ES 100 K

Name:
21 MnCr 5

Material No.:
1.2162

Typical analysis in %:

C	Mn	Cr
0.21	1.3	1.2

As-supplied condition:
BG-annealed to maximum
210 HB (approx. 710 N/mm²)

Characteristics:
Standard case hardening steel, easily machined, good polishability, suitable for cold hobbing, high surface hardness with high core toughness can be achieved with appropriate heat treatment

General fields of application:
Tools for plastic processing (thermoplastic and thermosetting), pinions, gear wheels, gear racks, shafts etc.

Special note:
Case hardening in powder at:
870 - 900 °C
Case hardening in salt bath:
900 - 930 °C
Intermediate annealing temperature:
630 - 650 °C

Heat treatment data:

	Temperature	*Duration*	*Cooling*
Soft annealing	670 - 710 °C	2 - 5 h	furnace
Stress-relief annealing	600 - 650 °C	min. 4 h	furnace
Hardening	810 - 840 °C	Group II	oil, WB 200 °C
Tempering	180 - 300 °C	min. 2 h	still air
	see tempering curve	depending on cross section	

Physical characteristics:

Coefficient of thermal expansion: between 20 °C and:

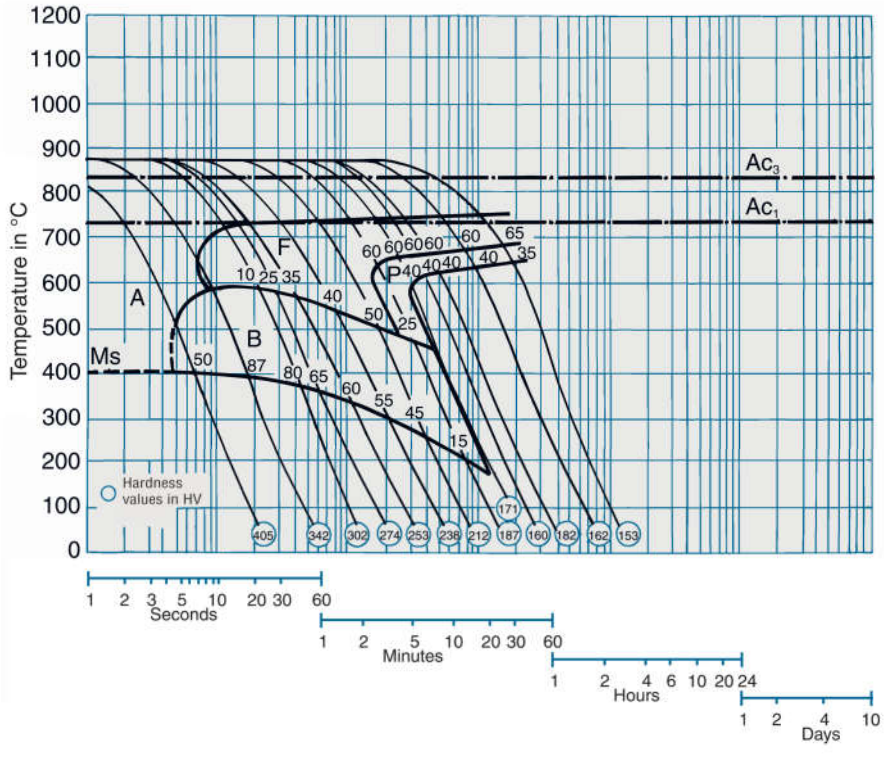
10^{-6} x m	100	200	300	400	500	600	700 °C
m x K	12.2	12.9	13.5	13.9	14.2	14.5	14.8

Thermal conductivity:

W	20	350	700 °C
m x K	39.5	36.5	33.5

Normal working hardness: 58 - 61 HRC (after hardening, core strength approx. 1000 - 1200 N/mm²)

Continuous time-temperature-transformation diagram



Tempering curve