

## I Buderus Hot Work Tool Steel HIPERDIE®

	C	Si	Mn	P	S	Cr	Mo	Ni	V	Others
Typical analysis	0.35	≤ 0.35	0.50	≤ 0.025	≤ 0.003	2.70	1.00	0.60	0.20	+

Figures in % by mass

### Characteristics

Special CrMoV-alloyed hot work tool steel with excellent high-temperature strength and better toughness properties than grade 2344 as well as higher thermal conductivity than the classic hot work tool steels 2343, 2344 and 2367. In comparison to the NiCrMoV – tool steels 2711/2714 High PERFORMANCE DIE is characterized by higher wear resistance, comparable to grade 2343.

### Applications

- I Close-die forging: Small and medium-sized dies and die inserts for a large number of forgings.
- I Light alloy processing: Gravity – as well as low pressure die – casting moulds and tools up to 45 HRC.

### Delivered condition

Annealed to max. 250 HB

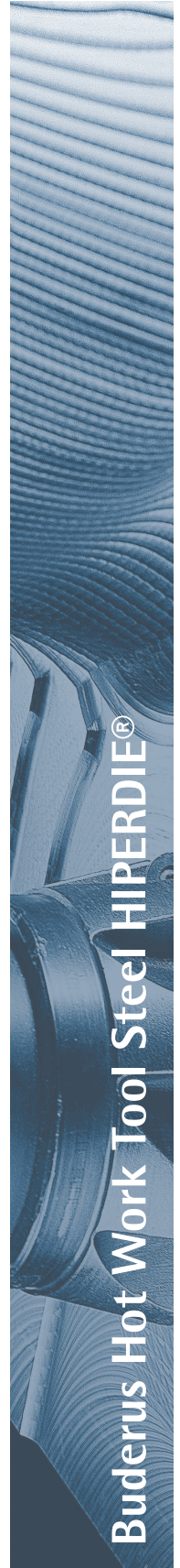
Quenched and tempered to customer specification on request to max. 430 HB (△ approx. 1450 MPa)\*

Sizes upon request

### Physical properties (reference values)

Thermal expansion coefficient (10 <sup>-6</sup> /K)	20–100 °C	20–250 °C	20–500 °C
	11.9	12.8	13.8
Thermal conductivity (W/mK)	20 °C	250 °C	500 °C
	38.3	37.1	35.3
Young's modulus (GPa)	20 °C	250 °C	500 °C
	209	204	198

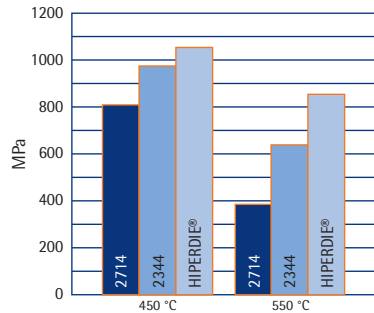
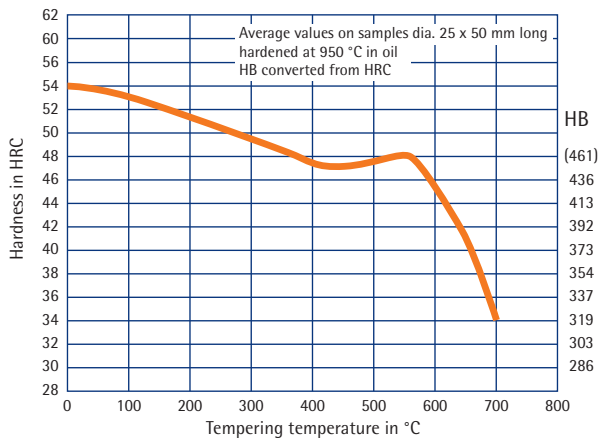
\* Surface hardness in Brinell, converted to DIN EN ISO 18265, Table A.1



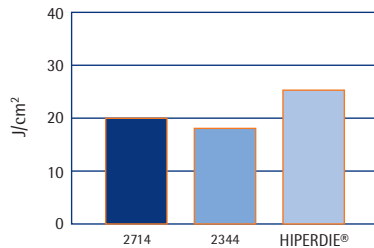
## HIPERDIE®

Heat treatment	
Stress relieving	Temperature: Approx. 650 °C in the annealed state 40 °C below tempering temperature in the quenched and tempered state Duration: 1 hour per 50 mm wall thickness Cooling: Furnace
Soft annealing	Temperature: 750 °C Duration: 1 hour per 25 mm wall thickness Cooling: Furnace
Hardening	Temperature: 950 °C Duration: 1 minute per mm wall thickness
Quenching hardness	Max. 54 HRC in oil, salt bath or vacuum
Tempering	Temperature: See tempering curve Duration: 1 hour per 25 mm wall thickness Cooling: Air
Working hardness	Max. 430 HB

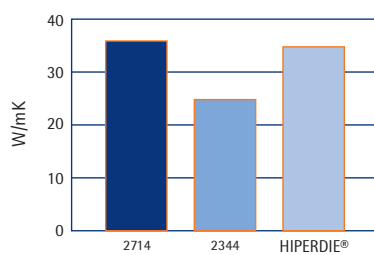
### Tempering curve



Comparison of high-temperature yield strength  
Quenched and tempered to approx. 1400 MPa

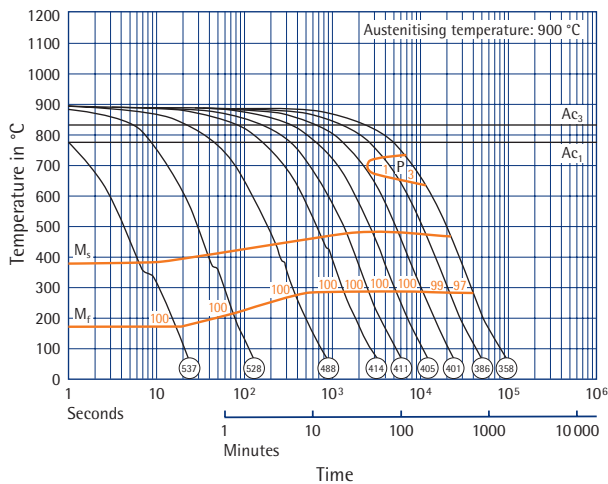


Comparison of impact value  
Quenched and tempered to approx. 1400 MPa  
ISO-V samples surface transverse 20 °C



Comparison of thermal conductivity at 250 °C

### TTT curve (continuous)



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