

ES 60 S

Name:
90 MnCrV 8

Material No.:
1.2842

Typical analysis in %:
C Mn Cr V
0.9 2.0 0.4 0.1

As-supplied condition:
Soft-annealed to max. 229 HB
(770 N/mm²)

Characteristics:
Oil hardening steel with simple heat treatment, especially easy to machine, high hardenability, good dimensional stability

General fields of application:

Punching, cutting, deep drawing tools, stamps, industrial knives, cutting tools, measuring tools, compression and injection moulds, sprue bushings, clamping plates, guide columns

Heat treatment data:

	Temperature	Duration	Cooling
Soft annealing	680 - 720 °C	2 - 5 h	furnace
Stress-relief annealing	600 - 650 °C	min. 4 h	furnace
Hardening	790 - 820 °C	Group II	oil
Tempering	180 - 250 °C see tempering curve	min. 2 h depending on cross section	still air

Physical characteristics:

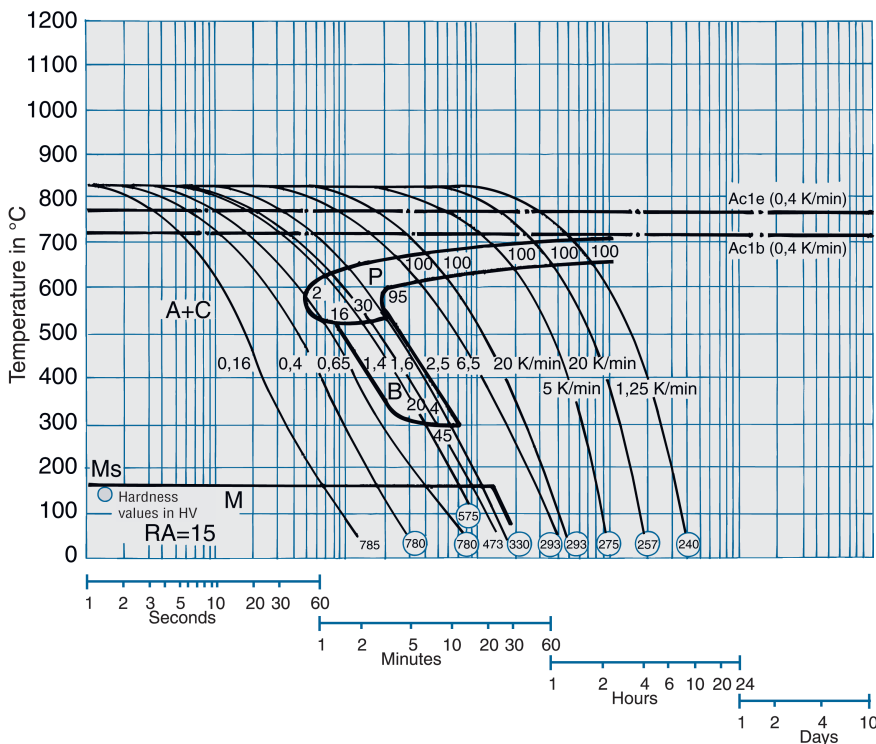
Coefficient of thermal expansion: between 20 °C and:

10 ⁻⁶ x m m x K	100	200	300	400	500	600	700 °C
	12.2	13.2	13.8	14.3	14.7	15.0	15.3

Thermal conductivity: $\frac{W}{m \times K}$ $\frac{W}{m \times K}$ $\frac{W}{m \times K}$ $\frac{W}{m \times K}$
20 350 700 °C
33.3 32.0 31.3

Normal working hardness: 57 - 62 HRC

Continuous time-temperature-transformation diagram



Tempering curve

