

ES 50 S

Name:
X 210 Cr 12

Material No.:
1.2080

Typical analysis in %:
C Cr
2.1 12.0

As-supplied condition:
Soft-annealed to max. 248 HB
(840 N/mm²)

Characteristics:
Ledeburitic 12% chromium steel with good dimensional stability and high wear resistance, very good compressive strength combined with adequate toughness.

General fields of application:
Cutting tools, shearing knives, broaches, woodworking tools, profile and flanging rollers, thread rolling tools, deep drawing and pressing tools, drawing cones, guide rails, extrusion dies, sand blast nozzles, rotary shear knives

Special note:
Not suitable for larger wire sections; for this we recommend ES 70 S, Mat. No. 1.2379.

Through-hardening diameter for
64 HRC: 50 mm
62 HRC: 80 mm
60 HRC: 90 mm
58 HRC: 120 mm

Core hardness at \varnothing 300 mm: 44 HRC
Cooling: oil

Heat treatment data:

	Temperature	Duration	Cooling
Soft annealing	800 - 840 °C	2 - 5 h	furnace
Stress-relief annealing	600 - 650 °C		
Hardening	940 - 970 °C	Group III	oil, WB 500° C
Tempering	200 - 350 °C see tempering curve	min. 2 h depending on cross section	still air

Physical characteristics:

Coefficient of thermal expansion: between 20 °C and:

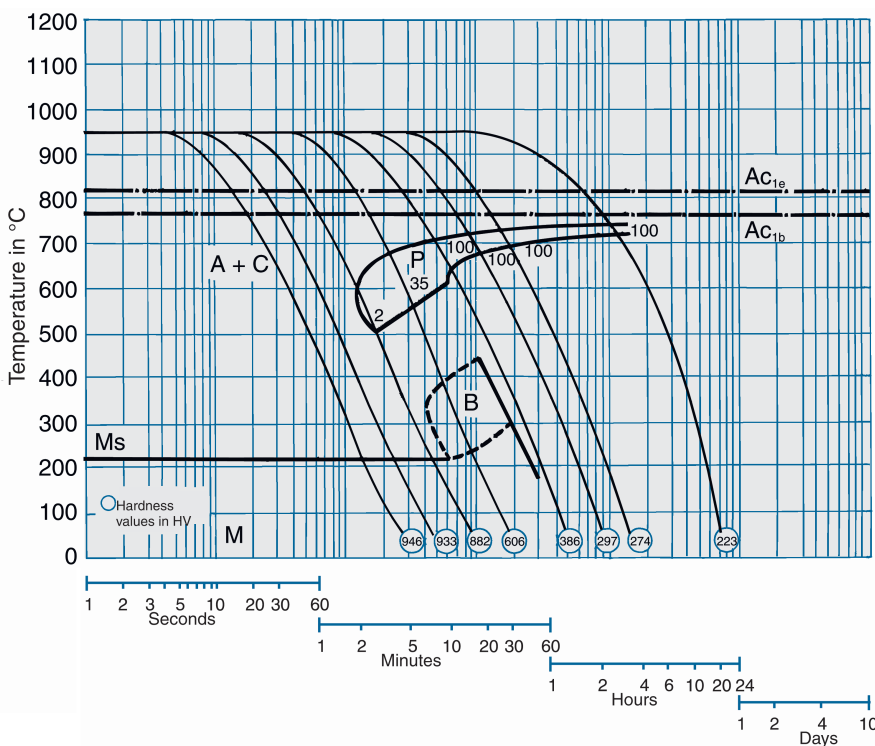
$10^{-6} \times m$	100	200	300	400	500	600	700 °C
m x K	10.8	11.7	12.2	12.6	12.8	13.1	13.3

Thermal conductivity:

W	20	350	700 °C
m x K	16.7	20.5	24.2

Normal working hardness: 58 - 62 HRC

Continuous time-temperature-transformation diagram



Tempering curve

