Steel grade

Material No. / Werkstoff-Nr.	PREMIUM 1.2365
Description	32CrMoV12-28
AISI/SAE	H10; T20810
Search for alternatives in the ABRAMS STEEL GUIDE®	**www.steel-guide.eu/alternatives/H10**

Specifications

€co-Präz® [€co]
L: 500 mm

Precision round steel
with machining allowance [PRS/BA]
peeled / rough-turned
L: 500 mm
L: 1.000 mm

Chemical composition AISI/SAE H10 (reference value %)

C	Si	Mn	P	S	Cr	Mo	V
0,28 - 0,35	0,1 - 0,4	0,15 - 0,45	0 - 0,03	0 - 0,02	2,7 - 3,2	2,5 - 3,0	0,4 - 0,7

Physical properties

Hardness (delivery condition)	max. 229 HB, annealed						
Tensile strength R_m (as received condition)	approx. 770 N/mm²						
Working hardness	max. 52 HRC						
Thermal expansion coefficient 10^{-6}m/(m • K)	20 - 100°C	20 - 200°C	20 - 300°C	20 - 400°C	20 - 500°C	20 - 600°C	20 - 700°C
	11,8	12,5	12,7	13,1	13,5	13,6	13,8
Thermal conductivity W/(m • K)	20°C	350°C	700°C				
Annealed	32,8	34,5	32,2				
Tempered	31,4	32,0	29,3				

Technical properties

Hot work steel with high toughness, heat resistance and tempering resistance. Air-hardening steel grade with good thermal conductivity. Can be cooled with water.

Applications

Extrusion presses, brass casting, press tools, die inserts, die casting moulds, plastic moulds, recipient bushes, pressure dies, press mandrels, tube extrusion mandrels, piecer plugs, press dies, block receivers, screw production, nut production, rivet production, bolts production, hot shear knives.

Heat treatment

Soft annealing	**Temperature**		**Cooling**			**Hardness**			
	750 - 800°C		Furnace			max. 229 HB			
Stress relief annealing	**Temperature**		**Cooling**						
	600 - 650°C		Furnace						
Hardening	**Temperature**		**Quenching in**			**Hardness after quenching**			
	1030 - 1050°C		Oil, hot basin (500 - 550°C)			52 HRC			
Tempering	100°C	200°C	300°C	400°C	500°C	550°C	600°C	650°C	700°C
	51 HRC	50 HRC	50 HRC	50 HRC	52 HRC	50 HRC	47 HRC	40 HRC	34 HRC

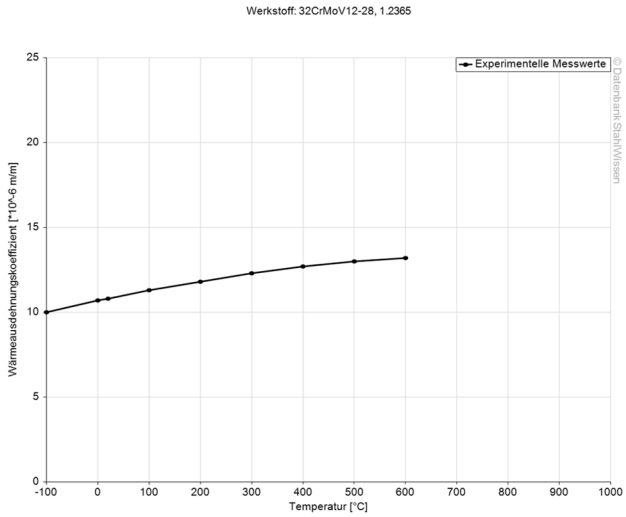
Divisions of
ABRAMS Industries GmbH & Co. KG
Hannoversche Str. 38 / 46
49084 Osnabrück
Germany

County court Osnabrück / Germany, HRA 6865
GP: ABRAMS Industries Verwaltungs GmbH
Country court Osnabrück /Germany, HRB 20019
CEO: Dipl.-Wi.-Ing. Dr. Jürgen Abrams
COO: Ms. Nur H. Nezir, LL. B.

