

MATERIAL NO.:

1.2379

DESIGNATION:

DIN: X 153 CrMoV 12
AFNOR: Z 160 CDV 12
UNI: -
AISI: ≈ D2

TECHNICAL TIP:

» Secondary hardening, makes very good base material for nitriding or coating

INDICATORY ANALYSIS:

C 1.53
 Si 0.30
 Mn 0.35
 Cr 12.00
 Mo 0.80
 V 0.80

STRENGTH:

max. 255 HB
 (≈ max. 860 N/mm²)

THERMAL CONDUCTIVITY AT 100°C:

21 $\frac{W}{m K}$

COEFFICIENT OF THERMAL EXPANSION [10⁻⁶/K]

100°C	200°C	300°C	400°C	500°C	600°C	700°C
10.5	11.3	11.5	12.5			

CHARACTER:

» High-alloy **steel for through-hardening** with moderate machinability; extremely wear resistant and low warpage, good dimensional stability, toughness and through hardenability

APPLICATION:

» Mould plates and inserts as well as cutting punches, wear plates and cutting with high requirements for wear resistance

TREATMENT BY:

- » Polishing:
ideal when hardened
- » Nitriding:
very well suited, due to the fact that the hardness of the base material will not fall below 60 HRC
- » EDM:
possible, structure eroding not possible
- » Hard chrome plating:
possible
- » Etching:
not possible, coarse carbides are washed out

HEAT TREATMENT:

- » Soft annealing:
800 to 850°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. 235 HB**
- » Hardening:
curing temperature: see **tempering chart**
quenching in oil/air/hot bath
obtainable hardness: 63–65 HRC
- » Tempering:
slow heating to tempering temperature (to avoid forming of cracks) immediately after hardening;
triple tempering at max. secondary hardening temperature is recommended;
rapid cooling following the tempering improves the dimensional stability;
maximum hardness achievable after tempering: **60–62 HRC**

TEMPERING CHART:

