

Crucible Steels for Knifemaking



Stainless Steels

Grade	Carbon	Chromium	Molybdenum	Vanadium	Niobium	
440C	1.10	17.50	0.50	-	-	
154 CM	1.05	14.00	4.00	-	-	
CPM® S30V®	1.45	14.00	2.00	4.00	-	
CPM® S35VN®	1.40	14.00	2.00	3.00	0.50	
CPM® S90V®	2.30	14.00	1.00	9.00	-	
CPM® S125V®	3.30	14.00	2.50	12.00	-	Cobalt
CPM® S110V®	2.85	15.25	2.25	9.00	3.00	2.50

440C

440C is a high hardness martensitic stainless steel (HRC 58/60) which offers good wear resistance and good corrosion resistance.

154 CM®/CPM® 154

154 CM is a high molybdenum modification of 440C offering improved wear resistance (edge retention) and better corrosion resistance. It is also available in a CPM version for improved toughness and polishability.

CPM® S30V®

CPM S30V was designed for cutlery and offers the best overall combination of hardness, corrosion resistance and wear resistance

CPM® S35VN® **NEW!**

CPM S35VN was designed to offer a 15-20% improvement in toughness over CPM S30V without any loss of wear resistance or corrosion resistance. It is also easier to machine and polish than CPM S30V.

CPM® S90V®

CPM S90V offers the expert knifemaker extremely high wear resistance and edge retention in a stainless steel.

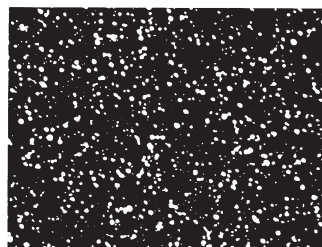
CPM® S110V® and CPM® S125V®

CPM S110V and CPM S125V provide the ultimate in wear and edge retention. **CAUTION:** These grades are only appropriate for knifemakers with substantial experience in difficult-to-grind materials!

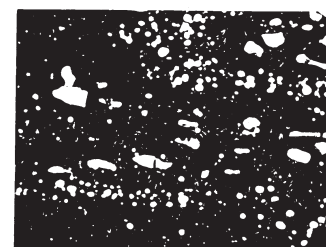
CPM®- Crucible Particle Metallurgy

The CPM process begins with the production of fine particles of steel by gas atomization of a prealloyed melt. In the atomizer, the molten metal is poured through a small nozzle where high pressure gas turns the liquid stream into a fine spray of tiny spherical droplets. These liquid droplets rapidly solidify into tiny powder particles which are spherical in shape and uniform in chemical composition. The atomized powder is collected and loaded into steel cans which are then hermetically sealed (i.e. evacuated and welded shut). The filled cans are exposed to sufficient temperature and pressure to consolidate the powder inside to 100% dense steel. The fully dense compacts then undergo normal mill processing to finished bar.

The CPM process results in very fine-grained steel which has a homogeneous composition and an extremely uniform microstructure. In the higher carbon CPM grades, the carbides which precipitate during solidification are extremely fine and remain so throughout mill processing and in the finished bar.



CPM Steel

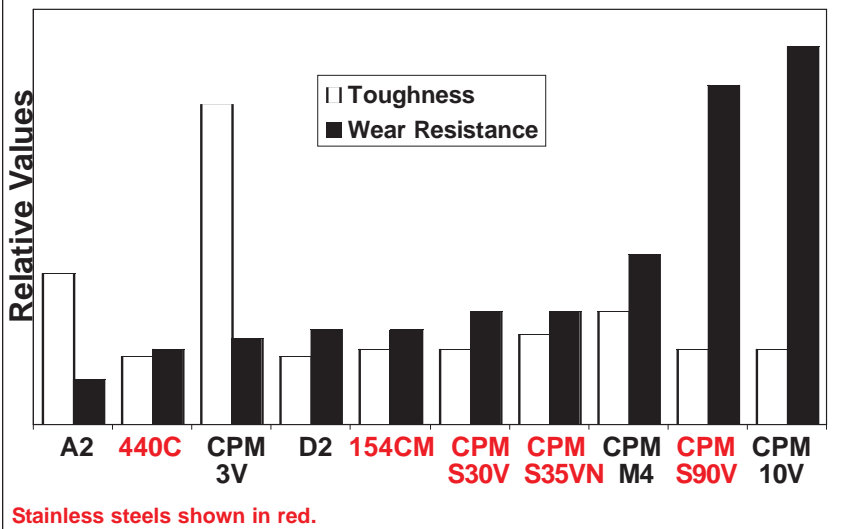


Conventional Steel

Tool Steels

Grade	Carbon	Chromium	Molybdenum	Vanadium	Tungsten
Airkool® (A2)	1.00	5.25	1.10	0.25	-
Airdi® 150 (D2)	1.55	11.50	0.80	0.90	-
CPM® M4	1.40	4.00	5.25	4.00	5.50
CPM® 3V®	0.80	7.50	1.30	2.75	-
CPM® 10V®	2.45	5.25	1.30	9.75	-

Wear Resistance and Toughness



Advantages of CPM®

Ease of Fabrication for the Knifemaker:

- Consistent Heat Treat Response
- Predictable Size Change on Heat Treat
- Excellent Grindability

Higher Performance for the Knife User:

- Higher Alloy Grades Possible
- Improved Edge Retention
- Improved Toughness

Airkool® (A2)

Airkool is a 5% chromium, air-hardening tool steel with good wear resistance. It is often used for blades because it is easy to grind and heat treat.

Airdi® 150 (D2)/CPM® D2

Airdi 150 is a 12% chromium, air-hardening tool steel with improved wear resistance over A2. It is also available in a CPM version for improved toughness.

CPM® M4 (M4)

CPM M4 is actually a high speed steel with better wear resistance and higher attainable hardness (HRC 64) than D2 for better edge retention.

CPM® 3V®

CPM 3V has wear resistance similar to D2 for edge retention, and at HRC 58/60, it has more than twice the toughness of A2 for reduced chipping and breaking. It is easier to grind than D2.

CPM® 10V®

CPM 10V has the highest wear resistance and the best edge retention of all the blade steels due to the presence of a large volume of vanadium carbides.

***Crucible blade steels are available in hot rolled sheets:
Custom cutting/slitting is available.***



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