



Material No.: Code:  
**1.2367 X38CrMoV5-3**

DE - Brand:  
**DM3X**

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

C	Cr	Mo	V				
0,38	5,00	3,00	0,50				

**Steel properties:**

Hot work tool steel with good wear resistance at high temperatures, high hardness and tempering strength, depending on the application also available in EFS and ESR.

**Applications:**

Large die casting tools, tools needing high strength at elevated temperatures, forging dies, mandrels, extrusion dies.

**Condition of delivery:**

Soft annealed to max. 229 HB

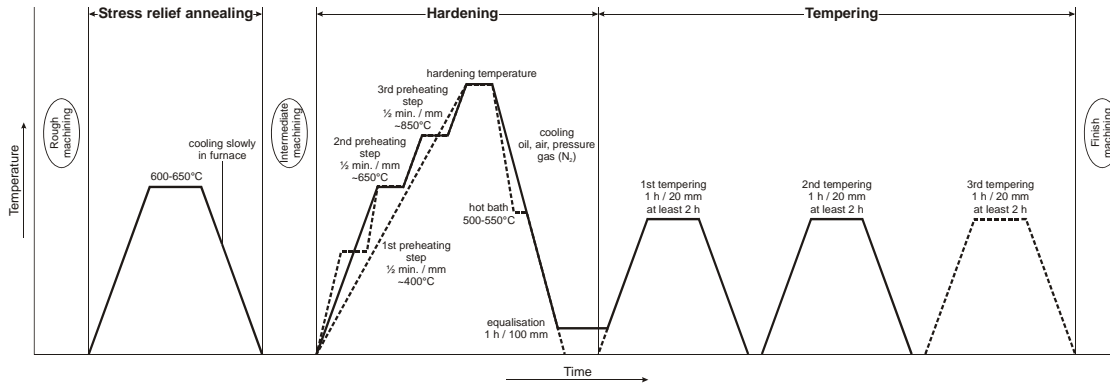
**Physical properties:**

Thermal expansion coefficient	$\left[ \frac{10^{-6} \cdot \text{m}}{\text{m} \cdot \text{K}} \right]$	20-100°C	20-300°C	20-500°C	20-700°C
		11,9	12,6	13,1	13,5
Thermal conductivity	$\left[ \frac{\text{W}}{\text{m} \cdot \text{K}} \right]$	20°C	350°C	700°C	
		30,8	33,5	35,1	

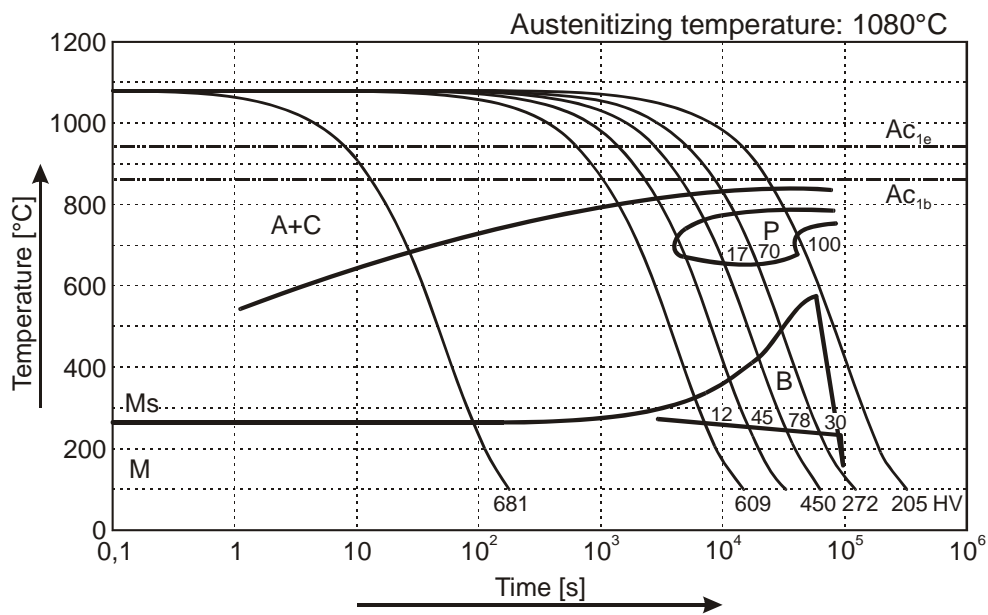
**Heat treatment:**

Soft annealing	<table border="1"><tr><th>Temperature</th><th>Cooling</th><th>Hardness</th></tr><tr><td>730 - 780°C</td><td>furnace</td><td>max. 229 HB</td></tr></table>	Temperature	Cooling	Hardness	730 - 780°C	furnace	max. 229 HB
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Stress relief annealing	<table border="1"><tr><th>Temperature</th><th>Cooling</th><th></th></tr><tr><td>600 - 650°C</td><td>furnace</td><td></td></tr></table>	Temperature	Cooling		600 - 650°C	furnace	
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Hardening	<table border="1"><tr><th>Temperature</th><th>Cooling</th><th>Tempering</th></tr><tr><td>1030 - 1080°C</td><td>oil, pressure gas (N<sub>2</sub>), air or hot bath 500 - 550°C</td><td>see tempering diagram</td></tr></table>	Temperature	Cooling	Tempering	1030 - 1080°C	oil, pressure gas (N <sub>2</sub> ), air or hot bath 500 - 550°C	see tempering diagram
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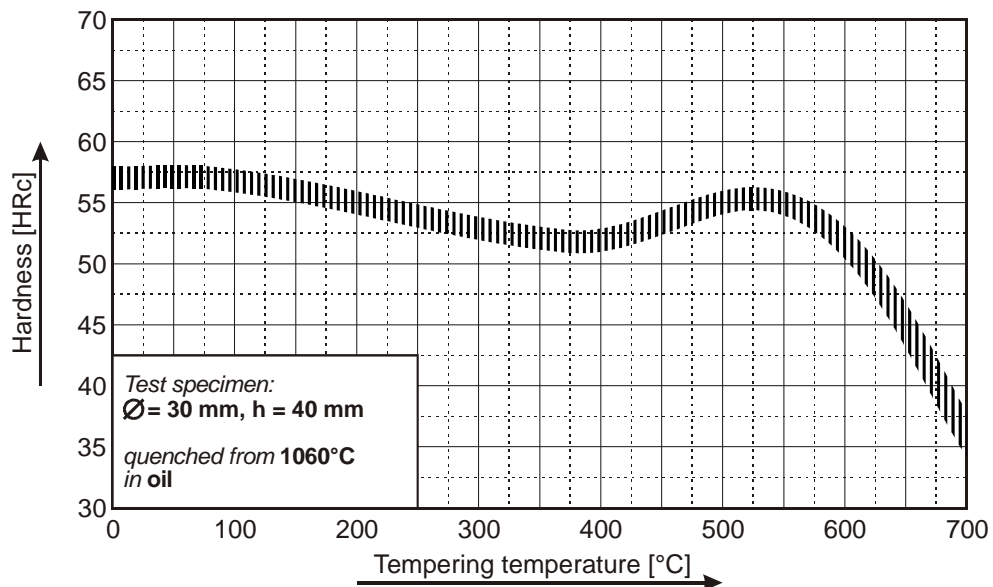
## (1.2367) Thermal Cycle Diagram



## Continuous Cooling Transformation Diagram (CCT)



## Tempering Diagram



Remarks: All technical information is for reference only.