



Technical Data Sheet	Grade	Code (SEL)	Cold work tool steel
	1.2842	90MnCrV8	

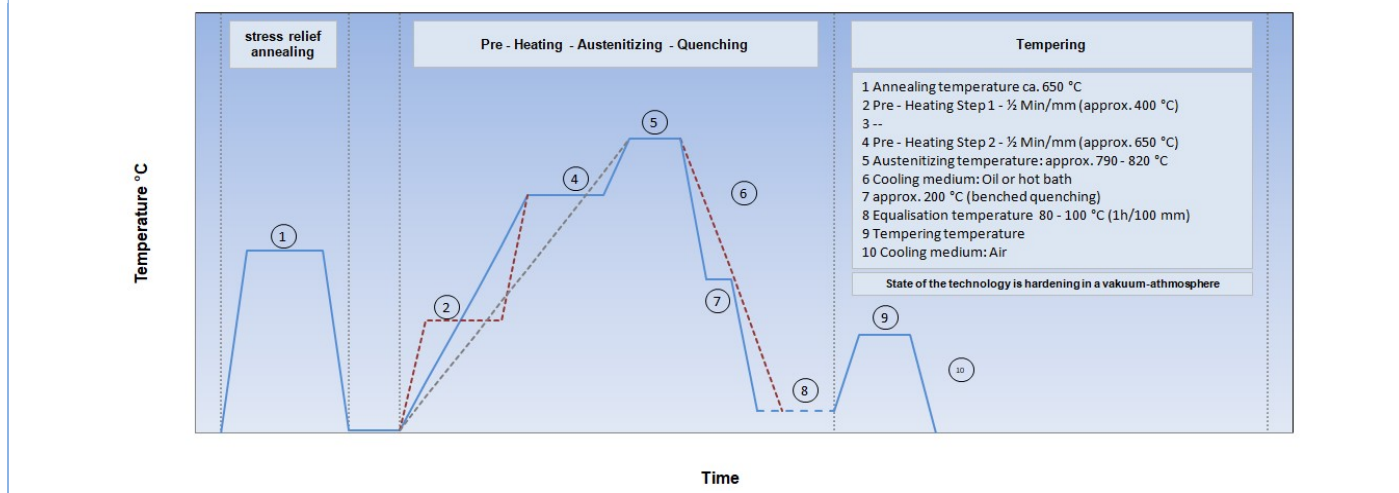
Standards	Steel properties
<b>EN ISO 4957</b> 90MnCrV8	Light alloyed, oil-hardenable cold working tool steel with high hardenability, good cutting edge retention, toughness and wear resistance. Dimensionally stable during heat treatment.
<b>AFNOR</b> 90MV8	
<b>BS</b> BO 2	
<b>UNE</b> F.5229	
<b>UNI</b> 90MnVCr8KU	
<b>AISI</b> O 2	
<b>GOST</b> 9Г2Φ	
<b>Suitable for:</b>	
Tool steel for universal use, punches, cutters, deep drawing tools, cutting tools, moulds for plastics, clipping beds and punches, industrial knives, measuring tools. Cutting and stamping tools for sheet up to 6 mm thickness, thread-cutting, reamers, gauges, measuring tools, shear blades, guide strips and ejector pins.	

C	Si	Mn	Cr	Mo	Ni	V	W	Co	Sonst.
0,90	0,30	2,00	0,40	-	-	0,10	-	-	-

<b>Melting</b>	EAF + VOD	<b>Remarks</b> -
<b>Density (g/cm³)</b>	7,85	
<b>Supply condition</b>	soft annealed	
<b>Hardness (HB)</b>	max. 220	
<b>Tensile strength (N/mm²)</b>	-	
<b>Work hardness (HRC)</b>	-	
<b>Structure</b>	-	
<b>Cleanness (DIN 50602)</b>	-	

Physical properties		20 °C	100 °C	200 °C	300 °C	350 °C	400 °C	500 °C	600 °C	700 °C
<b>Thermal expansion coefficient</b>	10 <sup>-6</sup> * K (20 °C bis ...)	-	12,2	13,2	13,8	-	14,3	14,7	15,0	15,3
<b>Thermal conductivity (W / m * K)</b>	annealed	33,0				32,0				31,3
	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
<b>Soft annealing</b>	680 - 720	Furnace	Controlled slow cooling in furnace
<b>Stress-relief annealing</b>	ca. 650	Furnace	Slow cooling in furnace. After extensive machining process or complex shapes
<b>Hardening</b>	790 - 820		After through-heating hold for 15-30 minutes
Pre – heating Step 1	appr. 400		
Pre – heating Step 2	appr. 650		
Pre – heating Step 3	-		
<b>Quenching</b>	appr. 200	hot bath	To reduce as possible thermal stress, size alteration and distorsion it is recommended to use the softest quenching medium.
	appr. 80	Oil	Oftentimes a hot bath hardening with the advantage of less thermal stress. 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. In case of oil hardening interrupt at appr. 150 °C.

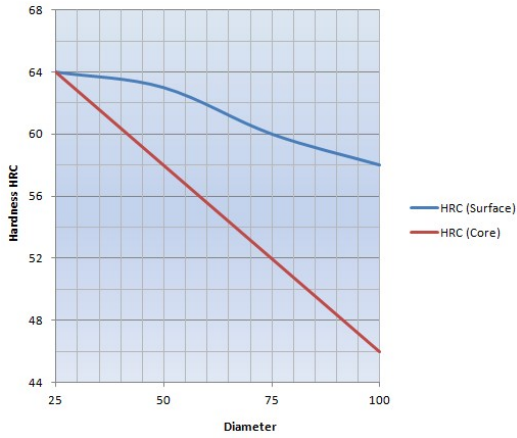
Tempering Chart	Tempering – Hardness after tempering																				
	<table border="1"> <thead> <tr> <th>Temperature °C</th> <th>100</th> <th>200</th> <th>300</th> <th>400</th> <th>500</th> <th>550</th> <th>600</th> <th>650</th> <th>700</th> </tr> </thead> <tbody> <tr> <td><b>HRC</b></td> <td>63</td> <td>60</td> <td>56</td> <td>50</td> <td>42</td> <td>-</td> <td>38</td> <td>-</td> <td>-</td> </tr> </tbody> </table>	Temperature °C	100	200	300	400	500	550	600	650	700	<b>HRC</b>	63	60	56	50	42	-	38	-	-
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<b>HRC</b>	63	60	56	50	42	-	38	-	-												
	<p><b>Remarks for tempering</b></p> <p>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.</p>																				

Continuous Cooling Transformation Chart	Heat resistance chart



Potential Hardness Increase

Several diameter



Several hardness figures

