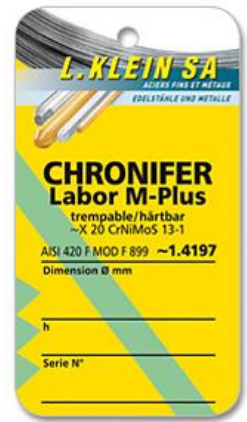
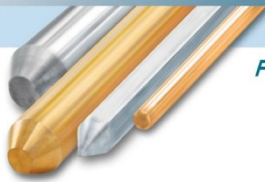


L. KLEIN SA

ACIERS FINS ET MÉTAUX

EDELSTÄHLE UND METALLE

FINE STEEL AND METALS



CHRONIFER

Labor M-Plus

martensitic

Hardenable Stainless Steel

Material No.	DIN Abbreviation	AFNOR	AISI/SAE/ASTM	ISO	Euro Standard EN	Others
~ 1.4197	~ X20CrNiMoS13-1		AISI 420F Mod ASTM F899			

Distinctive feature & main attribute: a rustproof, temperable stainless steel, characterized by its compromise between fine machinability and high wear resistance, which is even improved by the addition of molybdenum and nickel, unless the final part has been polished properly (without pores), and it is suited for hardening.

Use & application range: this alloy is suitable for dental instruments, the automotive industries and also other industries such as high-speed free cutting parts.

CHEMICAL COMPOSITION IN VOLUME PERCENTAGE	C	Si	Mn	P	S	Cr	Mo	Ni	Fe
	0.20 0.25	max. 0.60	max. 1.50	max. 0.03	0.15 0.25	12.50 14.00	1.00 1.20	0.75 1.25	balance

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

TOLERANCES	
	<ul style="list-style-type: none">• $\varnothing < 2$ mm, cold drawn, polished; ISO h8• $\varnothing \geq 2.00$ mm, cold drawn, ground, polished; ISO h7; surface finish Ra 0.4 (N5)• Tighter tolerances on request

MECHANICAL PROPERTIES	
	At delivery status: <ul style="list-style-type: none">• Tensile strength (R_m): ~ 780 MPa, size depending• Proof stress ($R_p 0.2$): ~ 350 MPa• Ductile yield A (ϵ): ~ 25 %• Hardness after tempering: ~ 48 – 52 HRc

HEAT TREATMENT	
	<ul style="list-style-type: none">• Tempering: 1000 – 1050 °C, cooling in oil or in air (Annealing as required see chart)

CUTTING RATES	
	<p>$v_c \sim 40 - 55$ m/min, short-chipping, value depending on the lubrication oil, cutting tools and shape of parts.</p> <ul style="list-style-type: none">• Cutting oil: e.g. INOX of Motorex

Modifications will not be adjusted automatically

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CHRONIFER

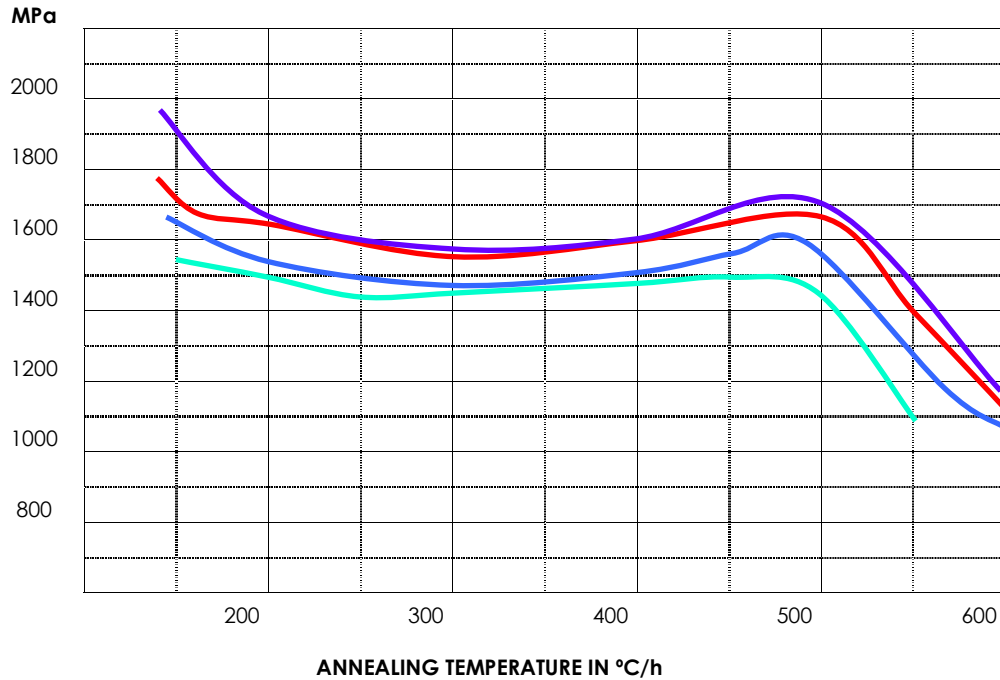
Labor M-Plus

~ 1.4197

ANNEALING CHART

TENSILE STRENGTH MPA

950°C 20 min./oil
1000°C 20 min./oil
1050°C 20 min./oil
1100°C 20 min./oil



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