



SB Specialty Metals LLC

Your **First Choice** for Specialty Metals

CTS 204P – Technical Data

General Descriptions:

CTS™ 204P alloy is a high wear and corrosion resistant, martensitic stainless knife steel produced using the powder metallurgy process. The excellent wear resistance of the alloy is provided by a significant volume fraction of hard vanadium-rich carbides, while the alloy's outstanding corrosion resistance is obtained as a result of the chromium rich matrix. CTS 204P alloy's uniform microstructure, fine carbide distribution, cleanliness and high chromium content, is responsible for the materials excellent combination of wear resistance, toughness, polishability and corrosion resistance.

Examples of applications:

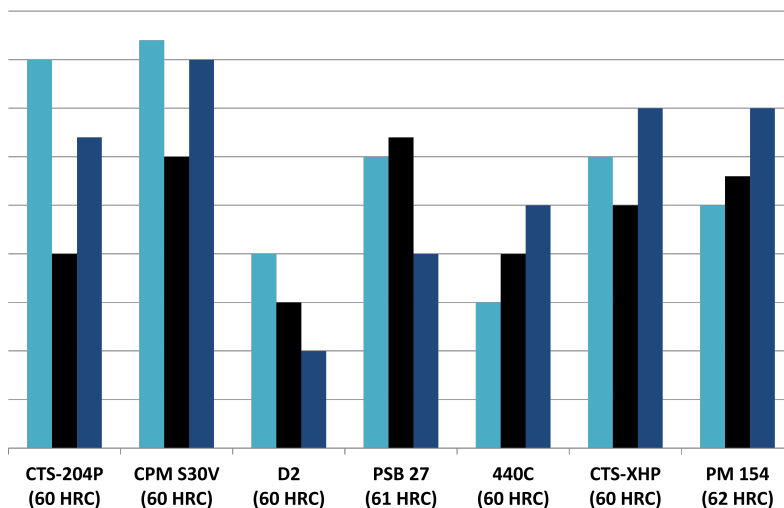
High performance industrial and custom knives, food processing equipment, severe applications requiring toughness and good wear and corrosion resistance.

Chemical Composition

Carbon	Silicon	Molybdenum	Tungsten	Manganese	Chromium	Vanadium
1.90%	0.60%	1.00%	0.65%	0.35%	20.00%	4.00%

Comparison Chart

■ Edge Retention ■ Toughness ■ Corrosion Resistance



Typical Heat Treat Response

Tempering Temp °F	Austenitizing Temp / Hardness HRC			
	2050°F	2100°F	2150°F	2150+Cryo
As quenched	58.5	60.5	61.5	61.0
200	57.0	59.0	60.0	61.0
400	55.0	57.0	58.0	60.5
600	54.5	55.5	57.0	59.5
800	56.0	56.0	57.5	60.0
1000	57.5	58.0	59.0	61.0



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Heat Treatment

Annealing

Heat slowly at a rate not exceeding 400°F/hr to 1860-1900 °F and hold at temperature for 2 hours. Furnace cool slowly (30°F/hr maximum) to 1000 °F, then air cool to room temperature. Annealed hardness is approximately 265-295 BHN.

Stress Relieving

1200-1300°F, hold for 2 hours minimum at temperature, cool slowly and uniformly to about 800 °F, then cool in still air.

Hardening

Preheat to 1400-1450 °F. Equalize.

High Heat (Austenitizing)

Heat to 1950-2100 °F, hold for 30 minutes at temperature then quench to room temperature.

Quench

A quench rate of 400 °F per minute to <1000 °F is required to insure optimum properties. Knife blanks can be quenched between steel or aluminum plates, forced air should be used.

Tempering

Temper immediately after quenching. 400-750 °F, hold for 2 hours per temper. Two tempers recommended, cool to room temperature between tempers.

Physical Properties

Modulus of Elasticity	31.0 x 10 ⁶ psi	Density	0.280 lbs/in ³
Annealed Hardness	280 BHN	Machinability	60% of O1