



Technical Information: PM 420-CW

PM 420-CW IS A POWDER METALLURGY, HIGH VANADIUM, STAINLESS STEEL. THE GRADE IS USED IN CORROSIVE, HIGH WEAR, ENVIRONMENTS SUCH AS PLASTIC PROCESSING EQUIPMENT.

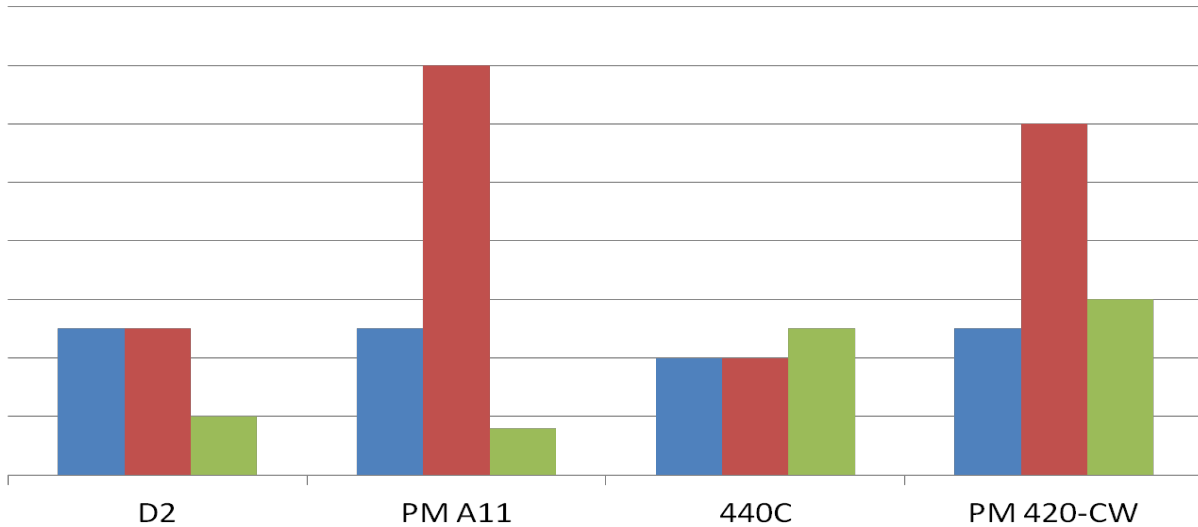
PM 420-CW HAS SIMILAR WEAR RESISTANCE TO PM A11 TOOL STEEL.

TYPICAL CHEMICAL COMPOSITION

CARBON	2.25%	CHROMIUM	12.80%
MOLYBDENUM	1.30%	SILICON	0.90%
VANADIUM	9.25%	MANGANESE	0.50%

TOOL STEEL PROPERTIES COMPARISON

■ Toughness ■ Wear Resistance ■ Corrosion Resistance



PHYSICAL PROPERTIES

MODULUS OF ELASTICITY 30 PSI X 10⁶ (207 GPA)
DENSITY 0.275 LB/IN³
ANNEALED HARDNESS 230-255 BRINELL HARDNESS (BHN)
MACHINABILITY SIMILAR TO PM A11 TOOL STEEL

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HEAT TREATMENT

ANNEALING

HEAT TO 1600°F, HOLD TWO HOURS
SLOW COOL 20°F/HOUR TO 600°F
THEN AIR OR FURNACE COOL TO ROOM TEMPERATURE

STRESS RELIEVING

PERFORMED PRIOR OR AFTER MACHINING TO MINIMIZE DISTORTION IN HEAT TREATING
800-900°F, HOLD TWO HOURS
THEN AIR COOL TO ROOM TEMPERATURE

HARDENING

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

HIGH HEAT (AUSTENITIZING)

1850/2050°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

HARDENING TEMP		TEMPERING TEMP		HARDNESS HRC
°F	°C	°F	°C	
2000	1093	400	205	61
		500	260	60
		600	315	59

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

THERMAL CONDUCTIVITY

Room T

W/M*K

16.25

THERMAL EXPANSION

Room T-100C

Room T-200C

Room T-300C

10-6 M/M*K

10.8

11.0

11.5