

<b>Designation</b>	<b>140Cr3</b>	EN 1.2008	UNS (ASTM) -	AISI -	LMSA <b>C330</b>
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## Chemical composition

Fe	C	Cr	Si	Mn	P	S
Balance	1.35 - 1.50	0.40 - 0.70	0.15 - 0.30	0.25 - 0.40	0.025 max.	0.025 max.

Values (Weight %). In order to achieve maximum homogeneity and consistent quality, the actual manufacturing tolerances are tighter and more precisely than the composition indicated.

## Main technical properties and features

140Cr3 is a low alloyed tool steel with chromium and a high carbon content (approx. 1.40%). Thanks to its high carbon content, this steel has good hardenability, and can be hardened by conventional quenching and tempering. This steel has very good formability in the annealed condition, high mechanical strength and good toughness in the quenched and tempered condition.

Lamineries MATTHEY supplies thin strips of 140Cr3 steel to tight dimensional tolerances, enabling complex parts to be stamped.

## Typical uses

Ck75 steel is used for parts for the watch industry, jewelry applications, parts in machine construction, cutting tools.

## Typical manufacturing range

	Thickness (mm)	Width (mm)	Length (mm)
<b>Rolled products</b> Strip in coils <sup>[1]</sup>	0.010 - 1.500	1.5 - 200.0	-
Strip as sheets <sup>[1]</sup>	0.015 - 1.500	10.0 - 200.0	300 - 3000

<sup>[1]</sup> Not all our production possibilities are presented here. Other dimensions or product forms available upon request. Some combinations of thicknesses and widths are not possible.

## Mechanical properties of strips

Temper	R <sub>m</sub> (N/mm <sup>2</sup> )	A <sub>50mm</sub> (%)	Hardness HV
soft	550 - 640	-	160 - 190
¼ hard	620 - 740	-	185 - 215
½ hard	720 - 930	-	210 - 240
hard	900 - 1010	-	260 - 290
extra hard	990 min.	-	280 min.

## Physical properties

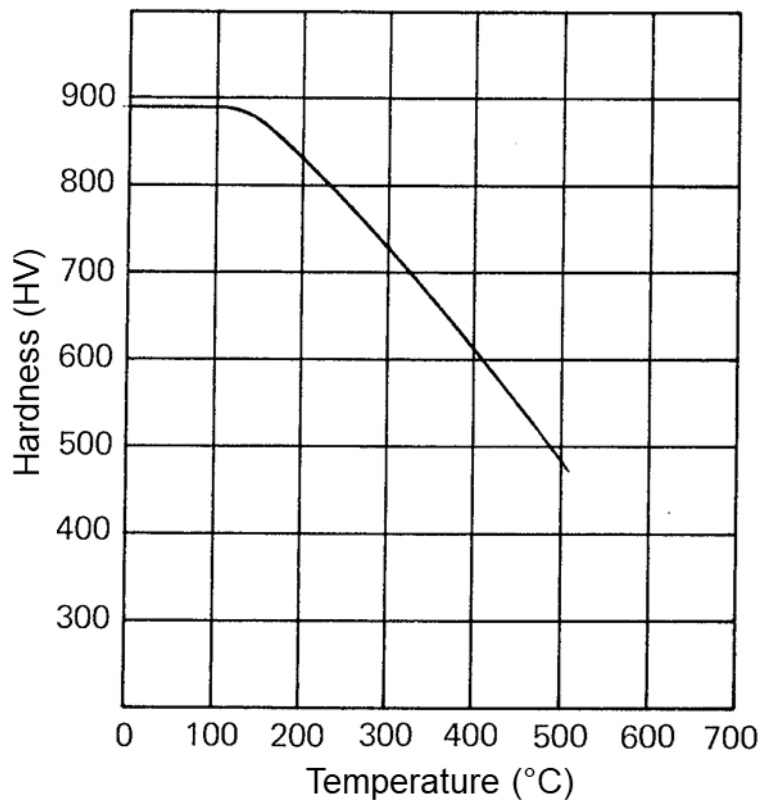
Modulus of elasticity	kN/mm <sup>2</sup>	210
Poisson ratio		0.29
Density	g/cm <sup>3</sup>	7.90
Melting point	°C	1450 - 1510
Linear dilatation coefficient	10 <sup>-6</sup> ./ °C	11 (20-100°C) / 12 (20-300°C)
Thermal conductivity at 20°C	W/m °K	52
Electrical resistivity at 20°C	μΩcm	18
Electrical conductivity at 20°C	% IACS	13
Specific heat at 20°C	J/(kg. K)	50.2

## Heat treatment

Steel 140Cr3 can be heat treated by quenching in oil or water followed by a tempering.

Stress-relieving annealing (°C)	Annealing (°C)	Quenching (°C)	Tempering <sup>[1]</sup> (°C) > 60min
650 (1 - 2h)	650 - 720	790 - 810 (oil or water)	200 - 300

<sup>[1]</sup> Function of time



**Tolerances (strip and foil)**

Thickness	Thickness (mm)		Lamineries MATTHEY			
	≥	<	LMSA Standard	LMSA Precision	LMSA Extreme	
<p>The table shown is an outline of our typical thickness tolerances available. They are tighter than industry standards.</p> <p>Our "LMSA Precision" and "LMSA Extreme" tolerances are available upon request.</p>	-	0.025	-	-	± 0.001	
	0.025	0.050	± 0.003	± 0.002	± 0.0015	
	0.050	0.065	± 0.004	± 0.003	± 0.002	
	0.065	0.100	± 0.006	± 0.004	± 0.003	
	0.100	0.125	± 0.008	± 0.006	± 0.003	
	0.125	0.150	± 0.008	± 0.006	± 0.004	
	0.150	0.250	± 0.010	± 0.008	± 0.004	
	0.250	0.300	± 0.012	± 0.008	± 0.005	
	0.300	0.400	± 0.012	± 0.009	± 0.005	
	0.400	0.500	± 0.015	± 0.010	± 0.006	
	0.500	0.600	± 0.020	± 0.012	± 0.007	
	0.600	0.800	± 0.020	± 0.014	± 0.007	
	0.800	1.000	± 0.025	± 0.015	± 0.009	
	1.000	1.200	± 0.025	± 0.018	± 0.012	
	1.200	1.250	± 0.030	± 0.020	± 0.012	
1.250	1.500	± 0.035	± 0.025	± 0.014		
<b>Width</b>	Our width tolerances "Standard" is +0.2, -0.0 (or ± 0.1 mm upon request). They are available for slit widths < 125 mm and thicknesses < 1.00 mm. Special tolerances upon request.					
<b>Camber</b>	Width (mm)		Camber max. (mm/m)			
	>	≤	LMSA standard		LMSA extreme	
			≤ 0.5 mm	> 0.5 mm	≤ 0.5 mm	> 0.5 mm
	3	6	12	-	6	-
	6	10	8	10	4	5
10	20	4	6	2	3	
20	250	2	3	1	1.5	
<b>Surface</b>	Special surface qualities upon request					
<b>Flatness</b>	Special requirement on the longitudinal or transversal flatness upon request					

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