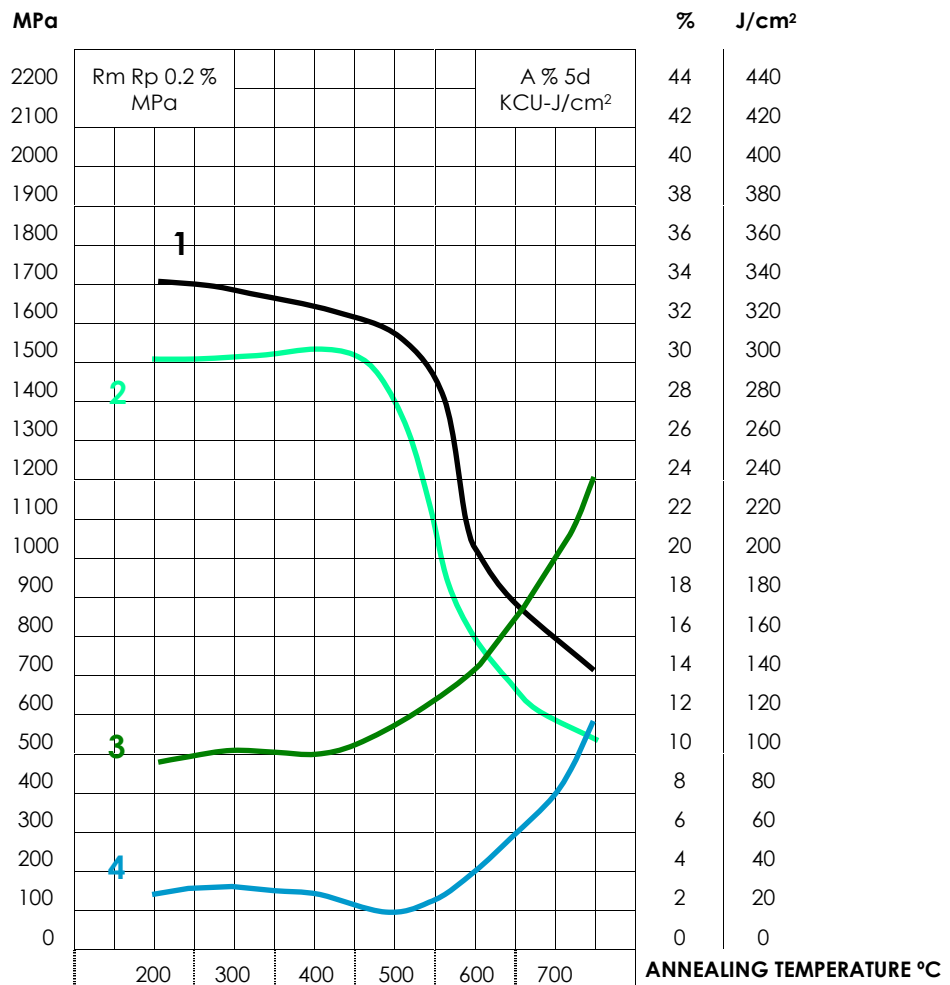
## M-4028

### 1.4028

#### Chart

#### MECHANICAL PROPERTIES

due to the annealing temperature  
(treatment of pre-heated test pieces  
at 950 – 1000 °C, tempered in oil)



- 1: Tensile strength  $R_m$  (MPa)
- 2: Proof stress  $R_p 0.2$  (mm<sup>2</sup>)
- 3: Ductile yield  $A \epsilon$  (%)
- 4: Impact ductility  $KCU$  (J-cm<sup>2</sup>)

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