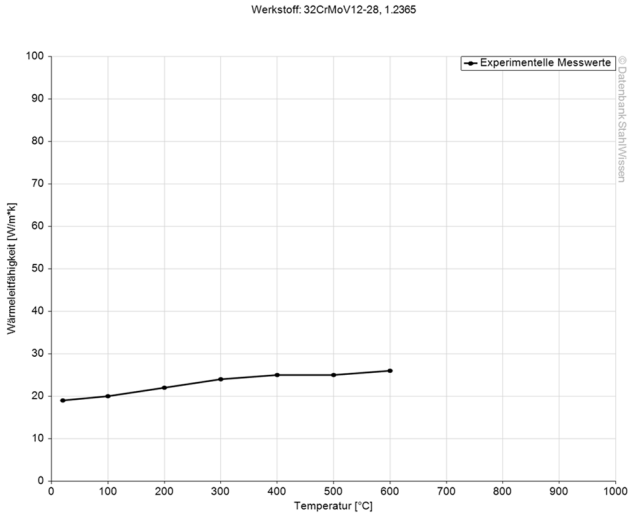
T: +49 541 / 357 39-0
sales@abrams-industries.eu
www.abrams-industries.eu/shop
VAT-No.: DE221940667

Bank details:
Bank: Sparkasse Osnabrück / Germany
SWIFT / BIC: NOLADE22
IBAN: DE63 2655 0105 1522 9268 96

Thermal expansion coefficient diagram



Thermal conductivity diagram



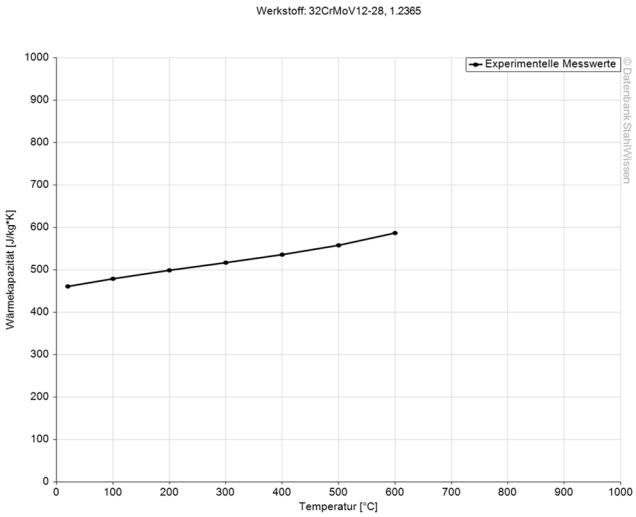
Divisions of
ABRAMS Industries GmbH & Co. KG
Hannoversche Str. 38 / 46
49084 Osnabrück
Germany

County court Osnabrück / Germany, HRA 6865
GP: ABRAMS Industries Verwaltungs GmbH
Country court Osnabrück /Germany, HRB 20019
CEO: Dipl.-Wi.-Ing. Dr. Jürgen Abrams
COO: Ms. Nur H. Nezir, LL. B.

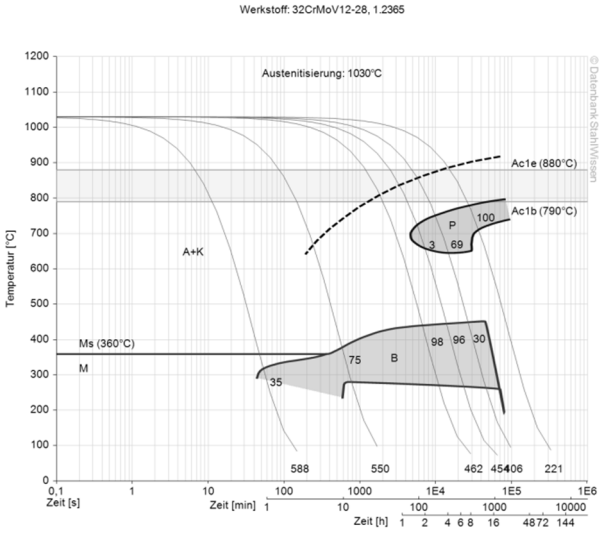
T: +49 541 / 357 39-0
sales@abrams-industries.eu
www.abrams-industries.eu/shop
VAT-No.: DE221940667

