



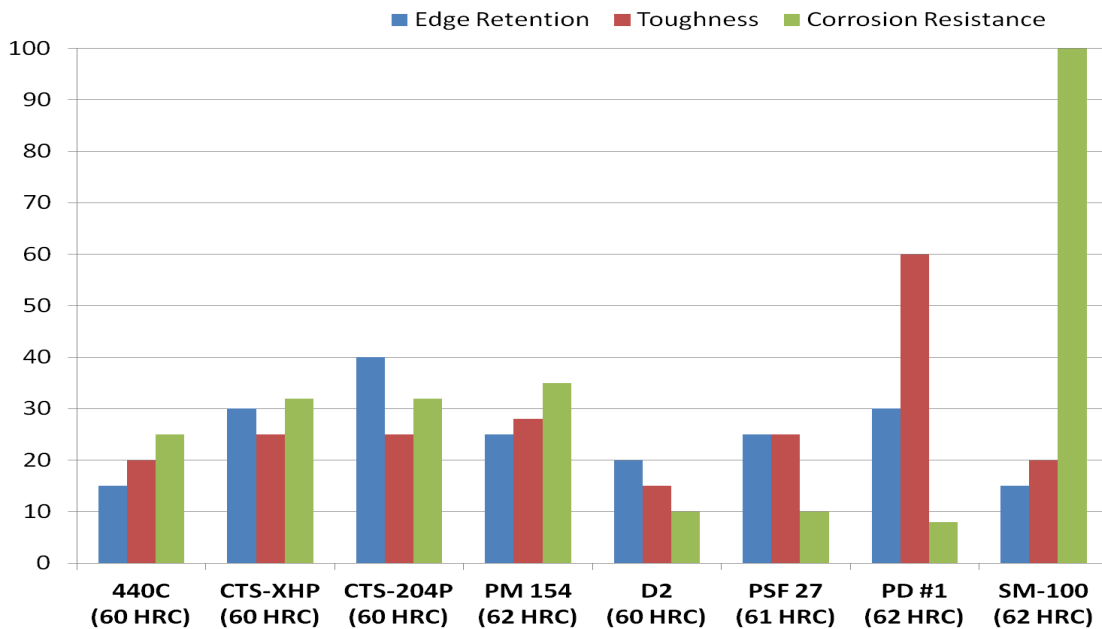
## Technical Information: CTS™ 204P

CTS™ 204P IS A POWDER METALLURGY, CHROMIUM/VANADIUM STAINLESS STEEL. THE GRADE IS USED IN HIGH END CUTLERY AND APPLICATIONS REQUIRING A HIGH DEGREE OF CORROSION RESISTANCE AND WEAR RESISTANCE.

### TYPICAL CHEMICAL COMPOSITION

CARBON	1.90%	CHROMIUM	20.00%
MOLYBDENUM	1.00%	SILICON	0.60%
VANADIUM	4.00%	TUNGSTEN	0.65%

### SBSM KNIFE STEEL PROPERTIES COMPARISON



### PHYSICAL PROPERTIES

**MODULUS OF ELASTICITY**.....31 PSI X 10<sup>6</sup> .....(214 GPa)  
**DENSITY**..... 0.275 LB/IN<sup>3</sup>  
**ANNEALED HARDNESS**.....280 MAX BRINELL HARDNESS (BHN)  
**MACHINABILITY**.....SIMILAR TO PM M4 TOOL STEEL



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### HEAT TREATMENT

#### ANNEALING

HEAT TO 1860/1900°F, HOLD 4 HOURS  
SLOW COOL 30°F/HOUR MAXIMUM TO 600°F  
THEN AIR OR FURNACE COOL TO ROOM TEMPERATURE

#### STRESS RELIEVING

PERFORMED PRIOR OR AFTER MACHINING TO MINIMIZE DISTORTION IN HEAT TREATING  
1200°F, HOLD TWO HOURS  
THEN AIR COOL TO ROOM TEMPERATURE

#### HARDENING

SALT BATH, PROTECTIVE ATMOSPHERE, OR VACUUM FURNACE EQUIPMENT PREFERRED.

#### HIGH HEAT (AUSTENITIZING)

2050/2150°F FOR 30 MINUTES AT HEAT.

#### QUENCH

SALT BATH QUENCH TO 1000-1100°F, EQUALIZE, THEN AIR COOL TO 150°F.  
VACUUM OR ATMOSPHERE QUENCH RATE OF A MINIMUM 50 DEGREES F PER MINUTE DOWN TO 1200F IS  
CRITICAL TO ACHIEVE BEST HEAT TREAT RESPONSE.  
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.

### TYPICAL HEAT TREAT RESPONSE

TEMPERING TEMP		HARDENING		HARDENING	
°F	°C	TEMP	TEMP	TEMP	TEMP
		2150°F	1121°C	2150°F	1121°C
				PLUS CRYO	
400	205	58		60.5	
500	260	57		60	
600	315	57.5		59.5	

\* Note: Tempering between 800 F and 1000 F is not recommended for stainless steels