API 5CT (Tubing and Casing)

- ●Production Standard of API 5CT
- ●Specification & Size of API 5CT Tubing
- ●Specification & Size of API 5CT Casing
- ●Chemical Composition of API 5CT
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●Production Standard of API 5CT (Tubing and Casing)

●API 5CT

APT 5CT specified that casing and tubing used in OCTG production must be cased with a material that is both strong and functional. The standard establishes requirements for three Product Specification Levels (PSL-1, PSL-2, and PSL-3) and a variety of grades (API 5CT J55, K55, N80, L80, P110).

●Dimensions and Sizes of API 5CT (Tubing and Casing)

DN	O.D.		Weight		W.T.		End Processing						
			Non-upset coupling-thread	Upset coupling-thread			Steel Grade						
	in	mm	lb./ft.	lb./ft.	in	mm	H40	J55	L80	N80	C90	T95	P110
2-3/8	2.375	60.32	4.00	–	0.167	4.24	PU	PN	PN	PN	PN	PN	–
			4.60	4.70	0.190	4.83	PNU	PNU	PNU	PNU	PNU	PNU	PNU
			5.80	5.95	0.254	6.45	–	–	PNU	PNU	PNU	PNU	PNU
			6.60	–	0.295	7.49	–	–	P	–	P	P	–

			7.35	7.45	0.336	8.53	–	–	PU	–	PU	PU	–
2-7/8	2.875	73.02	6.40	6.50	0.217	5.51	PNU	PNU	–	–	–	–	–
			7.80	7.90	0.276	7.01	–	–	–	–	–	–	–
			8.60	8.70	0.308	7.82	–	–	PLB	PLB	PLBE	–	PLB
			9.35	9.45	0.340	8.64	–	–	PLB	PLB	PLBE	–	PLB
			10.50	–	0.392	9.96	–	–	PLB	PLB	PLB	–	PLB
			11.50	–	0.440	11.18	–	–	–	–	PLB	–	
3-1/2	3.500	88.90	7.70	–	0.216	5.49	PN	PN	PN	PN	PN	PN	–
			9.20	9.30	0.254	6.45	PNU	PNU	PNU	PNU	PNU	PNU	PNU
			10.20	–	0.289	7.34	PN	PN	PN	PN	PN	PN	–
			12.70	12.95	0.375	9.52	–	–	PNU	PNU	PNU	PNU	PNU
			14.30	–	0.430	10.92	–	–	P	–	P	P	–
			15.50	–	0.476	12.09	–	–	P	–	P	P	–
			17.00	–	0.530	13.46	–	–	P	–	P	P	–
4	4.000	101.60	9.50	–	0.226	5.74	PN	PN	PN	PN	PN	PN	–
			–	11.00	0.262	6.65	PU	PU	PU	PU	PU	PU	–
			13.20	–	0.330	8.38	–	–	P	–	P	P	–
			16.10	–	0.415	10.54	–	–	P	–	P	P	–
			18.90	–	0.500	12.70	–	–	P	–	P	P	–
			22.20	–	0.610	15.49	–	–	P	–	P	P	–
4-1/2	4.500	114.30	12.60	12.75	0.271	6.88	PNU	PNU	PNU	PNU	PNU	PNU	–
			15.20	–	0.337	8.56	–	–	P	–	P	P	–
			17.00	–	0.380	9.65	–	–	P	–	P	P	–
			18.90	–	0.430	10.92	–	–	P	–	P	P	PLB
			21.50	–	0.500	12.70	–	–	P	–	P	P	PLB
			23.70	–	0.560	14.22	–	–	P	–	P	P	PLB
			26.10	–	0.630	16.00	–	–	P	–	P	P	PLB
P——Plain；N—— Non-upset coupling-thread；U—— Upset coupling-thread； L——Integral													

