

## I Buderus Die Steel 2714 ISO-B MOD

	C	Si	Mn	P	S	Cr	Ni	Mo	V
Typical analysis	0.52	0.25	0.95	0.015	0.005	1.10	2.00	0.75	0.10
Chemical composition as per SEL	0.50–0.60	0.10–0.40	0.60–0.90	≤ 0.030	≤ 0.030	0.80–1.20	1.50–1.80	0.35–0.55	0.05–0.15

Figures in % by mass

Register of European Steels (SEL)	~ 55 NiCrMoV 7 mod
DIN EN ISO 4957	~ 55 NiCrMoV 7 mod
AFNOR	~ 55 NCD 07-05 mod
AISI	~ L 6 mod

### Characteristics

Cr-Ni-Mo alloyed die steel based on grade 1.2714, but with optimized composition to achieve full quenching and tempering with dimensions up to 800 mm reference diameter, improved high-temperature strength properties, and increased wear-resistance compared to the standard.

### Applications

Large press dies for forming aluminium, forging dies with large quantities, die and mould holders, tool holders and cold forging die holders, tool cassettes.

Hydroforming moulds (IHU).

**Note:** For extremely large dimensions, we recommend contour hardening.

### Delivered condition

Annealed to max. 248 HB

Quenched and tempered to 370–415 HB ( $\Delta$  approx. 1250–1400 MPa)\* or to customer specification

### Physical properties (reference values)

Thermal expansion coefficient ( $10^{-6}/K$ )	20–100 °C	20–250 °C	20–500 °C
	12.2	13.1	14.2
Thermal conductivity (W/mK)	20 °C	250 °C	500 °C
	36.0	37.5	34.8
Young's modulus (GPa)	20 °C	250 °C	500 °C
	215	198	175

### High-temperature yield strength

Quenched and tempered state	0.2 % yield strength in MPa at temperature			
	450 °C	500 °C	550 °C	600 °C
~ 1570 MPa	910	750	470	230
~ 1370 MPa	830	605	410	215
~ 1180 MPa	630	480	305	165

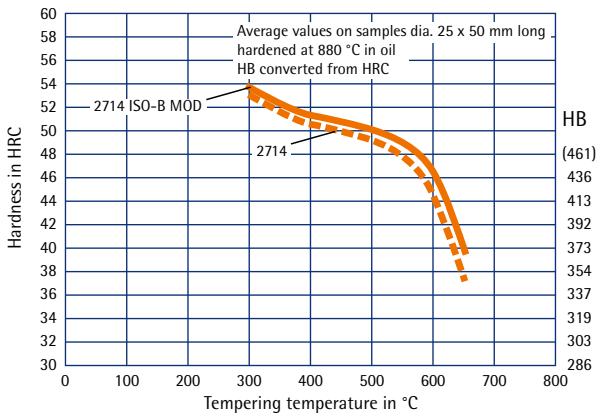
\* Surface hardness in Brinell, converted to DIN EN ISO 18265, Table A.1

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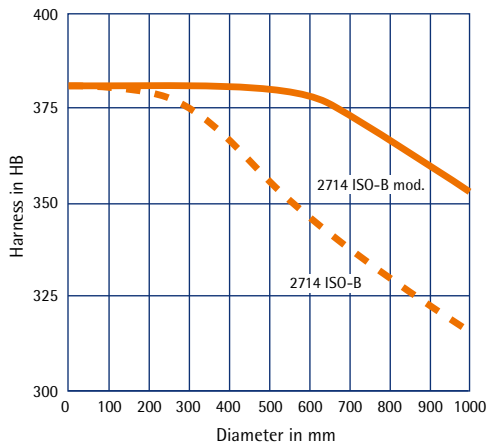
Heat treatment		
Stress relieving	Temperature:	Approx. 650 °C in the annealed state
	Duration:	1 hour per 50 mm wall thickness
	Cooling:	Furnace
Soft annealing	Temperature:	700 °C
	Duration:	1 hour per 25 mm wall thickness
	Cooling:	Furnace
Hardening	Temperature:	880 °C
	Duration:	1 minute per mm wall thickness
Quenching hardness	Max. 58 HRC	in water/oil, protective atmosphere/oil, oil, hot bath or vacuum
Tempering	Temperature:	See tempering curve
	Duration:	1 hour per 25 mm wall thickness
	Cooling:	Air
Working hardness	300–440 HB	depending on application

Note: pre-heating of the tools to 250–280 °C is recommended.

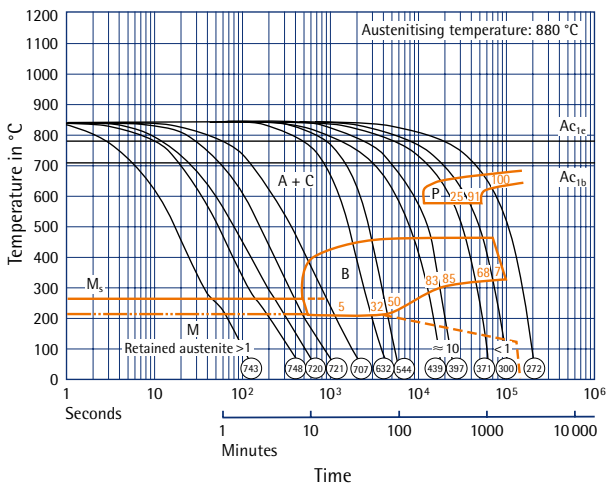
### Tempering curve



### Comparison of core hardness (schematic curve)



### TTT curve (continuous)



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