

**MATERIAL NO.:**

**M V10 PM**

**DESIGNATION:**

**AISI:** A11 (PM)

**TECHNICAL TIP:**

**INDICATORY ANALYSIS:**

C 2.45  
Si 0.90  
Mn 0.50  
Cr 5.20  
Mo 1.30  
V 9.75

- » Due to the high vanadium content the steel is enriched with small, hard carbides. This guarantees optimum edge stability with maximum abrasive wear resistance
- » Ideally suitable for highly stressed parts with complicated geometries

**STRENGTH:**

max. 280 HB  
( $\approx$  max. 960 N/mm<sup>2</sup>)

**THERMAL CONDUCTIVITY AT 100°C:**

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

**COEFFICIENT OF THERMAL EXPANSION [10<sup>-6</sup>/K]**

100°C	200°C	300°C	400°C	500°C	600°C	700°C
10.7	10.9	11.1	11.4			

**CHARACTER:**

- » Powder metallurgical high-speed steel with optimal dimensional accuracy after the heat treatment. Highest abrasive wear resistance and excellent toughness. Good machinability through a homogeneous microstructure

**APPLICATION:**

- » Blocks for eroding, dies and cutting punches with extreme requirements, fine blanking punches, pressing punches for sinter press tools.

**TREATMENT BY:**

- » Polishing:  
best metallurgical properties for mirror polishing
- » Nitriding:  
highly suitable
- » EDM:  
highly suitable
- » Coating:  
highly suitable

**HEAT TREATMENT:**

- » Soft annealing:  
880 to 900°C, about 2 to 5 hours  
slow controlled cooling of 10 to 20°C per hour to about 600°C; further cooling in air,  
**max. 280 HB**
- » Hardening:  
curing temperature: **see tempering chart**  
quenching in oil/compressed gas/air/hot bath  
obtainable hardness: **60-63 HRC**
- » Tempering:  
slow heating to tempering temperature (to avoid forming of cracks) immediately after hardening;  
triple tempering is recommended

**TEMPERING CHART:**

