Taylor
Special Steels Ltd

440C

440C STAINLESS TOOL STEEL

TYPICAL ANALYSIS							
C	Mo	Cr	Mn	Si		ASTM	440C
1.10	0.75	17.00	1.00	1.00		Werkstoff	1.4125

440C is a martensitic stainless steel of high carbon and chromium content capable of full hardening response after oil quenching or air cooling.

APPLICATIONS

The outstanding wear resistance of 440C combined with it's moderately good corrosion resistance make it an excellent candidate for bearings, bushings, valve components, cutlery, pump parts, seaming chucks and rolls.

ANNEALING

For maximum softness 440C should be heated slowly to 850°C / 900°C equalised and very slowly furnace cooled to 540°C followed by cooling in air. Typical fully annealed hardness is 229 / 255 Brinell. Intermediate process annealing can be accomplished by heating uniformly to 730°C / 760°C followed by air cooling. Since typical hardness will be above 255 BHN, the full annealing process is preferred.

STRESS RELIEVING

Heat to 650°C / 700°C. Hold for 2-4 hours and furnace cool.

HARDENING

Heat slowly to 1010°C / 1060°C and oil quench. Smaller sections can be air cooled. As quenched hardness in the range of Rockwell "C" 60 / 61 is possible.

TEMPERING

Tempering 440C in the range of 180°C / 230°C is recommended to develop full working hardness in the range of Rockwell "C" 57 / 59.

TYPICAL HARDNESS AFTER TEMPERING

1040°C Oil Quench - Temper One Hour at Temperature

Temperature °C	Rockwell C	Brinell
150	60 - 61	614
180	57 - 59	578
200	57 - 58	578
260	56	555
320	55 - 56	555
430	56	555
540	57 - 59	578
650	38 - 39	352

TYPICAL MECHANICAL PROPERTIES

The following table gives typical mechanical properties for 440C from various tempering temperatures, holding two hours at temperature, after oil quenching from 1040°C

* Tempering °C	Hardness HRC	U.T.S. KSI	Tensile Yield KSI	% Elongation in 50 mm.	% Reduction of Area	Compressive Strength KSI
Annealed As Quenched	98	110	70	15	30	- -
1040	61 / 62	- -	- -	- -	- -	- -
260	57	265	230	- -	- -	350
320	53 / 56	267	230	- -	- -	338
430	54	267	230	- -	- -	330
540	43 / 45	248	200	- -	- -	321
650	38 / 39	150	130	- -	- -	181

* Note: Tempering above 370°C may result in some loss in corrosion resistance.