

Wind Load Table

Based on data prepared by Wil Andrews (AKA Capt'n Wil)
First published on the predecessor of the T&T List in 1998

Cd = 0.70 (Sail Boats)

WIND SPEED IN KNOTS ---->

Sq Ft	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	Sq Ft
50	12	47	107	190	297	427	581	759	961	1186	1436	1709	2005	2326	2670	50
75	18	71	160	285	445	641	872	1139	1442	1780	2153	2563	3008	3488	4004	75
100	24	95	214	380	593	854	1163	1519	1922	2373	2871	3417	4010	4651	5339	100
125	30	119	267	475	742	1068	1453	1898	2403	2966	3589	4271	5013	5814	6674	125
150	36	142	320	570	890	1281	1744	2278	2883	3559	4307	5126	6016	6977	8009	150
175	42	166	374	664	1038	1495	2035	2658	3364	4153	5025	5980	7018	8139	9344	175
200	47	190	427	759	1186	1709	2326	3037	3844	4746	5743	6834	8021	9302	10678	200
225	53	214	481	854	1335	1922	2616	3417	4325	5339	6460	7689	9023	10465	12013	225
250	59	237	534	949	1483	2136	2907	3797	4805	5932	7178	8543	10026	11628	13348	250
275	65	261	587	1044	1631	2349	3198	4176	5286	6526	7896	9397	11029	12790	14683	275
300	71	285	641	1139	1780	2563	3488	4556	5766	7119	8614	10251	12031	13953	16018	300
325	77	308	694	1234	1928	2776	3779	4936	6247	7712	9332	11106	13034	15116	17353	325

Cd = 1.00 (Power Boats)

WIND SPEED IN KNOTS ---->

Sq Ft	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	Sq Ft
50	17	68	153	271	424	610	831	1085	1373	1695	2051	2441	2865	3322	3814	50
75	25	102	229	407	636	915	1246	1627	2059	2542	3076	3661	4297	4983	5721	75
100	34	136	305	542	847	1220	1661	2170	2746	3390	4102	4882	5729	6644	7627	100
125	42	169	381	678	1059	1525	2076	2712	3432	4237	5127	6102	7161	8305	9534	125
150	51	203	458	814	1271	1831	2492	3254	4119	5085	6153	7322	8594	9967	11441	150
175	59	237	534	949	1483	2136	2907	3797	4805	5932	7178	8543	10026	11628	13348	175
200	68	271	610	1085	1695	2441	3322	4339	5492	6780	8204	9763	11458	13289	15255	200
225	76	305	686	1220	1907	2746	3737	4882	6178	7627	9229	10984	12890	14950	17162	225
250	85	339	763	1356	2119	3051	4153	5424	6865	8475	10255	12204	14323	16611	19069	250
275	93	373	839	1492	2331	3356	4568	5966	7551	9322	11280	13424	15755	18272	20976	275
300	102	407	915	1627	2542	3661	4983	6509	8238	10170	12306	14645	17187	19933	22882	300
325	110	441	992	1763	2754	3966	5399	7051	8924	11017	13331	15865	18620	21594	24789	325

NOTES

Loads based on the formula : $D = 0.00339 * Cd * V * V * S$

D = pounds of pressure on boat created by wind velocity

Cd = the coefficient of drag

V = wind velocity in knots

S = square feet of boat exposed to wind

Temperature = 59F. Barometric pressure = 29.92 in. Hg.

Formula taken from "Anchors and Anchoring" by Robert Danforth Ogg and published by Rule Industries.

Mr. Ogg suggest that pleasure boats will have a Cd of between 0.70 & 1.00.

