



CHRONIFER®
M-13
martensitic
Hardenable Stainless Steel

Material No.	DIN Abbreviation	AFNOR	AISI/SAE/ASTM	ISO	Euro Standard EN	Others
1.4034	X46Cr13 (X45Cr13)	X46Cr13 (former Z 44 C 14)	AISI 420 AISI 420C ASTM F899	7153-1 (D)	X46Cr13	NF S 94-090 JIS ~ SUS420

Distinctive feature & main attribute: a temperable, alloyed stainless steel (martensite, no sulphur added), excelled by its good corrosion resistance to water unless the final part has been polished properly (without pores). There is no difference due to abrasion of the parts after tempering between qualities with or without sulphur.

Use & application range: this alloy is preferentially deployed in areas such as dental medicine and microsurgery but also for other industries including cutthroat razors and cutterly knives.

REFERENCE ANALYSIS %	C	Si	Mn	P	S	Cr	Ni	Fe
	0.43 0.50	max. 1.00	max. 1.00	max. 0.04	max. 0.03	12.50 14.50	max. 1.00	balance

EXECUTION DELIVERY FORM STANDARD SIZES AVAILABILITY	<ul style="list-style-type: none"> Execution in 3 m round bars as well as in coils Standard size in stock: see Product range Other sizes on request
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TOLERANCES	<ul style="list-style-type: none"> Ø < 2.00 mm, cold drawn, polished; ISO h8 Ø ≥ 2.00 mm, cold drawn, ground, polished; ISO h7; surface finish Ra 0.4 (N5) Tighter tolerances on request
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MECHANICAL PROPERTIES	At delivery status: <ul style="list-style-type: none"> Tensile strength (R_m): ~ 850 MPa, size depending Hardness after tempering: ~ 55 HRC
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HEAT TREATMENT	<ul style="list-style-type: none"> Tempering: 1000 – 1050 °C, cooling in water Soft annealing: 750 – 800 °C (Annealing as required see chart)
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CUTTING RATES	$v_c \sim 25 - 40 \text{ m/min}$, long-chipping, value depending on the lubrication oil, cutting tools and shape of parts. <ul style="list-style-type: none"> Cutting oil: e.g. INOX or ORTHO NFX of Motorex
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Modifications will not be adjusted automatically

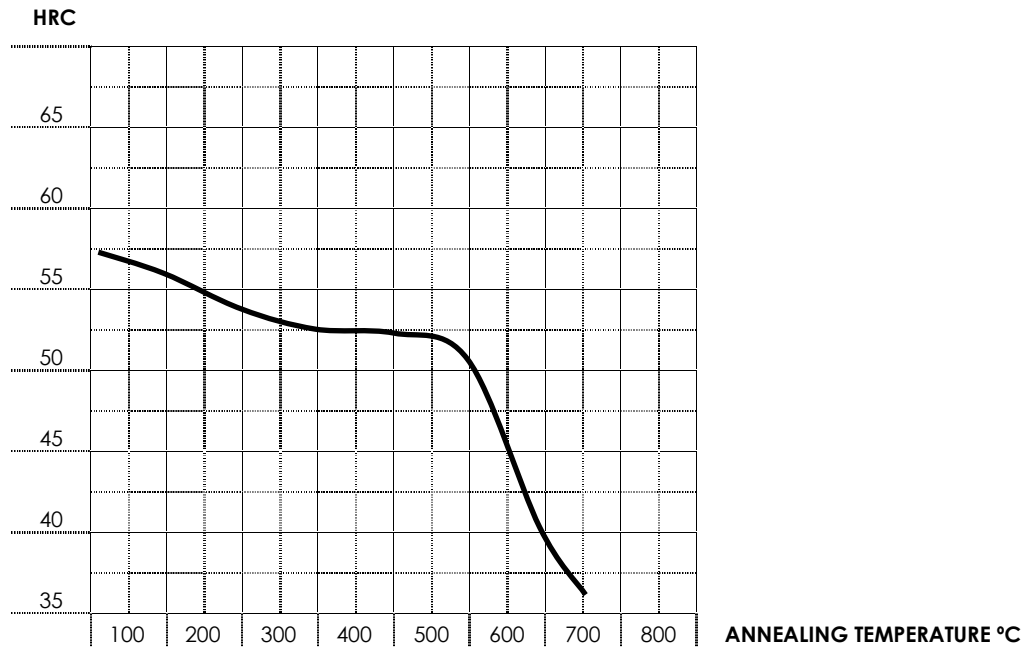
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ANNEALING CURVE



The above curve indicates 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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