

Thermodur® E 38 K

Superclean

Hot Work Tool Steel

Data Sheet

Chemical composition in %

C	Si	Mn	Cr	Mo	V
0.35	0.30	0.30	5.00	1.35	0.45

Steel properties

- outstanding high-temperature strength
- improved toughness.
- excellent thermal conductivity
- low susceptibility to hot cracking
- may be water-cooled to a limited extent

Typical Applications

- Hot-work tool steel for universal use
- particularly suitable for applications involving high flexural stresses due to outstanding toughness
- Extrusion tools for light metal processing
- Die casting tools for light metal processing

Physical properties

Coefficient of thermal expansion in 10 ⁻⁶ m/(m K)		
20–100 °C	11.8	
20–200 °C	12.4	
20–300 °C	12.6	
20–400 °C	12.7	
20–500 °C	12.8	
20–600 °C	12.9	
20–700 °C	12.9	
Thermal conductivity in W/(m K)	Annealed	Quenched and tempered
20 °C	29.8	26.8
350 °C	30.0	27.3
700 °C	33.4	30.3

Heat treatment

Soft annealing	740–780 °C	Ofen	≤ 200 HB
Hardening	990–1020 °C	Oil or hot bath, 500–550 °C	52 HRC after quenching

Tempering

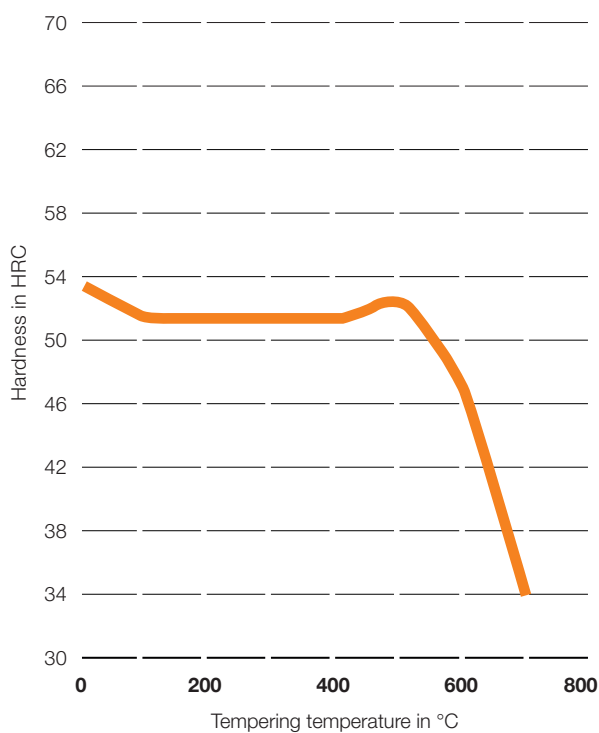
100 °C	200 °C	300 °C	400 °C	500 °C	550 °C	600 °C	700 °C
51 HRC	51 HRC	51 HRC	51 HRC	52 HRC	50 HRC	47 HRC	34 HRC

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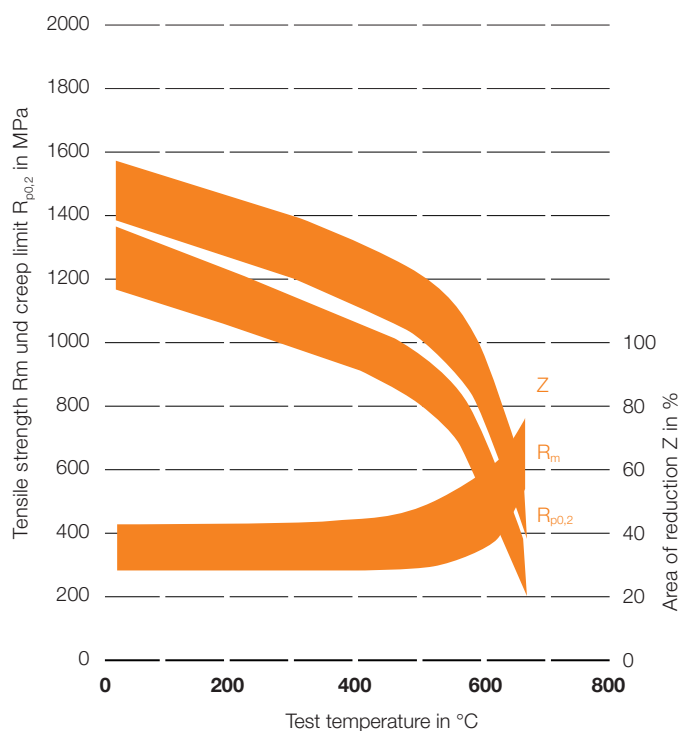
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Tempering



High-Temperature strength



Time-temperature-transformation

