

# Buderus Corrosion-Resistant Plastic Mould Steel 2316 NITRO-B®

	C	Si	Mn	P	S	Cr	Ni	Mo	V	N
Typical analysis	0,30	0,30	0,95	0,03	0,002	14,50	1,00	1,30	0,20	+
Chemical composition as per SEL	0,33-0,45	≤ 1,00	≤ 1,50	≤ 0,03	≤ 0,03	15,50-17,50	≤ 1,00	0,80-1,30		

Figures in % by mass

European Steels Register (SEL)	~ X 38 CrMo 16
DIN EN ISO 4957	~ X 38 CrMo 16
AFNOR	Z 35 CD 17
AISI	~ 422

## Characteristics

Modified, corrosion-resistant mould steel, polishable to 400 grit.

## Application

Injection dies, mould inserts for processing PVC amino-plastics and additives. Increased hardness compared to the corrosion-resistant steel 2316 ISO-B MOD.

## Important notes

- In salt spray tests according to DIN EN ISO 9227, 2316 NITRO-B® proved to perform identically well regarding corrosion properties as 2316 ISO-B MOD.
- Processing amino-plastics and PVC compounds involves high working temperatures (> 160 °C) and can give rise to highly aggressive cleavage products such as hydrochloric acid HCl, causing corrosive attack on the mould surface. No mould steel is resistant to that. The production temperature of 160 °C should therefore not be exceeded.

## As-delivered condition

Hardened and tempered to 320 - 365 HB (approx. 1080 - 1230 MPa)\*  
Annealed for hardening to max. 53 HRC on request.

## Physical properties (reference values)

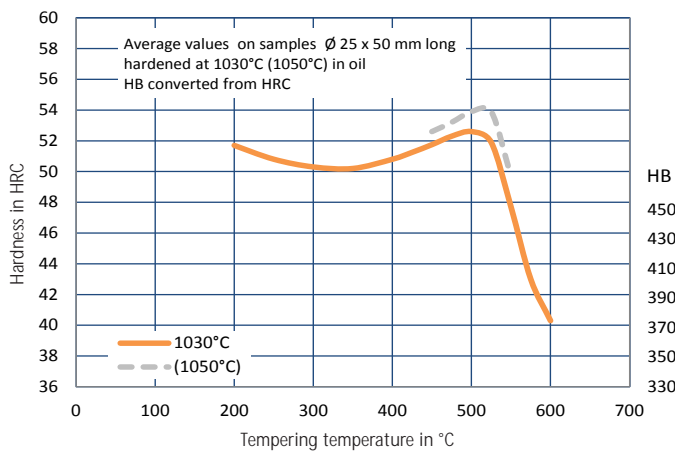
	20-100 °C	20-250 °C	20-500 °C
Thermal expansion coefficient (10 <sup>-6</sup> /K)	10.5	11.2	12.0
Thermal conductivity (W/mK)	20 °C 21.5	250 °C 23.9	500 °C 25.6
Young's modulus (GPa)	20 °C 210	250 °C 200	500 °C 170

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

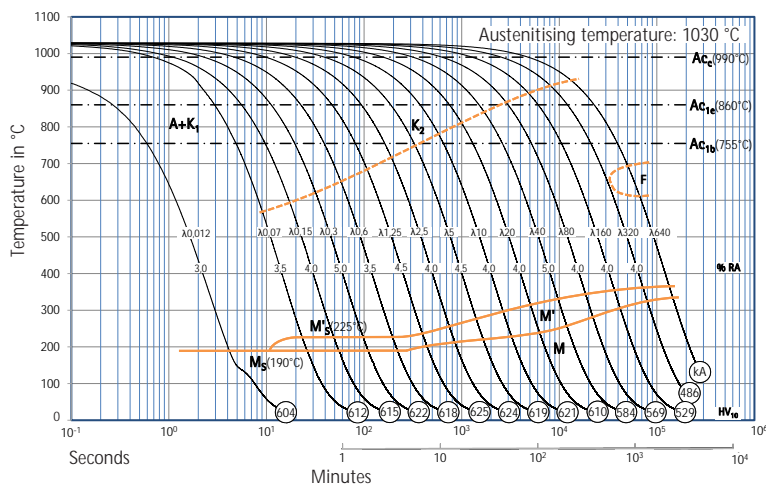
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Heat treatment	
Stress relieving	Temperature: Approx. 530 °C in the quenched and tempered condition Duration: 1 hour per 50 mm wall thickness Cooling: furnace
Soft annealing	Temperature: 800 °C Duration: 1 hour per 25 mm wall thickness Cooling: furnace
Hardening	Temperature: 1030 °C (1050 °C) Cooling: 1 min. per mm wall thickness
Quenching hardness	max. 54 HRC in oil or vacuum
Tempering	Temperature: see tempering chart Duration: 1 hour per 25 mm wall thickness Cooling: air
Working hardness	320 - 365 HB (max. 50 - 53 HRC)

## Tempering curve



## TTT curve (continuous)



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