



Material No.: Code:  
**1.2764 X19NiCrMo4**

DE - Brand:  
**ECN4M**

**Chemical composition:**  
(Typical analysis in %)

C	Cr	Mo	Ni				
0,19	1,30	0,20	4,10				

**Steel properties:**

Case hardening steel, when hardened high core strength, good polishability in hardened condition.

**Applications:**

Press tools, highly stressed plastic moulds, profiling rolls.

**Condition of delivery:**

Soft annealed to max. 250 HB

**Physical properties:**

Thermal expansion coefficient	$\left[ \frac{10^{-6} \cdot \text{m}}{\text{m} \cdot \text{K}} \right]$	20-100°C	20-200°C	20-300°C	20-400°C
		11,5	12,0	12,4	12,8
Thermal conductivity	$\left[ \frac{\text{W}}{\text{m} \cdot \text{K}} \right]$	20°C	350°C		
		32,9	33,8		

**Heat treatment:**

Soft annealing

Temperature	Cooling	Hardness
620 - 660°C	furnace	max. 250 HB

Stress relief annealing

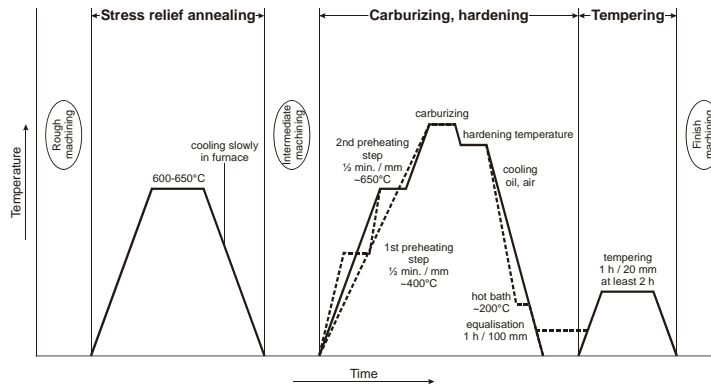
Temperature	Cooling	
600 - 650°C	furnace	

Hardening

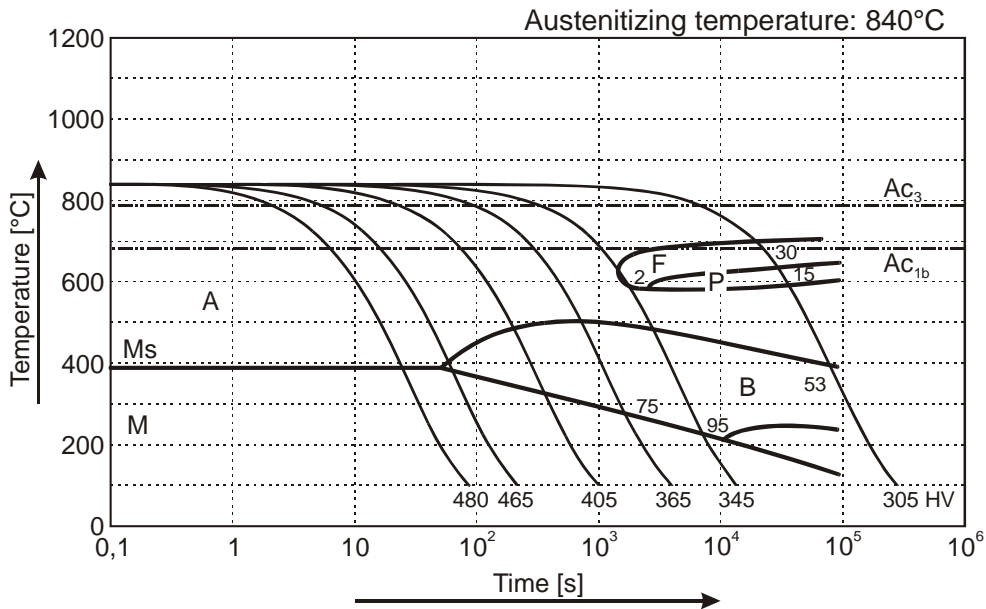
Carburizing	Intermediate annealing	Austenitizing temperature	Cooling	Tempering
860 - 890°C	600 - 630°C	780 - 810°C	oil or hot bath 180 - 220°C	see tempering diagram
		800 - 830°C	air	

### (1.2764) Thermal Cycle Diagram

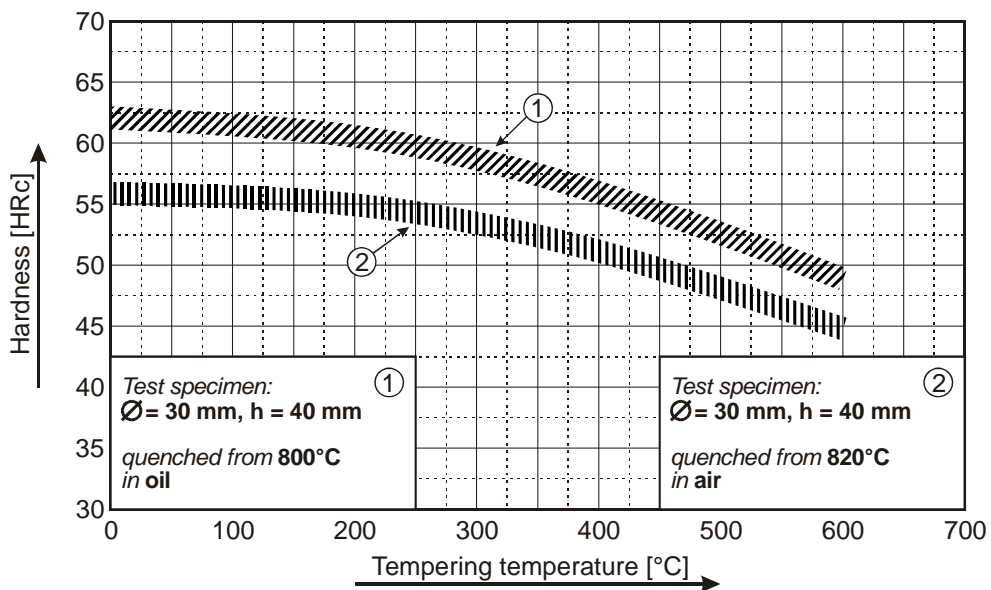
In certain cases intermediate annealing or isotherm transformation may be useful depending on the tool or component. Please contact us.



### Continuous Cooling Transformation Diagram (CCT) (core area)



### Tempering Diagram (for carburized surface)



Remarks: All technical information is for reference only.