Bank details:
Bank: Sparkasse Osnabrück / Germany
SWIFT / BIC: NOLADE22
IBAN: DE63 2655 0105 1522 9268 96

Thermal capacity diagram



Continuous ZTU-diagram



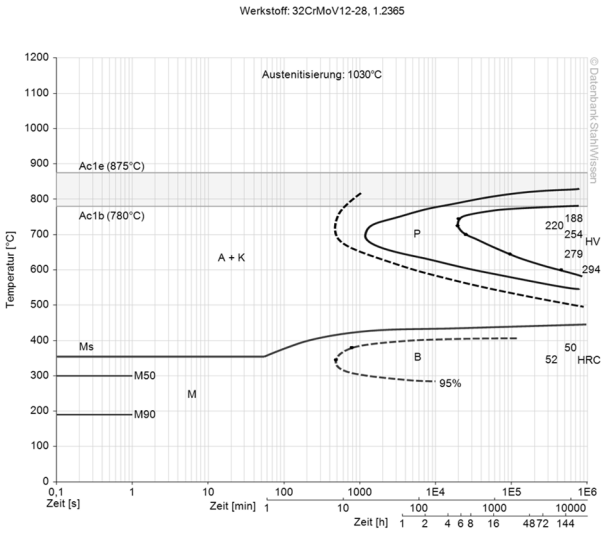
Divisions of
ABRAMS Industries GmbH & Co. KG
Hannoversche Str. 38 / 46
49084 Osnabrück
Germany

County court Osnabrück / Germany, HRA 6865
GP: ABRAMS Industries Verwaltungs GmbH
Country court Osnabrück /Germany, HRB 20019
CEO: Dipl.-Wi.-Ing. Dr. Jürgen Abrams
COO: Ms. Nur H. Nezir, LL. B.

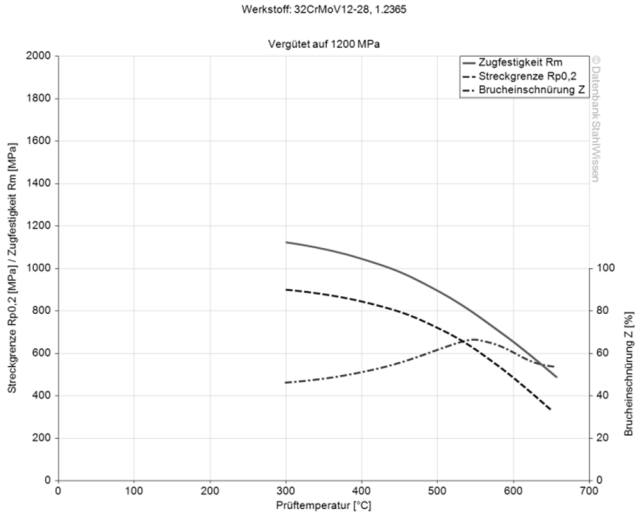
T: +49 541 / 357 39-0
sales@abrams-industries.eu
www.abrams-industries.eu/shop
VAT-No.: DE221940667

