ES 275 K ESR

Name:
45 NiCrMo 16

Material No.:
1.2767 ESR

Typical analysis in %:

C	Cr	Mo	Ni
0.45	1.4	0.3	4.0

As-supplied condition:
Soft-annealed to max. 285 HB (965 N/mm²)

Characteristics:
Through-hardening steel with the highest toughness, low distortion. ESR technology provides this material with high polishability.

General fields of application:
Solid coining dies for the highest toughness requirements, extremely highly loaded cutlery presses, tools for heavy cold forming, hobbing tools, shearing blades and cutters for cutting very thick material; plastic, compression and injection moulds, which require high hardness combined with the highest toughness.

Heat treatment data:

	Temperature	*Duration*	*Cooling*
Soft annealing	620 - 650 °C	2 - 5 h	furnace
Stress-relief annealing	600 - 650 °C	min. 4 h	furnace
Hardening	840 - 870 °C	Group II	oil, air WB 200° C
Tempering	180 - 600 °C see tempering curve	min. 2 h depending on cross section	still air

Physical characteristics:

Coefficient of thermal expansion: between 20 °C and:

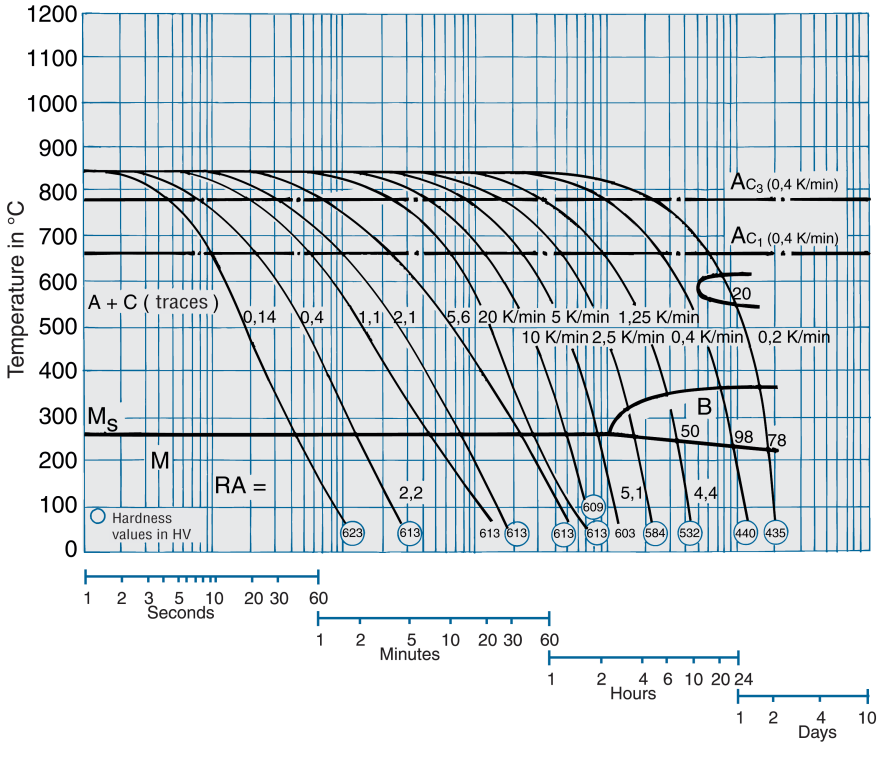
10^{-6} x m	100	200	300	400	500	600	700 °C
m x K	11.8	12.5	12.8	13.1	13.4	13.8	13.6

Thermal conductivity:

W	20	350	700 °C
m x K	30.0	30.5	32.0

Normal working hardness: 50 - 56 HRC

Continuous time-temperature-transformation diagram



Tempering curve