

TEX-FIN - GREENHOUSE BTU CHART - SERRATED FINS

TUBES SPECIFICATIONS						BTU/HR/LINFT. FOR A MEAN TEMPERATURE OF 65 DEG F (Table 1)																		
PIPE SIZE IPS (O.D.)	FIN HEIGHT	O.D. WITH FINS	FINS PER INCH	WEIGHT LBS/FT	SURFACE AREA SQ.FT LIN. FT.	MEAN TEMPERATURE OF WATER (DEG F)														STEAM PRESSURE PSIG				
						150	155	160	165	170	175	180	185	190	195	200	205	1	5	10	15	25		
1" (1.315")	.75"	2.815"	2	2.59	1.74	302	324	347	370	394	418	443	468	493	520	546	574	630	700	779	842	955		
	1"	3.315"	2	2.88	2.23	351	377	403	429	456	484	512	541	570	600	631	662	725	805	895	967	1094		
	.75"	2.815"	3.5	3.27	2.79	431	462	495	528	561	596	631	667	704	741	779	818	898	998	1111	1202	1362		
	1"	3.315"	3.5	3.78	3.64	472	506	541	574	610	647	685	723	763	803	844	885	971	1078	1199	1296	1467		
1-1/4" (1.660")	.75"	3.16"	2	3.39	2.15	374	401	429	458	487	517	548	579	611	643	676	710	780	885	964	1043	1182		
	1"	3.66"	2	3.75	2.75	435	467	499	532	586	600	635	670	707	744	782	820	899	998	1109	1198	1356		
	.75"	3.16"	3.5	4.23	3.43	535	574	615	655	695	740	784	829	874	921	968	1017	1110	1240	1381	1423	1592		
	1"	3.66"	3.5	4.85	4.48	550	633	673	717	762	809	856	904	953	1004	1055	1107	1214	1347	1498	1619	1834		
1-1/2" (1.90")	.75"	3.4"	2	3.98	2.43	424	455	487	519	552	586	621	656	692	729	767	805	884	982	1093	1182	1340		
	1"	3.9"	2	4.38	3.11	494	529	586	603	641	680	720	760	802	844	886	930	1020	1132	1258	1359	1538		
	.75"	3.4"	3.5	4.92	3.85	608	652	698	744	792	841	890	941	993	1046	1099	1154	1257	1408	1567	1695	1921		
	1"	3.9"	3.5	5.63	5.06	671	720	766	817	868	921	975	1030	1086	1143	1201	1260	1382	1534	1706	1843	2088		
2" (2.375")	.75"	3.875"	2	5.2	2.99	523	561	600	640	681	723	765	809	854	899	946	993	1090	1211	1348	1458	1552		
	1"	4.375"	2	5.69	3.82	609	653	698	744	791	839	888	938	989	1041	1094	1148	1258	1396	1552	1677	1898		
	.75"	3.875"	3.5	6.35	4.77	751	806	862	920	979	1039	1100	1163	1227	1292	1358	1426	1556	1740	1937	2094	2374		
	1"	4.375"	3.5	7.22	6.22	833	889	950	1013	1077	1142	1209	1277	1347	1417	1490	1583	1714	1905	2110	2286	2589		

SIZES MOST COMMONLY USED AND MOST ECONOMICAL	CORRECTION FACTOR "k" (table 2)																		
temp	150	155	160	165	170	175	180	185	190	195	200	205	1	5	10	15	25		
Values shown in Table 1 are for greenhouse at 65°F	40	1.42	1.4	1.4	1.37	1.35	1.34	1.33	1.32	1.31	1.3	1.29	1.28	1.27	1.25	1.24	1.23	1.21	
	45	1.33	1.31	1.3	1.29	1.28	1.27	1.26	1.25	1.24	1.23	1.22	1.21	1.2	1.19	1.18	1.17		
	50	1.24	1.23	1.2	1.21	1.2	1.19	1.18	1.18	1.17	1.17	1.16	1.15	1.15	1.14	1.13	1.12		
	55	1.16	1.15	1.1	1.14	1.13	1.13	1.12	1.12	1.11	1.11	1.11	1.1	1.09	1.09	1.09	1.08		
	60	1.07	1.07	1.1	1.07	1.06	1.06	1.06	1.06	1.05	1.05	1.05	1.05	1.05	1.04	1.04	1.04		
For other greenhouse temperatures, multiply values in Table 1 by corr. Factor "K" in table 2	65	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
	70	0.92	0.92	0.9	0.93	0.93	0.93	0.93	0.94	0.94	0.94	0.94	0.94	0.94	0.95	0.95	0.95		
	75	0.84	0.85	0.9	0.86	0.87	0.87	0.87	0.88	0.88	0.89	0.89	0.89	0.9	0.9	0.91	0.91		
	80	0.77	0.78	0.8	0.8	0.81	0.81	0.82	0.82	0.83	0.83	0.84	0.84	0.85	0.86	0.86	0.87		

HOW TO MAKE A SELECTION

KNOWN VALUES:

- Greenhouse ambient temperatures (T) = 60° F
- BTU required to heat greenhouse (Q) = 500,00 BTU.HR
- Water Flow (V) = 50 USGPM
- Temperature of water out of boiler (To) = 180°F
- Tubes selection Pipe size = 1-1/4"
- Fins = 1" x 3.5 fins/inch

SAMPLE CALCULATION

- A.) Calculate temperature at inlet boiler (T1) $(T1) = (To) - \frac{Q}{V \times 500} = 180 - \frac{500,000}{50 \times 500} = 160^\circ F$
- B.) Calculate mean temperature of water (Ta) $(Ta) = \frac{(T1) + (To)}{2} = \frac{160 + 180}{2} = 170^\circ F$
- C.) From Table 1, find the corresponding value (q) for (Ta) = 762 BTU/hr/lin.Ft.
- D.) From Table 2 find the correction factor "K" for T = 1.06
- E.) Calculate the total length (L) of tube required $(L) = \frac{Q}{4 \times K} = \frac{500,000}{762 \times 1.06} = 619.03 \text{ lin.Ft.}$