



Technical Data Sheet	Grade	Code (SEL)	Cold work tool steel
	1.2083	X40Cr14	

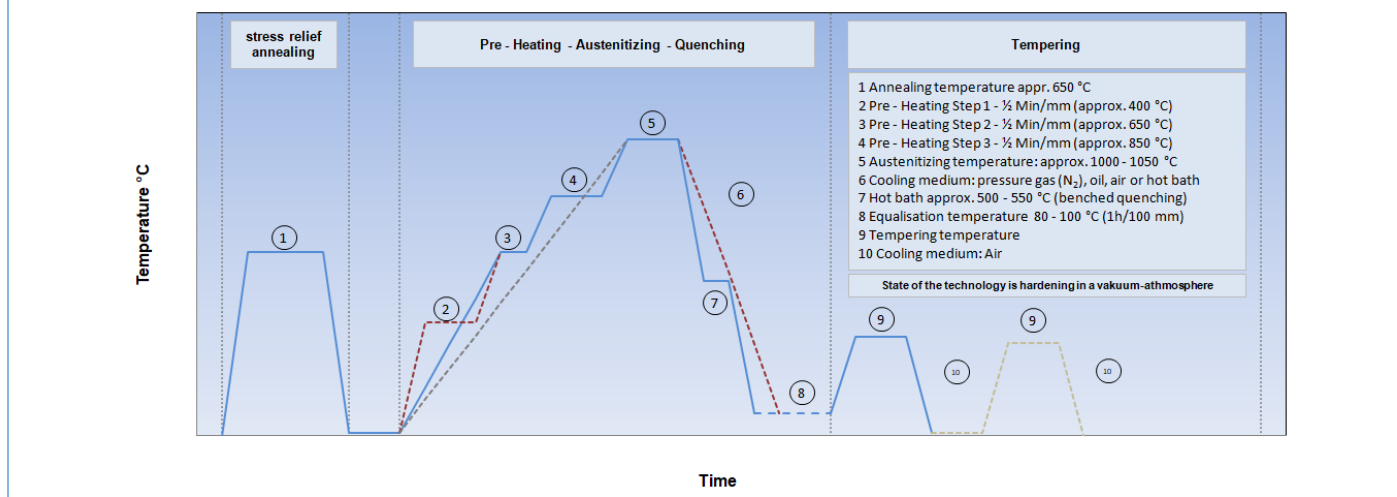
Standards	Steel properties
EN ISO 4957 X40Cr14	Tool steel with high dissolved Cr – content in the matrix, through hardenable, high wear resistance, corrosion-resistant, good polishability.
AFNOR Z40C14	
BS -	
UNE F.5263	
UNI -	
AISI 420	
GOST 40X13	Suitable for: Moulds, tooling and inserts for processing plastics with corrosive reactions, moulds and pressure tools

C	Si	Mn	Cr	Mo	Ni	V	W	Co	Sonst.
0,40	< 1,00	< 1,00	13,50	-	-	-	-	-	-

Melting	EAF + VOD	Remarks In the hardened condition 1.2083 is corrosion-resistant. For highest requirements concerning polishability we recommend the use of 1.2083 ESR
Density (g/cm³)	7,80	
Supply condition	soft annealed	
Hardness (HB)	max. 241	
Tensile strength (N/mm²)	-	
Work hardness (HRC)	-	
Structure	-	
Cleanness (DIN 50602)	-	

Physical properties		20 °C	100 °C	200 °C	300 °C	350 °C	400 °C	500 °C	600 °C	700 °C
Thermal expansion coefficient	10 ⁻⁶ * K (20 °C bis ...)	-	10,5	10,9	11,3	-	11,6	-	-	-
Thermal conductivity (W / m * K)	annealed	24,6				25,3				26,2
	quenched + tempered	-				-				-

Thermal Cycle Diagram (Heat treatment)



Hinweis: Die in diesem Datenblatt enthaltenen Angaben dienen der Beschreibung, eine Haftung ist ausgeschlossen.



Heat treatment	Temperature (°C)	Cooling	Remarks heat treatment
Soft annealing	760 - 800	Furnace	Controlled slow cooling in furnace
Stress-relief annealing	ca. 650	Furnace	Slow cooling in furnace. After extensive machining process or complex shapes
Hardening	1000 - 1050		After through-heating hold for 15-30 minutes
Pre – heating Step 1	appr. 400		
Pre – heating Step 2	appr. 650		
Pre – heating Step 3	appr. 850		
Quenching	500 - 550	hot bath	To reduce as possible thermal stress, size alteration and distortion it is recommended to use the softest quenching medium. Oftentimes a hot bath hardening with the advantage of less thermal stress.
	appr. 80	Oil	
	appr. 80	Air	To avoid stress corrosion cracks the steel has to be carried out immediately after hardening and when the steel is at appr. 80 °C. Cooling down to RT has to be disabled.
	appr. 80	pressure gas	

Tempering Chart		Tempering – Hardness after tempering									
	Temperature °C	100	200	300	400	500	550	600	650	700	
	HRC	56	55	52	51	52	-	40	-	-	
Remarks for tempering Slow heating to tempering temperature immediately after hardening. Time in furnace 1 hour for each 20 mm of workpiece thickness but at least 2 hours. Tempering must be repeated at least twice at a temperature 30 °C lower than the previous.											

