

CPM 1V®**CRUCIBLE DATA**

CPM 1V is a medium carbon, high alloy tool steel which exhibits high toughness combined with high heat resistance. It is suited for hot or cold applications demanding high impact toughness which also require moderate wear resistance.

Typical Chemistry

Carbon	0.55%
Chromium	4.50%
Vanadium	1.00%
Tungsten	2.15%
Molybdenum	2.75%

Typical Applications**Hot (Warm) Work**

Hot and Warm Forming Dies	Hot Shear Dies
Hot Heading Dies	Extrusion Dies
Forging Dies and Punches	

Cold Work

High Impact Blanking Dies	Cold Heading Dies
Punches	Thread Rolling Dies

Relative Mechanical Properties**Impact Toughness**

Its CPM microstructure gives 1V high impact toughness superior to that of the shock-resistant tool steels such as S7.

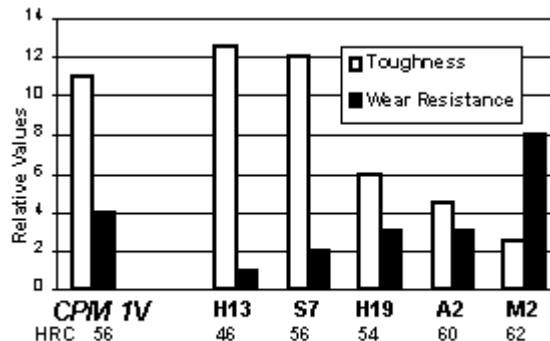
Wear Resistance

Its vanadium content imparts 1V with wear resistance slightly better than A2.

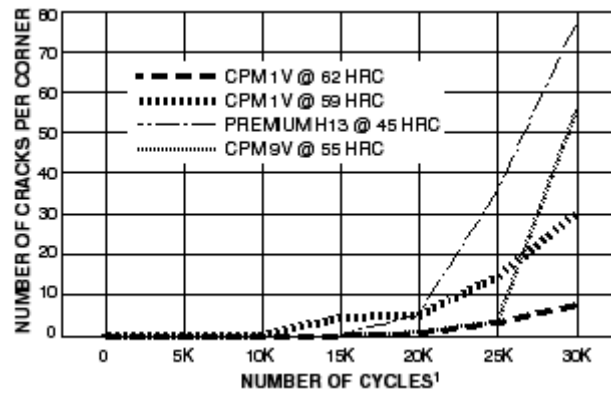
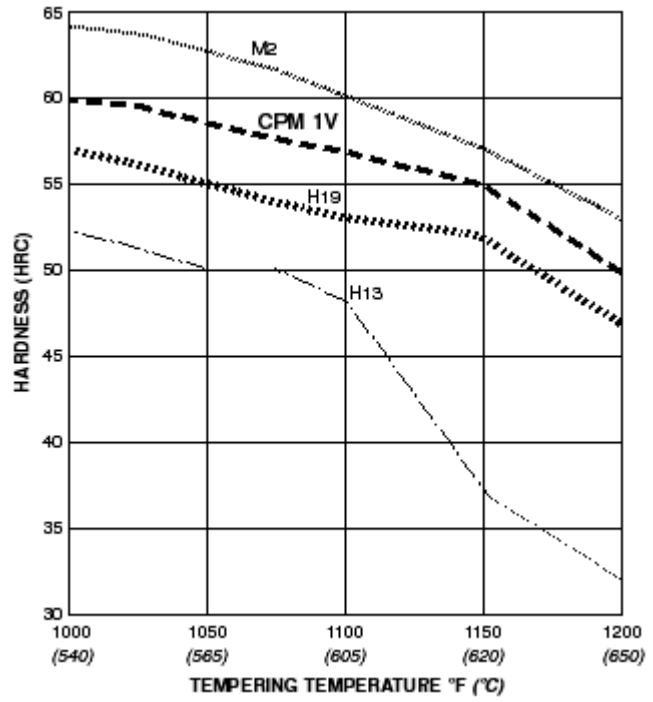
Temper Resistance

Because of its high alloy composition, CPM 1V has temper resistance similar to high speed steel (M2) and much better than most typical hot work tool steels as shown in the comparative temper curves below.

All specimens double tempered a minimum of 2 hrs. at temperature each temper.
M2 austenitized 1975F (1080C),
CPM 1V austenitized 2000F (1095C),
H19 austenitized 2100F (1150C),
H13 austenitized 1850F (1010C), and
S7 austenitized 1725F (940C).

Tool Steel Comparagraph

¹Specimens were dipped in molten aluminum at 1250F and water quenched. Every 5000 cycles specimens were microscopically examined for corner cracks.



	HRC	Austenitize	Quench	Temper
CPM 1V	62	2050F/10 min.	Air	1000F/2+2hrs.
CPM 1V	59	1950F/30 min.	Air	1000F/2+2hrs.
Premium H13	45	1875F/30 min.	Oil	1130F/2+2hrs.
CPM 9V	55	2050F/30 min.	Air	1000F/2+2hrs.