



SB Specialty Metals LLC

Your *First Choice* for Specialty Metals

CPM S30V – Technical Data

General Descriptions:

CPM S30V is a martensitic stainless steel designed to offer the best combination of toughness, wear resistance and corrosion resistance. Its chemistry has been specially balanced to promote the formation of vanadium carbides which are harder and more effective than chromium carbides in providing wear resistance. CPM S30V offers substantial improvements in toughness over other high hardness steels such as 440C and D2 and its corrosion resistance is equal to or better than 440C in various environments. The CPM process produces very homogeneous, high quality steel characterized by superior dimensional stability, grindability, and toughness compared to steels produced by conventional processes.

Examples of applications:

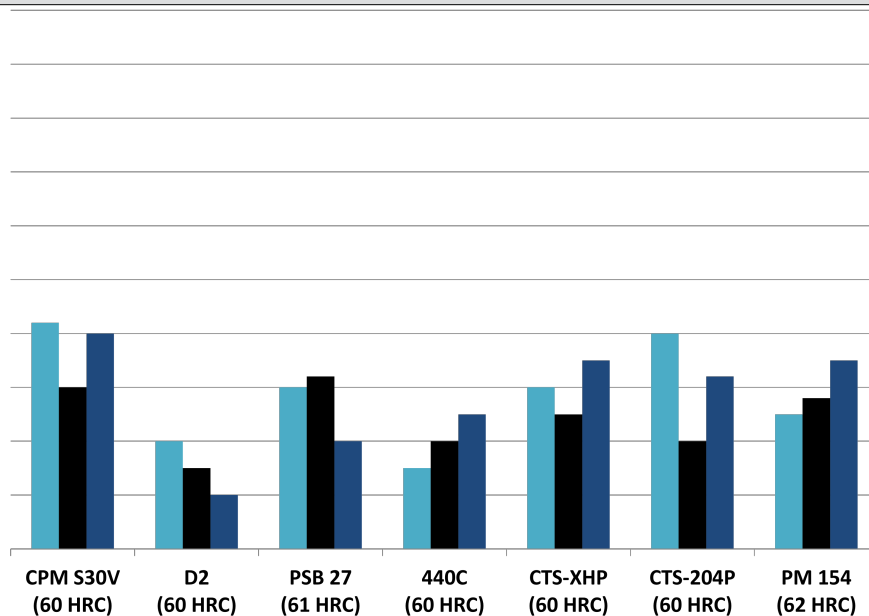
Long-wearing specialty cutlery, plastic injection and extrusion feed screws and dies, non-return valve components, pelletizing equipment, wear components for food and chemical processing.

Chemical Composition

Carbon	Molybdenum	Vanadium	Chromium
1.45%	2.00%	4.00%	14.00%

Comparison Chart

■ Edge Retention ■ Toughness ■ Corrosion Resistance



Typical Heat Treat Response

Tempering Temp °F	Hardness HRC			Toughness, Charpy C-Notch Ft.-lbs
	1900 °F	1950 °F	2000 °F	
As Quenched	60.5	62	63.5	
400	57.5	57.5	59.5	9.0
600	57.5	59	59	9.5
1000	57	59.5	58.5	9.5

Size Changes During Hardening

Hardening Temp °F	Tempering Temp	HRC	Longitudinal
			Size Change %
1900	400	60.5	+0.05%
1900	600	57.5	+0.07%

Surface Treatment

Any applied surface treatments should be done at temperatures below the final tempering temperature.



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Heat Treatment

Forging

2100 °F. Do not forge below 1750 °F

Annealing

Heat to 1650 °F, hold 2 hours, slow cool (25 °F /hour maximum) to 1100 °F, then furnace cool or cool in still air to room temperature.

Annealed Hardness is approximately 255 BHN.

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 tempering temperature, hold 2 hours, then furnace cool or cool in still air.

Hardening

Preheat to 1550-1600 °F, let parts equalize.

High Heat (Austenitizing)

1900-2000 °F, hold at temperature for 15-30 minutes.

Quench

Air or positive pressure quench (2 bar minimum) to below 125 °F, then air cool to room temperature. Quenching between aluminum plates with forced air is also an effective quench method.

Tempering

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

Cryogenic treating can be done, but is not necessary.

Physical Properties

Modulus of Elasticity	32 x 10 ⁶ psi (221 GPa)	Density	0.27 lb/in ³
Annealed Hardness	255 BHN	Machinability	65% of O1