•Specification & Size of API 5CT Casing

DN	O. D.		Weight		W. T.		End Machining Form					
							Steel Grade					
	in	mm	lb/ft	kg/m	in	mm	H40	J55 K55	L80	N80	C90 T95	P110
4-1/2	4.500	114.3	9.50	14.14	0.205	5.21	PS	PS	–	–	–	–
			10.50	15.63	0.224	5.69	–	PSB	–	–	–	–
			11.60	17.26	0.250	6.35	–	PSLB	PLB	PLB	PLB	PLB
			13.50	20.09	0.290	7.37	–	–	PLB	PLB	PLB	PLB
			15.10	22.47	0.337	9.56	–	–	–	–	–	PLB
5	5.000	127	11.50	17.11	0.220	5.59	–	PS	–	–	–	–
			13.00	19.35	0.253	6.43	–	PSLB	–	–	–	–
			15.00	22.32	0.296	7.52	–	PSLB	PLB	PLB	PLBE	PLB
			18.00	26.79	0.362	9.19	–	–	PLB	PLB	PLBE	PLB
			21.40	31.85	0.437	11.10	–	–	PLB	PLB	PLB	PLB
			23.20	34.53	0.478	12.14	–	–	–	–	PLB	–
			24.10	35.86	0.500	12.70	–	–	–	–	PLB	–
5-1/2	5.500	139.7	14.00	20.83	0.244	6.20	PS	PS	–	–	–	–
			15.50	23.07	0.275	6.98	–	PSLB	–	–	–	–
			17.00	25.30	0.304	7.72	–	PSLB	PLB	PLB	PLBE	PLB
			20.00	29.76	0.361	9.17	–	–	PLB	PLB	PLBE	PLB
			23.00	34.23	0.415	10.54	–	–	PLB	PLB	PLBE	PLB
			26.80	39.88	0.500	12.70	–	–	–	–	–	–
			29.70	44.20	0.562	14.27	–	–	–	–	–	–
			32.60	48.51	0.625	15.88	–	–	–	–	–	–
			35.30	52.53	0.687	17.45	–	–	–	–	–	–
			38.00	56.55	0.750	19.05	–	–	–	–	–	–
			40.50	60.27	0.812	20.62	–	–	–	–	–	–
			43.10	64.14	0.875	22.22	–	–	–	–	–	–
6-5/8	6.625	168.28	20.00	29.76	0.288	7.32	PS	PSLB	–	–	–	–

			24.00	35.72	0.352	8.94	–	PSLB	PLB	PLB	PLBE	PLB
			28.00	41.67	0.417	10.59	–	–	PLB	PLB	PLBE	PLB
			32.00	47.62	0.475	12.06	–	–	PLB	PLB	PLBE	PLB
7	7.000	177.8	17.00	25.30	0.231	5.87	PS	–	–	–	–	–
			20.00	29.76	0.272	6.91	PS	PS	–	–	–	–
			23.00	34.23	0.317	8.05	–	PSLB	PLB	PLB	PLBE	–
			26.00	38.69	0.362	9.19	–	PSLB	PLB	PLB	PLBE	PLB
			29.00	43.16	0.408	10.36	–	–	PLB	PLB	PLBE	PLB
			32.00	47.62	0.453	11.51	–	–	PLB	PLB	PLBE	PLB
			35.00	52.09	0.498	12.65	–	–	PLB	PLB	PLBE	PLB
			38.00	56.55	0.540	13.72	–	–	PLB	PLB	PLBE	PLB
			42.70	63.54	0.625	15.88	–	–	–	–	–	–
			46.40	69.05	0.687	17.45	–	–	–	–	–	–
			50.10	74.56	0.750	19.05	–	–	–	–	–	–
			53.60	79.77	0.812	20.62	–	–	–	–	–	–
			57.10	84.97	0.875	22.22	–	–	–	–	–	–
7-5/8	7.625	193.68	24.00	35.72	0.300	7.62	PS	–	–	–	–	–
			26.40	39.29	0.328	8.33	–	PSLB	PLB	PLB	PLBE	PLB
			29.70	44.20	0.375	9.52	–	–	PLB	PLB	PLBE	PLB
			33.70	50.15	0.430	10.92	–	–	PLB	PLB	PLBE	PLB
			39.00	58.05	0.500	12.70	–	–	PLB	PLB	PLBE	PLB
			42.80	63.69	0.562	14.27	–	–	PLB	PLB	PLB	PLB
			45.30	67.41	0.595	15.11	–	–	PLB	PLB	PLB	PLB
			47.10	70.09	0.625	15.88	–	–	PLB	PLB	PLB	PLB
			51.20	76.19	0.687	17.45	–	–	–	–	–	–
			55.30	80.30	0.750	19.05	–	–	–	–	–	–
8-5/8	8.625	219.08	24.00	35.72	0.264	6.71	–	PS	–	–	–	–
			28.00	41.62	0.304	7.72	PS	–	–	–	–	–
			32.00	47.62	0.352	8.94	PS	PSLB	–	–	–	–
			36.00	53.57	0.400	10.16	–	PSLB	PLB	PLB	PLBE	PLB
			40.00	59.53	0.450	11.43	–	–	PLB	PLB	PLBE	PLB
			44.00	65.48	0.500	12.70	–	–	PLB	PLB	PLBE	PLB
			49.00	72.92	0.557	14.15	–	–	PLB	PLB	PLBE	PLB

