

MATERIAL NO.:

1.7225

DESIGNATION:
DIN: 42 CrMo 4
AFNOR: 42 CD 4
UNI: 42 CrMo 4
AISI: 4140

INDICATORY ANALYSIS:
 C 0.42
 Si 0.25
 Mn 0.75
 S <0.035
 Cr 1.10
 Mo 0.22

STRENGTH: max. 217 HB
TENSILE STRENGTH: (\approx max. 740 N/mm²)

THERMAL CONDUCTIVITY AT 20°C: 42.6 $\frac{W}{m K}$

COEFFICIENT OF THERMAL EXPANSION
 [10⁻⁶/K]

100°C	200°C	300°C	400°C	500°C	600°C	700°C
11.6	12.5	13.1	13.5			

CHARACTER: » Alloyed steel, suitable for quenching and tempering, with high resistance and high toughness; universally usable in engineering when toughened and pre-hardened

APPLICATION: » Machine construction, base plates, axes, gear shafts, gear wheels

TREATMENT BY:
 » Nitriding: suitable
 » Welding: not recommended
 » EDM: suitable
 » Coating: suitable

HEAT TREATMENT:
 » Normalising: 840 to 880°C afterwards cooling in air; some components need tempering afterwards
 » Soft annealing: 680 to 720°C for about 2 to 5 hours
 slow controlled cooling inside the furnace: 10 to 20°C per hour to about 600°C; further cooling in air, **max. 217 HB**
 » Toughening: max. 1,600 N/mm²
 » Hardening: 820 - 880°C
 quenching in oil or water
 oil hardening for thin and complex, water hardening for large and simple components
 obtainable hardness: **53-61 HRC**
 » Tempering: slow heating to tempering temperature (to avoid forming of cracks)
 immediately after hardening; at least 60 minutes cooling in air

TEMPERING CHART:

