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# TUBE SUPPLY, INC.

## CHARACTERISTICS OF API SPECIFICATIONS

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API 5CT GROUP	API 5CT GRADE	CARBON		MANGANESE		MOLYBDENUM		CHROMIUM		NICKEL	COPPER	PHOSPHOROUS	SULFUR	SILICON	YIELD	YIELD	TENSILE	HARDNESS	HEAT TREATMENT
		MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MAX	MAX	MAX	MAX	MAX	MIN	MAX	MIN	MAX	
1	H-40	•	•	•	•	•	•	•	•	•	•	0.03	0.03	•	40,000	80,000	60,000	•	NONE
	J-55	•	•	•	•	•	•	•	•	•	•	0.03	0.03	•	55,000	80,000	75,000	•	NONE
	K-55	•	•	•	•	•	•	•	•	•	•	0.03	0.03	•	55,000	80,000	95,000	•	NONE
	N-80	•	•	•	•	•	•	•	•	•	•	0.03	0.03	•	80,000	110,000	100,000	•	N, N&T, Q&T
	R-95	•	0.45 <sup>c</sup>	•	1.9	•	•	•	•	•	•	0.03	0.03	0.45	95,000	110,000	105,000	•	Q & T
2	M-65	•	•	•	•	•	•	•	•	•	•	0.03	0.03	•	65,000	85,000	85,000	22	N, N&T, Q&T
	L-80 1	•	0.43 <sup>a</sup>	•	1.90	•	•	•	•	0.25	0.35	0.03	0.03	0.45	80,000	95,000	95,000	23	Q & T
	L-80 9CR	•	0.15	0.30	0.60	0.90	1.10	8.00	10.00	0.50	0.25	0.02	0.01	1.00	80,000	95,000	95,000	23	Q & T
	L-80 13CR	0.15	0.22	0.25	1.00	•	•	12.00	14.00	0.50	0.25	0.02	0.01	1.00	80,000	95,000	95,000	23	Q & T
	C-90 1	•	0.35	•	1.20	0.25 <sup>b</sup>	0.85	•	1.50	0.99	•	0.02	0.01	•	90,000	105,000	100,000	25.4	Q & T
	C-90 2	•	0.50	•	1.90	•	NL	•	NL	0.99	•	0.03	0.01	•	90,000	105,000	100,000	25.4	Q & T
	T-95 1	•	0.35	•	1.20	0.25 <sup>d</sup>	0.85	0.40	1.50	0.99	•	0.02	0.01	•	95,000	110,000	105,000	25.4	Q & T
	T-95 2	•	0.50	•	1.90	•	•	•	•	0.99	•	0.03	0.01	•	95,000	110,000	105,000	25.4	Q & T
C-110	•	0.35	•	1.20	0.25	1.00	0.40	1.50	0.99	•	0.02	0.005	•	110,000	120,000	115,000	30	Q & T	
3	P-110	•	•	•	•	•	•	•	•	•	•	0.03 <sup>e</sup>	0.03 <sup>e</sup>	•	110,000	140,000	125,000	•	Q & T
4	Q-125 1	•	0.35	•	1.35	•	0.85	•	1.50	0.99	•	0.02	0.01	•	125,000	150,000	135,000	•	Q & T
	Q-125 2	•	0.35	•	1.00	•	NL	•	NL	0.99	•	0.02	0.02	•	125,000	150,000	135,000	•	Q & T
	Q-125 3	•	0.50	•	1.90	•	NL	•	NL	0.99	•	0.03	0.01	•	125,000	150,000	135,000	•	Q & T
	Q-125 4	•	0.50	•	1.90	•	NL	•	NL	0.99	•	0.03	0.02	•	125,000	150,000	135,000	•	Q & T

**Note:** N.L. = No limit. Elements shown must be reported in product analysis.

<sup>a</sup> The carbon content for L-80 may be increased to 0.50 percent maximum if the product is oil quenched.

<sup>b</sup> The molybdenum content for Grade C-90, Type 1, has no minimum tolerance if the wall thickness is less than 0.700 inch.

<sup>c</sup> The carbon content for Grade T-95 may be increased to 0.55 percent maximum if the product is oil quenched.

<sup>d</sup> The molybdenum content for Grade T-95, Type 1, may be decreased to 0.15 percent minimum if the wall thickness is less than 0.700 inch.

<sup>e</sup> The phosphorous is 0.020 percent maximum and the sulfur is 0.010 percent maximum for EW Grade P110.

### CHARPY REQUIREMENTS

Transverse =  $S(0.152t + 0.064)$  or 15 ft-lbs, whichever is greater  
Longitudinal =  $S(0.304t + 0.128)$  or 30 ft-lbs, whichever is greater  
S = Maximum specified yield strength in ksi  
t = The critical thickness in inches based on specified dimensions for couplings, or wall thickness  
\*Charpy's required on all products except for H-40.