9-5/8	9.625	244.48	32.30	48.07	0.312	7.92	PS	–	–	–	–	–
			36.00	53.57	0.352	8.94	PS	PSLB	–	–	–	–
			40.00	59.53	0.395	10.03	–	PSLB	PLB	PLB	PLBE	–
			43.50	64.73	0.435	11.05	–	–	PLB	PLB	PLBE	PLB
			47.00	69.94	0.472	11.99	–	–	PLB	PLB	PLBE	PLB
			53.50	79.62	0.545	13.84	–	–	PLB	PLB	PLBE	PLB
			58.40	86.91	0.595	15.11	–	–	PLB	PLB	PLB	PLB
			59.40	88.40	0.609	15.47	–	–	–	–	–	–
			64.90	96.58	0.672	17.07	–	–	–	–	–	–
			70.30	104.62	0.734	18.64	–	–	–	–	–	–
			75.60	112.50	0.797	20.24	–	–	–	–	–	–
10-3/4	10.750	273.05	32.75	48.74	0.279	7.09	PS	–	–	–	–	–
			40.50	60.27	0.350	8.89	PS	PSB	–	–	–	–
			15.50	67.71	0.400	10.16	–	PSB	–	–	–	–
			51.00	75.90	0.450	11.43	–	PSB	PSB	PSB	PSBE	PSB
			55.50	82.59	0.495	12.57	–	–	PSB	PSB	PSBE	PSB
			60.70	90.33	0.545	13.84	–	–	–	–	PSBE	PSB
			65.70	97.77	0.595	15.11	–	–	–	–	PSB	PSB
			73.20	108.93	0.672	17.07	–	–	–	–	–	–
			79.20	117.86	0.734	18.64	–	–	–	–	–	–
			85.30	126.94	0.797	20.24	–	–	–	–	–	–
11-3/4	11.750		42.00	62.50	0.333	8.46	PS	–	–	–	–	–
			47.00	69.94	0.375	20.24	–	–	–	–	–	–
			54.00	80.36	0.435	8.46	–	–	–	–	–	–
			60.00	89.29	0.489	9.53	–	–	–	–	–	–
			65.00	96.73	0.534	11.05	–	–	–	–	–	–
			71.00	105.66	0.582	14.42	–	–	–	–	–	–
13-3/8	13.375	339.73	48.00	71.43	0.330	8.38	PS	–	–	–	–	–
			54.50	81.10	0.380	9.65	–	PSB	–	–	–	–
			61.00	90.78	0.430	10.92	–	PSB	–	–	–	–
			68.00	101.19	0.480	12.19	–	PSB	PSB	PSB	PSB	PSB
			72.00	107.15	0.514	13.06	–	–	PSB	PSB	PSB	PSB
16	16.000	406.4	65.00	96.73	0.375	9.53	PS	–	–	–	–	–

			75.00	111.61	0.438	11.13	–	PSB	–	–	–	–
			84.00	125.01	0.495	12.57	–	PSB	–	–	–	–
			109.00	162.21	0.656	16.66	–	P	P	P	–	P
18-5/8	18.625	473.08	87.50	130.21	0.435	11.05	PS	PSB	–	–	–	–
20	20.000	508	94.00	139.89	0.438	11.13	PSL	PSLB	–	–	–	–
			106.50	158.49	0.500	12.70	–	PSLB	–	–	–	–
			133.00	197.93	0.635	16.13	–	PSLB	–	–	–	–
P——Plain；S——Short-thread；L——Long-thread；B——Buttress thread；E——Extreme thread												

●Chemical Composition of API 5CT (Tubing and Casing)

