



SB Specialty Metals LLC

Your *First Choice* for Specialty Metals

CTS™ XHP – Technical Data

General Descriptions:

CTS™ XHP is a powder metallurgy, high carbon, high chromium stainless steel. CTS XHP has a relatively high level of corrosion resistance and high wear resistance. Corrosion resistance is significantly better than 440C stainless steel.

Examples of applications:

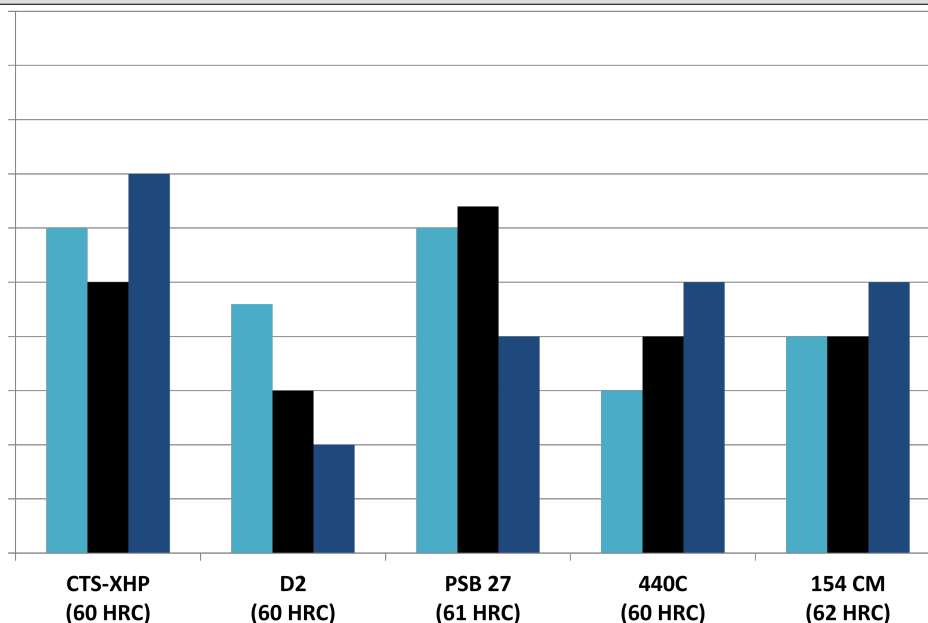
High end cutlery, including kitchen knives and applications requiring a high degree of corrosion resistance and wear resistance.

Chemical Composition

Carbon	Molybdenum	Vanadium	Chromium	Silicon	Manganese
1.60%	0.80%	0.45%	16.00%	0.40%	0.50%

Comparison Chart

■ Edge Retention ■ Toughness ■ Corrosion Resistance



Typical Heat Treat Response

Tempering Temp Degrees F	Austenitizing Temp/ 1950 °F	Rockwell Toughness, Charpy ft.-lbs
As Quenched	63.0	
350	62.0	26
400	61.0	27
450	60.0	27
500	59.0	28
600	58.0	28
750	58.0	29

Size Changes During Hardening

Hardening Temp (F)	Tempering Temp	HRC	Longitudinal Size Change %
1950	500	59	-0.0005%



CTS™ XHP – Technical Data

Heat Treatment

Forging

Do not forge below 1700 °F.
Preheat to 1500 °F, then heat slowly and uniformly to 1900-2100 °F.
Reheat as often as necessary. Cool in furnace heated to approximately 1550 °F, soak uniformly at this temperature, then shut off heat and cool slowly in furnace. Anneal after forging.

Annealing

Heat to 1550-1600 °F, hold 2 hours.
Slow cool (20 °F/hour maximum) to 600 °F. Then air or furnace cool to room temperature.
Annealed hardness is 230-255 BHN.

Stress Relieving

Performed prior to or after machining to minimize distortion in heat treating.
1200 °F, hold two hours, then air cool to room temperature.

Hardening

Preheat to 1550-1600 °F. Let parts equalize.

High Heat (Austenitizing)

1850-2000 °F for 20-30 minutes at temperature.

Quench

Quench to 1000-1100°F, equalize, then air cool to 150 °F.
Vacuum or atmosphere quench rate of a minimum of 50 °F/minute down to 1200 °F is critical to achieve best heat treat response. Aluminum plate quench can be used for knife blanks.
Temper immediately following quench.

Tempering

Minimum 400 °F tempering temperature required. Double tempering is required, triple tempering recommended. Air cool to room temperature between tempers.
For maximum corrosion resistance do not temper above 800 °F.

Physical Properties

Modulus of Elasticity	31 x 10 ⁶ psi	Density	0.275 lb/in ³
Annealed Hardness	230-255 BHN	Machinability	70% of O1