Edelstahlwerk Kind & Co.
GMH GRUPPE

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Q10

PREMIUM

Material properties

Q10 is a Cr-Mo-V-alloyed premium hot-work steel. In addition to high toughness, it offers very good high-temperature strength properties and a good thermal shock resistance.

MAIN FIELDS OF APPLICATION

- Extrusion presses: heavy-duty inner liners for very long service life, press stems, dies and die holders
- Die forging: dies subjected to high impact stress, dies with complex geometry, which are exposed to both high abrasive wear and simultaneous risk of cracking
- Rolling: mandrels for the production of seamless gas cylinders

Physical properties

Temperature in °C	20 - 100	20 - 200	20 - 400	20 - 600
Thermal expansion in 10^{-6}m/m x K	10,3	11,3	12,6	13,0
Temperature in °C	20	200	400	
Thermal conductivity in W/m x K	29,8	31,0	31,4	
Temperature in °C	20			
Density in g/cm³	7,8			
Temperature in °C	20			
Young's modulus in GPa	214			

Heat treatment

Soft annealing	Temperature	820 - 840 °C, 4 - 6 hours
	Cooling	slow furnace cooling
	Hardness	max. 220 HB
Hardening	Temperature	1010 - 1020 °C, 60 min
	Cooling	Air, warm bath of approx. 540 °C, Oil/polymer; Interrupt oil or polymer cooling at 230 - 280 °C or vacuum hardening

Tempering	Temperature	540 - 680 °C
	Hardness	see tempering graph
Nitriding	possible	
Preheating before use	Temperature	150 - 350 °C according to application

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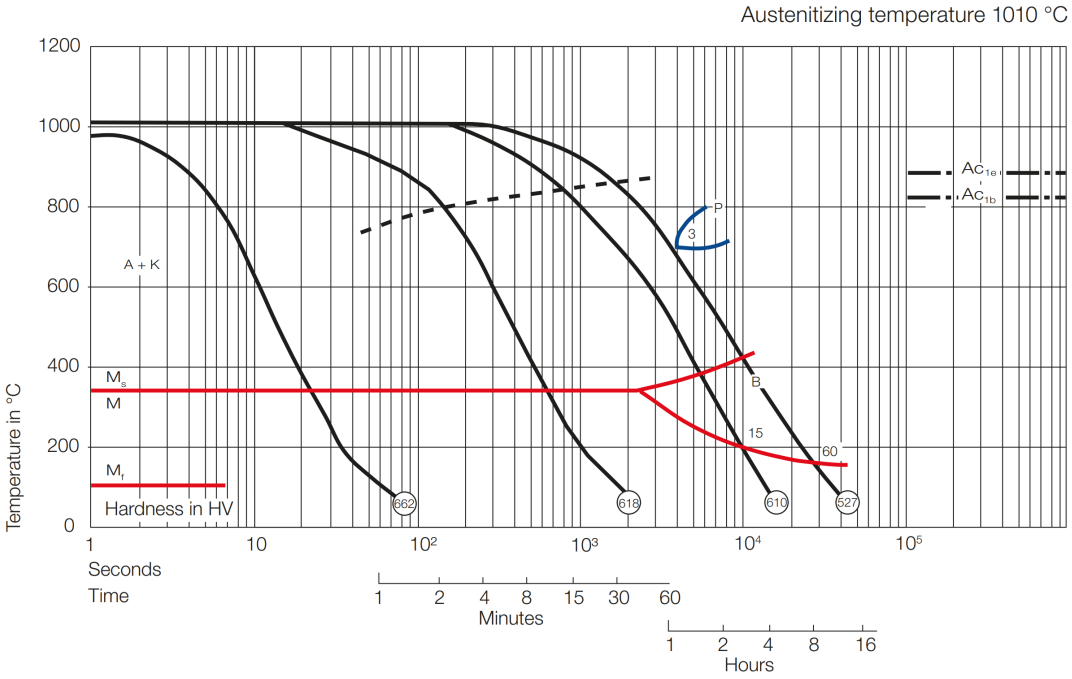
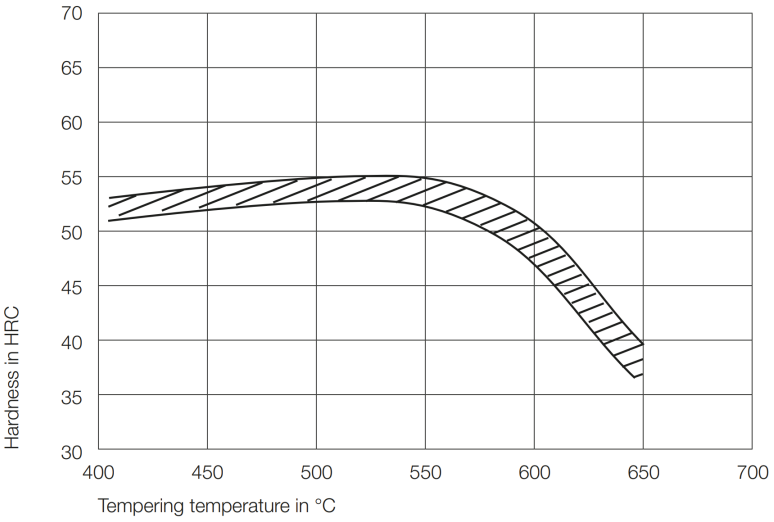
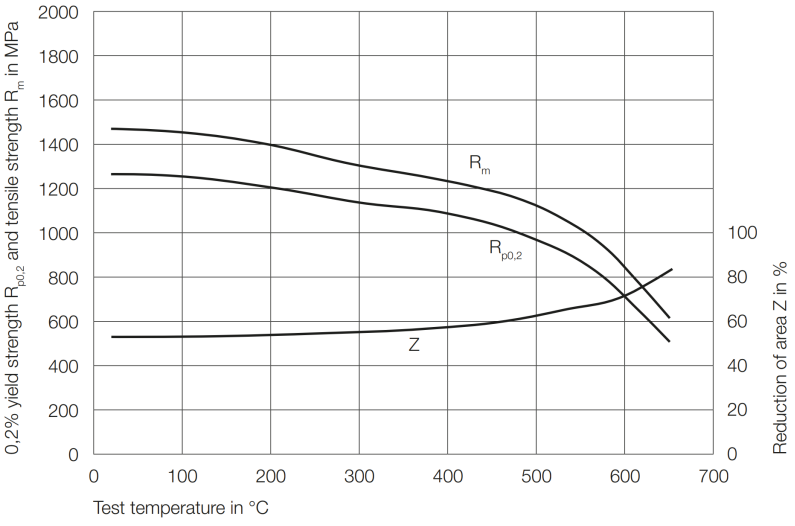
Continuous cooling transformation diagram



Tempering graph



High-temperature strength graph



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