Firmodur 6582

TECHNICAL DATA SHEET
34CrNiMo6
1.6582

QUENCHED AND TEMPERED STEEL

CHEMICAL COMPOSITION (IN WEIGHT-% ACCORDING TO DIN EN 10083-3)

	C	Si	Mn	P	S	Cr	Ni	Mo
min.	0.3	-	0.5	-	-	1.3	1.3	0.15
max.	0.38	0.4	0.8	0.025	0.035	1.7	1.7	0.3

Customer specific limitations of standard analysis are possible after consultation with the Deutsche Edelstahlwerke.

APPLICATIONS

Firmodur 6582 is used for through-hardened components such as fasteners in the automotive and mechanical engineering industry with high demands on strength and toughness.

STANDARDS AND DESIGNATIONS

DIN EN 10083-3	1.6582 34CrNiMo6
DIN EN 10263-4	1.6582 34CrNiMo6
B.S.	816M40 817M40
AFNOR	34CrNiMo8 35NCD6
UNI	35NiCrMo6KB
JIS	SNCM447
SS	2541
GOST	38Ch2N2MA
DIN EN ISO 683-1	36CrNiMo6
AISI / SAE / ASTM	4337 / 4340

PHYSICAL PROPERTIES

Density in kg/dm³	7.73
Young's modulus in GPa	210
Electrical resistivity at 20°C in (Ω mm²)/m	0.19
Thermal conductivity at 20°C in W/(m K)	42.6
Specific heat capacity at 20°C in J/(kg K)	470
Thermal expansion coefficient in soft annealed condition in $10^{-6}K^{-1}$	
» 20°C - 100°C	11.1
» 20°C - 200°C	12.1
» 20°C - 300°C	12.9
» 20°C - 400°C	13.5

DELIVERY CONDITION

Quenched and tempered	700 – 1,400 MPa
Soft annealed (+A)	max. 248 HB

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MECHANICAL PROPERTIES IN QUENCHED AND TEMPERED CONDITION AT ROOMTEMPERATURE (+QT) ACCORDING TO DIN EN 10083-3

d in mm	Yield strength in MPa	Tensile strength in MPa	Elongation ($L_0 = 5\ d_0$) in %	Reduction of area in %	Notch impact energy ISO - V in J
d ≤ 16	≥ 1,000	1,200 – 1,400	≥ 9	≥ 40	-
16 < d ≤ 40	≥ 900	1,100 – 1,300	≥ 10	≥ 45	≥ 45
40 < d ≤ 100	≥ 800	1,000 – 1,200	≥ 11	≥ 50	≥ 45
100 < d ≤ 160	≥ 700	900 – 1,100	≥ 12	≥ 55	≥ 45
160 < d ≤ 250	≥ 600	800 – 950	≥ 13	≥ 55	≥ 45

The sampling for the tests is carried out according to DIN EN 10083-1. Deviating requirements can be considered on request.

WELDING

Firmodur 6582 is difficult to weld and should therefore not be used in welded constructions.

HOT FORMING

The temperature range for hot forming of Firmodur 6582 is 1,000°C - 850°C. The material has to be cooled in the furnace down slowly.

HEAT TREATMENT

	Temperature in °C	Cooling
Normalizing (+N)	850 - 880	Air
Soft annealing (+A)	650 - 700	Furnace, down slowly
Quenched and tempered (+QT)		
» Hardening	830 - 860	Oil, polymer, water
» Tempering	540 - 680	Air

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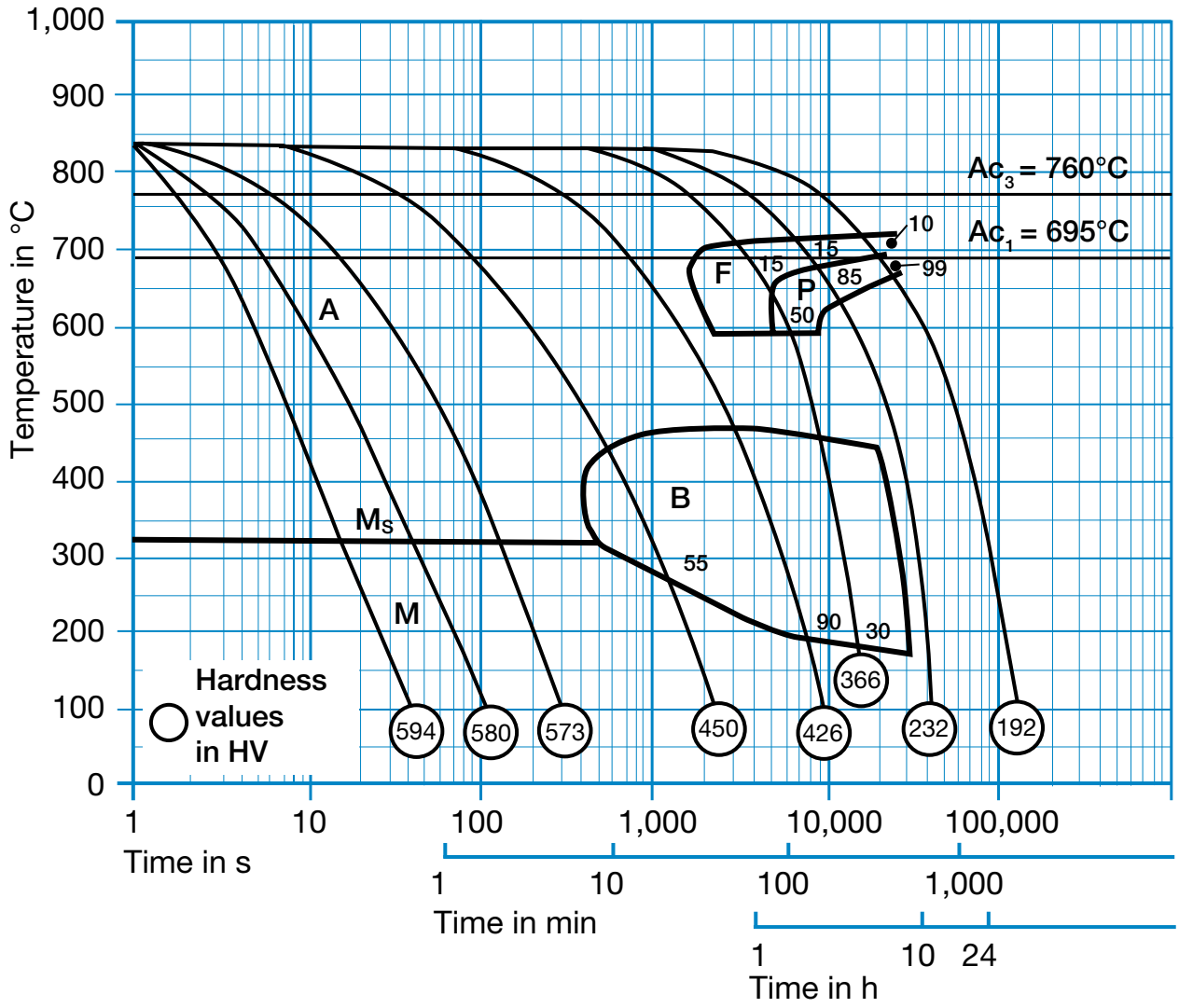
TIME-TEMPERATURE-TRANSFORMATION DIAGRAM

