

MATERIAL NO.:

1.2312

DESIGNATION:

DIN: 40 CrMnMoS 8-6
AFNOR: 40 CMD 8.S
UNI: -
AISI: P20 + S

TECHNICAL TIP:

» For increased surface quality requirements use material grade 1.2311.

INDICATORY ANALYSIS:

C 0.40
 Si 0.40
 Mn 1.50
 Cr 1.90
 Mo 0.20
 S 0.06

STRENGTH:

280 - 325 HB
 (\approx 950 - 1100 N/mm²)

THERMAL CONDUCTIVITY AT 100°C:

35 $\frac{W}{mK}$

COEFFICIENT OF THERMAL EXPANSION [10⁻⁶/K]

100°C	200°C	300°C	400°C	500°C	600°C	700°C
12.1	12.8	13.3	13.6			

CHARACTER:

» Alloyed and pre-toughened **tool steel** with excellent machinability in the hardened condition because of the sulphur additive; high dimensional stability

APPLICATION:

» Plates for mould bases and dies with increased requirements on strength; high-tensile machine parts

TREATMENT BY:

- » Polishing:
technical polishing possible; for higher surface requirements we recommend 1.2311 or 1.2738
- » Etching, EDM:
not recommended
- » Nitriding:
increases the steel's wear resistance

HEAT TREATMENT:

- Already pre-toughened; usually no heat treatment required
- » Soft annealing:
720 to 740°C for about 2 to 4 hours
slow controlled cooling inside the furnace
 - » Nitriding:
before nitriding, stress-relieving heat treatment at 580°C (Meusburger standard) is recommended.
 - » Hardening:
840 to 860°C
quenching in oil/hot bath (180 to 220°C)
obtainable hardness: **52 HRC**
 - » Tempering:
slow heating to tempering temperature immediately after hardening;
minimum time in furnace: 1 hour per 25 mm part thickness

TEMPERING CHART:

