CPM S35VN – Technical Data

General Descriptions:

CPM S35VN is a martensitic stainless steel designed to offer improved toughness over CPM S30V. It is also easier to machine and polish than CPM S30V. Its chemistry has been rebalanced so that it forms some niobium carbides along with vanadium and chromium carbides, which makes CPM S35VN about 15-20% tougher than CPM S30V without any loss of wear resistance and offers improved toughness which results in better resistance to edge chipping. Because both vanadium and niobium carbides are harder and more effective than chromium carbides in providing wear resistance, the CPM stainless blade steels offer improved edge retention over conventional high chromium steels such as 440C and D2.

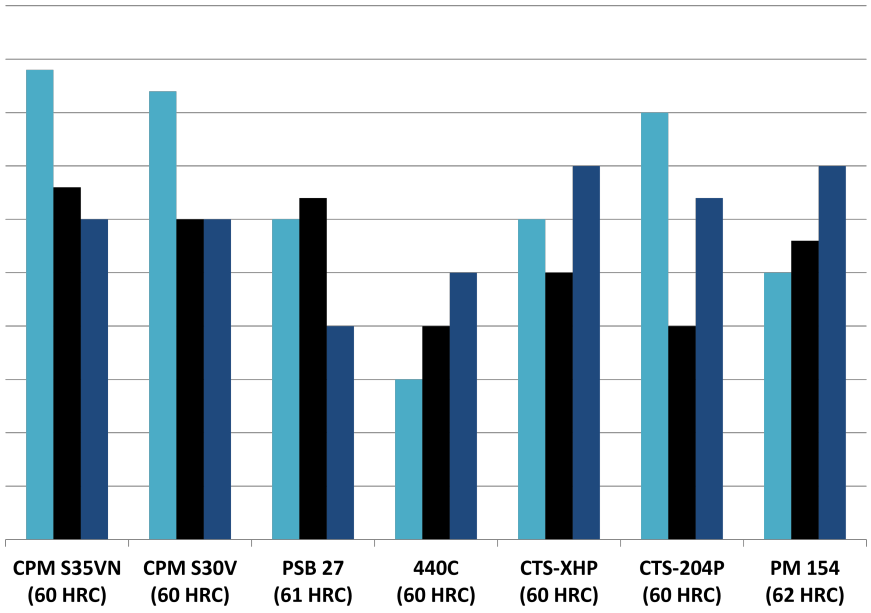
Examples of applications:

Long-wearing specialty cutlery, plastic injection and extrusion feed screws and dies, non-return valve components, pelletizing equipment, wear components for food and chemical processing.

Chemical Composition

Carbon	Chromium	Vanadium	Molybdenum	Niobium
1.40%	14.00%	3.00%	2.00%	0.50%

Comparison Chart



Typical Heat Treat Response

	Austenitizing Temp / Hardness HRC		
	1900 °F	1950 °F	2000 °F
As Quenched	60.5	62	63.5
400	57.5	57.5	59.5
600	57.5	59	59
1000	57	59.5	58.5
Min time at temp	30 min.	30 min.	15 min.

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Heat Treatment

Forging

2100 °F. Do not forge below 1750 °F.

Annealing

Heat to 1650 °F, hold 2 hours, cool slowly (25 °F/hour max) to 1100 °F then furnace cool or cool in still air to room temperature.
Annealed Hardness: Approximately BHN 255

Stress Relieving

Annealed Parts: Heat to 1100-1300 °F, hold 2 hours, then furnace cool or cool in still air.**Hardened Parts**: Heat to 25-50 °F below original tempering temperature, hold 2 hours, then furnace coolor cool in still air.**Straightening**: Best done warm, between 400-800 °F.

Hardening

Preheat to 1550-1600 °F. Equalize.

High Heat (Austenitizing)

1900-2000 °F, hold time at temperature 15-30 minutes (see chart above).

Quench

Air or positive pressure quench to below 125 °F.

Tempering

Double temper at 400-750 °F. Hold for 2 hours minimum each temper. Cool to room temperature between tempers.

Physical Properties

Modulus of Elasticity	32 x 10^6 psi (221 GPa)	**Density**	0.27 lbs/in^3
Annealed Hardness	255 BHN	**Machinability**	70% of O1