	C	Si	Mn	P	S	Cr	Ni	Mo
	0.34	0.29	0.59	0.012	0.007	1.54	1.52	0.24



Deutsche Edelstahlwerke

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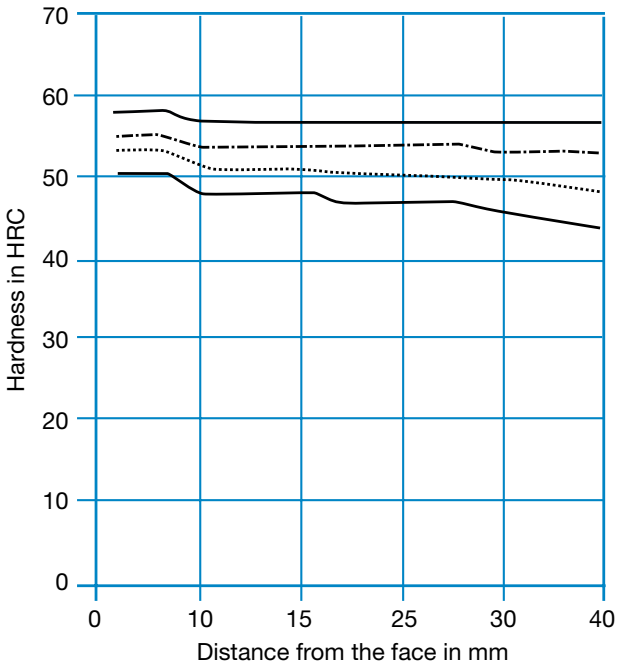
HARDENABILITY SCATTER BAND

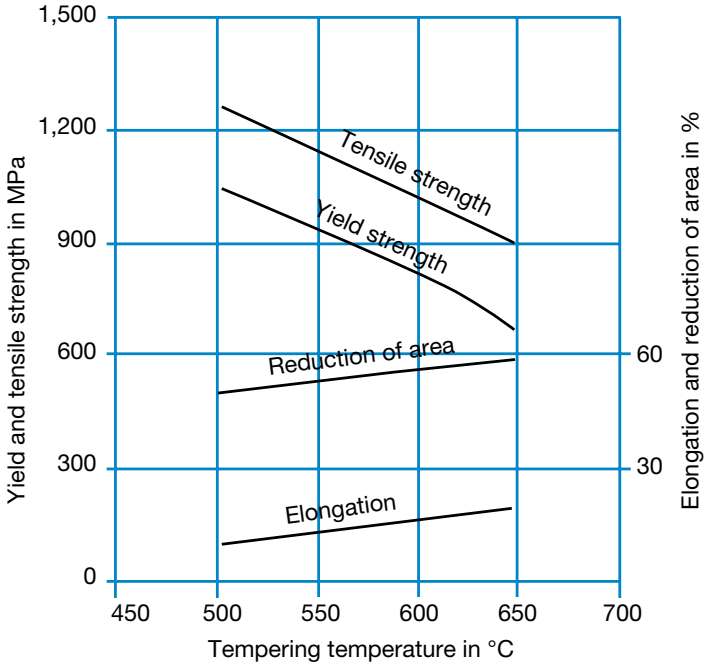


Lower limit +H and +HL
Lower limit +HH

Upper limit +H and +HH
Upper limit +HL

Hardening temperature 850°C

TEMPERING DIAGRAM



Hardening temperature 850°C
Cross section of the specimen Ø 60 mm
Samples conventionally hardened
in high performance oil

LIEFERMÖGLICHKEITEN

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