Special Steel

DE - Brand:
1.2379^{PLUS}

Chemical composition:
(Typical analysis in %)

C	Cr	Mo	V				
1,55	12,00	0,80	0,90				

Steel properties:

Ledeburitic 12% chrome steel of powder-metallurgical production, same analysis like 1.2379 (X153CrMoV12), but homogenous micro-structure within whole cross-section; fine distributed carbide-structure, better machine-ability, polish-ability, grind-ability. Very high resistance against abrasive and adhesive wear due to a high volume of hard carbides in the steel matrix, good toughness, very good dimensional stability, high compressive strength, very good base material for PVD/CVD coating as well as nitriding due to its secondary hardening properties. Analysis similar to AISI D2.

Applications:

Cutting, punching, stamping tools, shear blades, thread rolling dies, cold extrusion dies, drawing and bending tools, flanging and straightening rolls, fine cutting tools, deep drawing tools, plastic moulds for abrasive polymers.

Condition of delivery:

Soft annealed to max. 240 HB

Physical properties:

Thermal expansion coefficient

$\dfrac{10^{-6} \cdot m}{m \cdot K}$	20-100°C	20-200°C	20-300°C	20-400°C
	10,5	11,5	11,9	13,0

Thermal conductivity

$\dfrac{W}{m \cdot K}$	20°C	350°C	700°C
	16,7	20,5	24,2

Heat treatment:

Soft annealing

Temperature	Cooling	Hardness
820 - 850°C	furnace	max. 240 HB

Stress relief annealing

Temperature	Cooling	
600 - 650°C	furnace	

Hardening

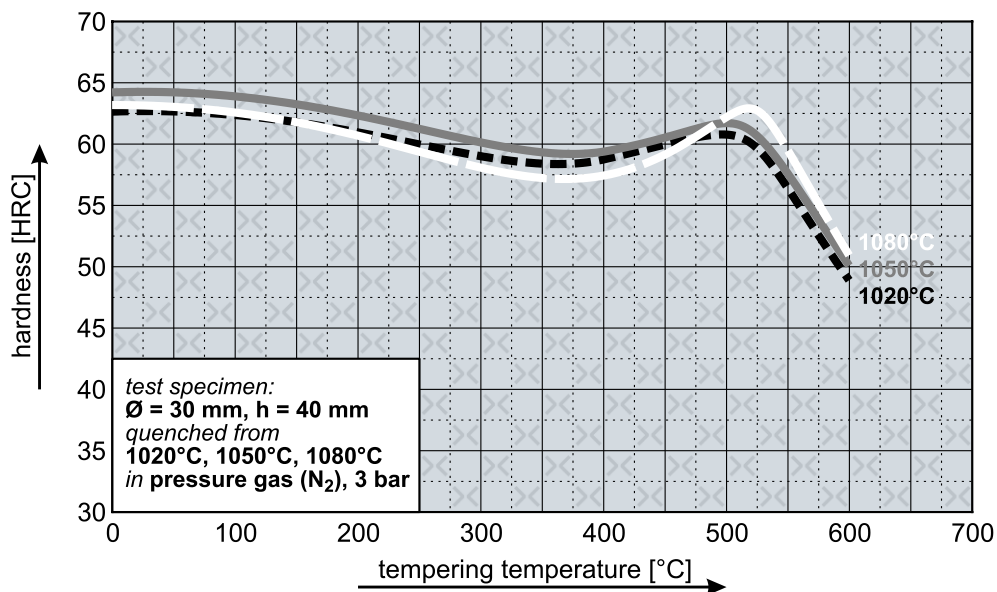| Temperature	Cooling	Tempering
1000 - 1030°C	oil, pressure gas (N$_2$), air or hot bath 500 - 550°C	see tempering diagram

(1.2379^PLUS) Thermal Cycle Diagram
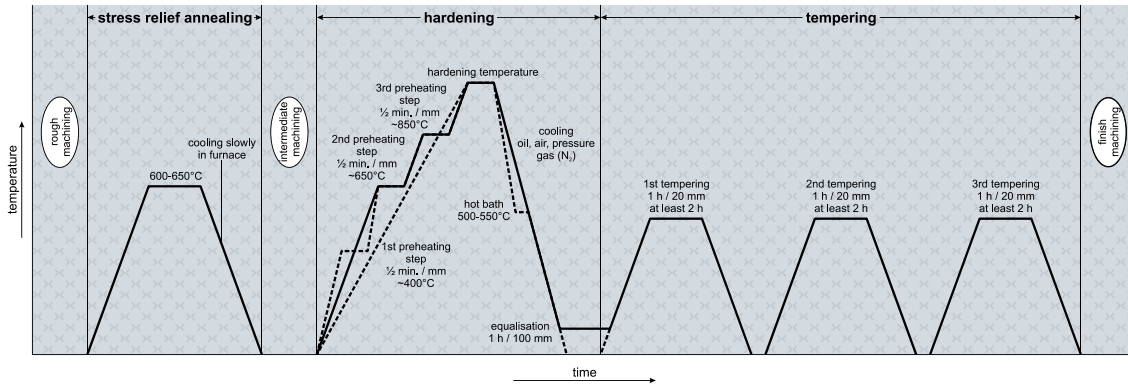
Continuous Cooling Transformation Diagram (CCT)

Tempering Diagram

test specimen:
Ø = 30 mm, h = 40 mm
quenched from
1020°C, 1050°C, 1080°C
in pressure gas (N$_2$), 3 bar
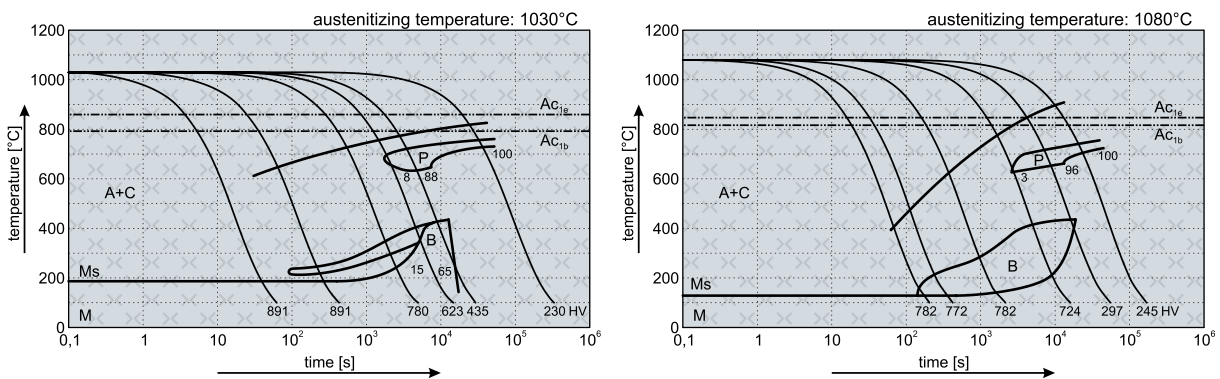
Remarks: All technical information is for reference only.