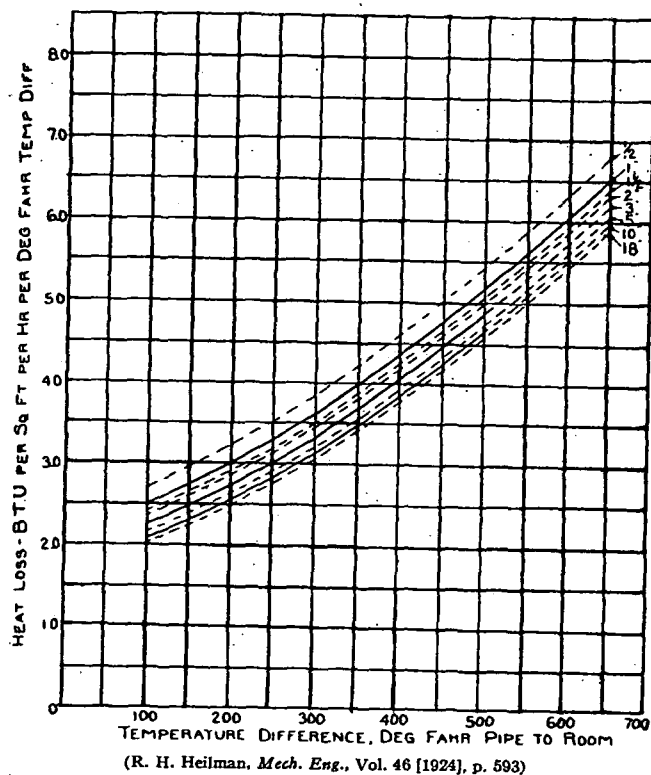


In order to determine heat losses per linear foot of pipe from known losses per square foot, it is necessary to know the number of square feet area per linear foot of pipe. Table 2 gives these areas for various standard pipe sizes while Table 3 gives the area in square feet for flanges and fittings for various standard pipe sizes.



(R. H. Heilman, *Mech. Eng.*, Vol. 46 [1924], p. 593)

FIG. 1. BARE PIPE LOSS CURVES

INSULATION OF HOT WATER, LOW AND HIGH PRESSURE STEAM LINES

The conductivities, in B.t.u. per square foot per hour per inch thick per degree fahrenheit temperature difference between inner and outer surfaces of the insulation are given in Fig. 2 for various insulations. In this figure the conductivities are plotted as functions of the mean temperatures or the mean of the inner and outer surface temperatures of the insulations.

This method of plotting conductivities, enables one readily to calculate the heat loss through single or compound sections. It should be emphasized that in this figure, the conductivities given for the various insulations are the average values from a number of tests on each type of

TABLE 1. LOSSES FROM HORIZONTAL BARE IRON STEAM PIPES

From 100 lineal feet of pipe per month of 30 days with steam in pipes 24 hours per day. Coal at \$4.00 per ton of 2000 lb.