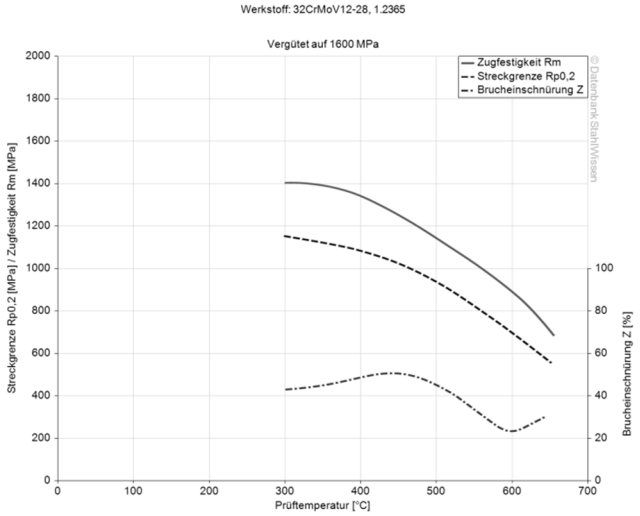
Bank details:
Bank: Sparkasse Osnabrück / Germany
SWIFT / BIC: NOLADE22
IBAN: DE63 2655 0105 1522 9268 96

Isothermical ZTU-diagram



Hardening and tempering diagrams





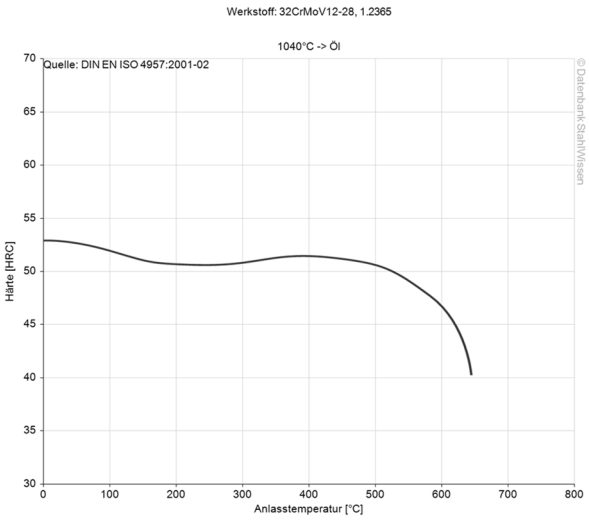
Divisions of
ABRAMS Industries GmbH & Co. KG
Hannoversche Str. 38 / 46
49084 Osnabrück
Germany

County court Osnabrück / Germany, HRA 6865
GP: ABRAMS Industries Verwaltungs GmbH
Country court Osnabrück /Germany, HRB 20019
CEO: Dipl.-Wi.-Ing. Dr. Jürgen Abrams
COO: Ms. Nur H. Nezir, LL. B.

T: +49 541 / 357 39-0
sales@abrams-industries.eu
www.abrams-industries.eu/shop
VAT-No.: DE221940667

Bank details:
Bank: Sparkasse Osnabrück / Germany
SWIFT / BIC: NOLADE22
IBAN: DE63 2655 0105 1522 9268 96

Tempering diagram



The data shown here is to be used only as an indication of the statistics, thus we accept no liability.
Diagrams are taken from Datenbank StahlWissen Dr. Sommer Werkstofftechnik
Issued: 2012

Divisions of
ABRAMS Industries GmbH & Co. KG
Hannoversche Str. 38 / 46
49084 Osnabrück
Germany

County court Osnabrück / Germany, HRA 6865
GP: ABRAMS Industries Verwaltungs GmbH
Country court Osnabrück /Germany, HRB 20019
CEO: Dipl.-Wi.-Ing. Dr. Jürgen Abrams
COO: Ms. Nur H. Nezir, LL. B.

T: +49 541 / 357 39-0
sales@abrams-industries.eu
www.abrams-industries.eu/shop
VAT-No.: DE221940667

Bank details:
Bank: Sparkasse Osnabrück / Germany
SWIFT / BIC: NOLADE22
IBAN: DE63 2655 0105 1522 9268 96