Group	Steel Grade	Type	C		Mn		Mo		Cr		Ni	Cu	P	S	Si
			min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	max.	max.	max.
1	H40	-	-	-	-	-	-	-	-	-	-	-	0.03	0.03	-
	J55	-	-	-	-	-	-	-	-	-	-	-	0.03	0.03	-
	K55	-	-	-	-	-	-	-	-	-	-	-	0.03	0.03	-
	N80	1	-	-	-	-	-	-	-	-	-	-	0.03	0.03	-
		Q	-	-	-	-	-	-	-	-	-	-	0.03	0.03	-
2	M65	-	-	-	-	-	-	-	-	-	-	-	0.03	0.03	-
	L80	1	-	0.43	-	1.9	-	-	-	-	0.25	0.35	0.03	0.03	0.5
		9Cr	-	0.15	0.3	0.6	0.9	1.1	8	10	0.5	0.25	0.02	0.01	1.0
		13Cr	0.15	0.22	0.25	1	-	-	12	14	0.5	0.25	0.02	0.01	1.0
	C90	1	-	0.35	-	1.2	0.25	0.85	-	1.5	0.99	-	0.02	0.01	-
		2	-	0.5	-	1.9	-	NL	-	NL	0.99	-	0.03	0.01	-
	C95	-	-	0.45	-	1.9	-	-	-	-	-	-	0.03	0.03	0.5
	T95	1	-	0.35	-	1.2	0.25	0.85	0.4	1.5	0.99	-	0.02	0.01	-
		2	-	0.5	-	1.9	-	-	-	-	0.99	-	0.03	0.01	-
3	P110	-	-	-	-	-	-	-	-	-	-	-	0.03	0.03	-
4	Q125	1	-	0.35	-	1.35	-	0.85	-	1.5	0.99	-	0.02	0.01	-
		2	-	0.35	-	1	-	NL	-	NL	0.99	-	0.02	0.02	-
		3	-	0.5	-	1.9	-	NL	-	NL	0.99	-	0.03	0.01	-

		4	-	0.5	-	1.9	-	NL	-	NL	0.99	-	0.03	0.02	-

a. The carbon content for L80 may be increased up to 0, 50 % maximum if the product is oil-quenched.
b. The molybdenum content for Grade C90 Type 1 has no minimum tolerance if the WT is less than 17, 78 mm.
c. The carbon content for R95 may be increased up to 0, 55 % maximum if the product is oil-quenched.
d. The molybdenum content for T95 Type 1 may be decreased to 0, 15 % minimum if the WT is less than 17, 78 mm.
e. For EW Grade P110, the phosphorus content shall be 0,020 % maximum and the sulfur content 0,010 % maximum
NL = no limit. Elements shown shall be reported in product analysis.

●Mechanical Properties Tensile Strength and Yield Strength of API 5CT (Tubing and Casing)

Group	Steel Grade	Type	Total %	Yield Strength MPa		Tensile MPa	Hardness max		W. T. mm	Changes in Hardness
				min.	max.	min.	HRC	HBW		
1	H40	-	0.5	276	552	414	-	-	-	-
	J55	-		379	552	517	-	-	-	-
	K55	-		379	552	655	-	-	-	-
	N80	1		552	758	689	-	-	-	-
		Q		552	758	689	-	-	-	-
2	M65	-	0.5	448	586	586	22	235	-	-
	L80	1		552	655	655	23	241	-	-
		9Cr		552	655	655	23	241	-	-
		13Cr		552	655	655	23	241	-	-
	C90	1、2		621	724	689	25.4	255	≤ 12.70	3.0
				621	724	689	25.4	255	12.71 ~ 19.04	4.0
				621	724	689	25.4	255	19.05 ~ 25.39	5.0
				621	724	689	25.4	255	≥25.40	6.0
	C95	-		655	758	724	-	-	-	-
	T95	1、2		655	758	724	25.4	255	≤ 12.70	3.0
				655	758	724	25.4	255	12.71 ~ 19.04	4.0
				655	758	724	25.4	255	19.05 ~ 25.39	5.0
				655	758	724	25.4	255	≥25.40	6.0
3	P110	-	0.6	758	965	862	-	-	-	-

4	Q125	all	0.65	862	1034	931	-	-	≤ 12.70	3.0
				862	1034	931	-	-	12.71 ~ 19.04	4.0
				862	1034	931	-	-	≥19.05	5.0