GAGE PRESSURE TEMPERATURES																		
Pipe Size	Hot Water						10 Lbs.						80 Lbs.		120 Lbs.			
	120 Deg. Fahr.		150 Deg. Fahr.		180 Deg. Fahr.		210 Deg. Fahr.		239.4 Deg. Fahr.		324 Deg. Fahr.		324 Deg. Fahr.		350 Deg. Fahr.			
	B.t.u. per Lineal Ft. per Deg. Fahr. Diff. per Hr.	Lib. Coal	Dolla. Loss	Lib. Coal	Dolla. Loss	B.t.u. per Lineal Ft. per Deg. Fahr. Diff. per Hr.	Lib. Coal	Dolla. Loss	B.t.u. per Lineal Ft. per Deg. Fahr. Diff. per Hr.	Lib. Coal	Dolla. Loss	B.t.u. per Lineal Ft. per Deg. Fahr. Diff. per Hr.	Lib. Coal	Dolla. Loss	B.t.u. per Lineal Ft. per Deg. Fahr. Diff. per Hr.	Lib. Coal	Dolla. Loss	
1/4"	0.543	215	0.53	363	1.32	526	707	0.638	2.24	897	0.670	1566	4.51	1805	0.815	2190	4.51	1805
1/2"	0.55	261	0.55	437	1.58	633	845	0.729	2.11	1083	0.809	1895	5.25	2300	0.890	2601	5.25	2300
3/4"	0.78	313	0.79	525	2.36	947	1275	1.15	4.34	1610	1.20	2290	8.18	2810	1.45	3280	8.18	2810
1"	0.97	388	0.97	646	3.19	1275	1750	1.58	5.36	2142	1.53	2860	9.28	3519	1.67	4050	9.28	3519
1 1/4"	1.08	432	1.09	728	4.15	1660	2260	2.12	7.48	2590	2.12	3550	11.37	4359	2.05	5060	11.37	4359
1 1/2"	1.32	530	1.34	886	5.24	1949	2705	2.87	8.63	3290	2.87	4460	13.66	5460	2.46	6170	13.66	5460
2"	1.56	625	1.58	1056	6.47	2345	3240	3.45	10.94	3950	3.45	5350	16.14	6450	2.91	7320	16.14	6450
2 1/2"	1.86	744	1.88	1260	7.58	2820	3820	4.18	13.17	4790	4.18	6325	18.31	7520	3.30	8700	18.31	7520
3"	2.11	843	2.13	1418	8.24	3354	4450	4.78	14.21	5680	4.78	7500	20.30	8900	3.70	10200	20.30	8900
3 1/2"	2.37	934	2.36	1580	9.25	3920	5160	5.38	16.18	6470	5.38	8430	22.62	9850	4.07	11200	22.62	9850
4"	2.57	1030	2.60	1740	10.25	4500	5850	6.00	18.25	7300	6.00	9500	24.62	10925	4.45	12500	24.62	10925
4 1/2"	2.84	1132	2.87	1910	11.32	5160	6700	6.78	20.35	8130	6.78	10600	26.58	12100	4.84	13800	26.58	12100
5"	3.13	1242	3.13	2080	12.40	5800	7520	7.51	22.05	8820	7.51	11800	28.58	14000	5.25	15000	28.58	14000
5 1/2"	3.35	1342	3.39	2250	13.52	6500	8330	8.20	23.90	9600	8.20	13000	30.58	15200	5.68	16300	30.58	15200
6"	3.63	1442	3.67	2420	14.60	7200	9140	8.90	25.80	10380	8.90	14200	32.58	16400	6.10	17600	32.58	16400
6 1/2"	3.93	1542	3.97	2600	15.68	7900	9950	9.60	27.70	11160	9.60	15400	34.58	17600	6.53	18900	34.58	17600
7"	4.27	1710	4.32	2880	17.00	8800	10960	10.40	30.60	12300	10.40	16600	36.58	19100	7.00	20200	36.58	19100
7 1/2"	4.75	1900	4.80	3200	18.60	9900	12170	11.20	32.50	13500	11.20	18000	38.58	20400	7.48	21500	38.58	20400
8"	5.26	2100	5.32	3500	20.00	11000	13380	12.00	34.40	14700	12.00	19200	40.58	21600	7.92	22800	40.58	22800
9"	6.18	2475	6.25	4040	23.00	12600	15390	13.60	36.10	16500	13.60	21400	42.58	23000	8.40	24100	42.58	24100
10"	6.74	2700	6.82	4400	25.00	13800	16600	14.40	38.00	18000	14.40	23000	44.58	24200	8.84	25400	44.58	25400
12"	7.66	3065	7.74	5000	28.00	15600	18610	16.30	42.80	20400	16.30	25800	48.58	26500	9.42	27200	48.58	27200
14"	8.38	3440	8.48	5520	31.00	17400	20620	18.20	46.10	22200	18.20	28000	50.58	28700	10.00	29500	50.58	29500
16"	8.58	3840	8.68	6040	34.00	19200	22630	20.10	49.40	24000	20.10	30000	52.58	30700	10.48	30700	52.58	30700