'0, a power boat closer to 1.0

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MAXIMUM THRUST PROVIDED BY BOAT PROPELLERS - in pound

Shaft Horse Power ----->

PROP DIAMTR	10	12	14	16	18	20	22	24	26	28	29	30	31	32	33	34
10 inches	260	293	325	356	385	413	440	467	492	518	530	542	554	566	578	589
20 inches	413	467	518	566	612	657	701	743	784	823	843	862	882	901	919	938
30	542	612	679	743	804	862	919	974	1028	1080	1106	1132	1157	1182	1206	1231
40	657	743	823	901	974	1046	1115	1182	1247	1310	1341	1372	1403	1433	1463	1492
50	763	862	956	1046	1132	1214	1294	1372	1448	1521	1558	1593	1629	1664	1699	1733
60	862	974	1080	1182	1279	1372	1463	1550	1636	1719	1760	1800	1840	1880	1919	1958
70	956	1080	1198	1310	1418	1521	1622	1719	1814	1906	1952	1996	2041	2085	2128	2171
80	1046	1182	1310	1433	1550	1664	1774	1880	1984	2085	2134	2183	2232	2280	2327	2374
90	1132	1279	1418	1550	1678	1800	1919	2034	2146	2256	2309	2362	2415	2467	2518	2569
100	1214	1372	1521	1664	1800	1932	2060	2183	2303	2421	2478	2535	2592	2647	2702	2757
110	1294	1463	1622	1774	1919	2060	2195	2327	2455	2580	2642	2702	2762	2822	2881	2939
120	1372	1550	1719	1880	2034	2183	2327	2467	2603	2735	2800	2865	2928	2991	3054	3115
125	1410	1593	1767	1932	2091	2244	2392	2535	2675	2811	2878	2944	3010	3074	3138	3202
130	1448	1636	1814	1984	2146	2303	2455	2603	2746	2886	2955	3023	3090	3156	3222	3287
135	1485	1678	1860	2034	2201	2362	2518	2669	2817	2960	3030	3100	3169	3237	3304	3371
140	1521	1719	1906	2085	2256	2421	2580	2735	2886	3033	3105	3176	3247	3317	3386	3454
145	1558	1760	1952	2134	2309	2478	2642	2800	2955	3105	3179	3252	3324	3396	3466	3536
150	1593	1800	1996	2183	2362	2535	2702	2865	3023	3176	3252	3327	3401	3474	3546	3618
155	1629	1840	2041	2232	2415	2592	2762	2928	3090	3247	3324	3401	3476	3551	3625	3698
160	1664	1880	2085	2280	2467	2647	2822	2991	3156	3317	3396	3474	3551	3627	3703	3778
165	1699	1919	2128	2327	2518	2702	2881	3054	3222	3386	3466	3546	3625	3703	3780	3856
170	1733	1958	2171	2374	2569	2757	2939	3115	3287	3454	3536	3618	3698	3778	3856	3934
175	1767	1996	2214	2421	2620	2811	2996	3176	3351	3522	3606	3689	3771	3852	3932	4011
180	1800	2034	2256	2467	2669	2865	3054	3237	3415	3589	3674	3759	3842	3925	4007	4088
185	1834	2072	2298	2513	2719	2918	3110	3297	3478	3656	3743	3829	3914	3998	4081	4163
190	1867	2109	2339	2558	2768	2970	3166	3356	3541	3721	3810	3898	3984	4070	4155	4238
195	1900	2146	2380	2603	2817	3023	3222	3415	3603	3787	3877	3966	4054	4141	4227	4313
200	1932	2183	2421	2647	2865	3074	3277	3474	3665	3852	3943	4034	4123	4212	4300	4387

NOTES

Based on the formula : $T = 62.72 * (SHP * D/12)^{0.67}$

T = pounds of thrust.

SHP = Shaft Horse Power.

D = diameter of propeller in inches.

Formula taken from "Propeller Handbook" by Dave Gerr and published by International Marine Publishing Co.

SHP is the horse power delivered to the water by the propeller. It is always less than the top Brake Horse Power produced by the engine. How much less is greatly affected by the propeller design and selection. It normally is different in forward and reverse gear. SHP in a typical sail boat might be 80% of the maximum engine Brake Horse Power in forward gear and 50% of maximum Brake Horse Power in reverse gear.

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