

### HOT WORK TOOL STEEL

#### CHEMICAL COMPOSITION (IN WEIGHT-%)

C	Si	Mn	Cr	Mo	V	Others
0.35	0.3	0.3	5.0	1.75	0.8	+

#### MATERIAL PROPERTIES

- » Cr-Mo-V alloyed hot work tool steel with lowest content of trace elements
- » Best thermal shock resistance
- » Outstanding high-temperature strength
- » Excellent toughness
- » Very good thermal wear resistance
- » Excellent duration tempering resistance
- » Excellent homogeneity
- » Outstanding isotropy

#### APPLICATIONS

- » Universally useable hot work tool steel for highly stressed tools
- » Pressure casting dies for light metal processing, especially for complex tools
- » Extrusion dies for light and heavy metal processing, especially for difficulty formed profiles
- » Swages and inserts

#### STANDARDS AND DESIGNATIONS

Thermodur E 40 K Superclean is a non-standard special steel from Deutsche Edelstahlwerke GmbH.

#### PHYSICAL PROPERTIES

Thermal expansion coefficient in  $10^{-6}/K^{-1}$

» 20 - 100°C	11.5
» 20 - 200°C	12.0
» 20 - 300°C	12.3
» 20 - 400°C	12.6
» 20 - 500°C	12.9
» 20 - 600°C	13.2

Thermal conductivity in W/(m K) quenched + tempered

» 20°C	28.3
» 100°C	29.3
» 200°C	30.9
» 300°C	31.0
» 400°C	30.7
» 500°C	29.5
» 600°C	27.8



### HEAT TREATMENT

	Temperature	Cooling	Hardness
Soft annealing (+A)	750 - 800°C	furnace	max. 230 HB
Hardening	1,020 - 1,040°C	air, oil or hot bath	hardness after quenching 55 HRC

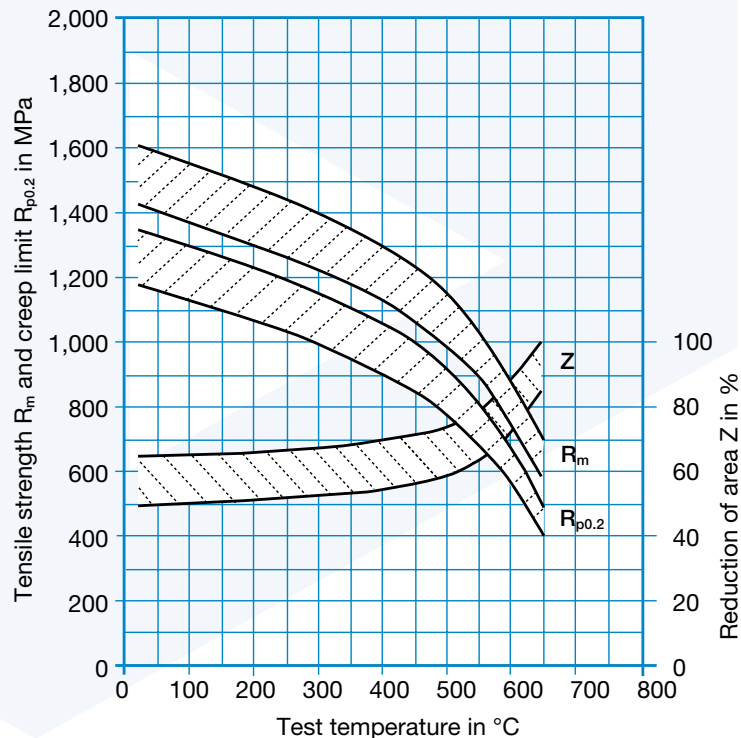
### TEMPERING

Tempering temperature in °C	300	400	500	550	600	650
Hardness in HRC	51	51	52	51	48	36

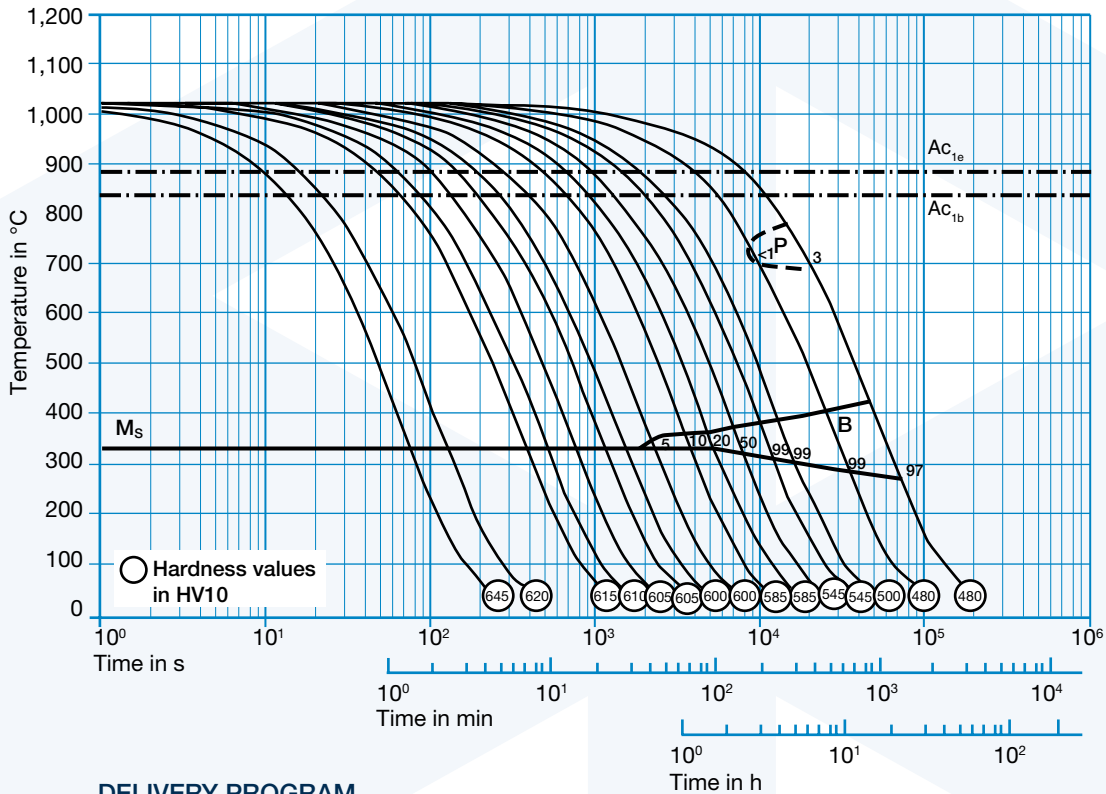
### TEMPERING DIAGRAM



### HIGH-TEMPERATURE STRENGTH DIAGRAM



### CONTINUOUS TIME-TEMPERATURE-TRANSFORMATION DIAGRAM



### DELIVERY PROGRAM

You can find our complete delivery programme in the brochure "High-tech Steel Solutions for Tomorrow's World (Products and Services)" on [www.dew-stahl.com](http://www.dew-stahl.com).

We reserve the right to change the content of our technical datasheets without prior notice at any time to remove and/or edit in any way. Errors and misprints reserved.

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