

SPECIFIC HEAT OF BODIES

Material	Specific Heat	Material	Specific Heat	Material	Specific Heat
Cast Iron.....	0.12983	Gold.....	0.03244	Glass.....	0.19768
Wrought Iron....	0.11379	Platinum.....	0.03243	Burnt Clay.....	0.18500
Lime.....	0.09555	Lead.....	0.03140	Brickwood.....	0.20000
Copper.....	0.09515	Bismuth.....	0.03084	Water at 32°.....	1.00000
Brass.....	0.09391	Nickel.....	0.10860	Alcohol (S.G. 793).....	0.62200
Silver.....	0.05701	Ice.....	0.50400	Petroleum.....	0.43400
Tin.....	0.05695	Coal.....	0.27770	Olive Oil.....	0.30960
Mercury.....	0.03332	Coke.....	0.20085	Air.....	0.2415*

*W. H. CARRIER

SPECIFIC GRAVITY OF BODIES

Body	Specific Gravity	Weight per Cu. Ft. in Lb.
Water.....	1.00	62.5
Aluminum.....	2.50	156.3
Tin (cast).....	7.29	455.6
Steel.....	7.84	490.0
Cast Iron.....	7.21	450.6
Wrought Iron.....	7.68	480.0
Brass.....	8.38	523.8
Copper.....	8.79	549.4
Lead (cast).....	11.35	709.4
Mercury.....	13.60	850.0
Platinum.....	21.50	1343.8

DECIMAL EQUIVALENTS OF FRACTIONS

Fraction	Dec. Equiv.	Fraction	Dec. Equiv.	Fraction	Dec. Equiv.	Fraction	Dec. Equiv.
1-64	0.015625	17-64	0.265625	33-64	0.515625	49-64	0.765625
1-32	0.031250	9-32	0.281250	17-32	0.531250	25-32	0.781250
3-64	0.046875	19-64	0.296875	35-64	0.546875	51-64	0.796875
1-16	0.062500	5-16	0.312500	9-16	0.562500	13-16	0.812500
5-64	0.078125	21-64	0.328125	37-64	0.578125	53-64	0.828125
3-32	0.093750	11-32	0.343750	19-32	0.593750	27-32	0.843750
7-64	0.109375	23-64	0.359375	39-64	0.609375	55-64	0.859375
1-8	0.125000	3-8	0.375000	5-8	0.625000	7-8	0.875000
9-64	0.140625	25-64	0.390625	41-64	0.640625	57-64	0.890625
5-32	0.156250	13-32	0.406250	21-32	0.656250	29-32	0.906250
11-64	0.171875	27-64	0.421875	43-64	0.671875	59-64	0.921875
3-16	0.187500	7-16	0.437500	11-16	0.687500	15-16	0.937500
13-64	0.203125	29-64	0.453125	45-64	0.703125	61-64	0.953125
7-32	0.218750	15-32	0.468750	23-32	0.718750	31-32	0.968750
15-64	0.234375	31-64	0.484375	47-64	0.734375	63-64	0.984375
1-4	0.250000	1-2	0.500000	3-4	0.750000	1-	1.000000

SQUARE FEET OF SURFACE PER LINEAL FOOT OF PIPE

ON ALL LENGTHS OVER 1 FT., FRACTIONS LESS THAN TENTHS ARE ADDED TO OR DROPPED
SIZE OF PIPE

Length of Pipe	1/4	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	7	8
1	.275	.346	.434	.494	.622	.753	.916	1.175	1.455	1.739	2.022	2.306	2.590	2.874
2	.5	.7	.9	1.1	1.2	1.5	1.8	2.4	2.9	3.5	4.1	4.7	5.3	5.9
3	.8	1.1	1.3	1.5	1.9	2.3	2.7	3.5	4.4	5.2	6.0	6.8	7.6	8.4
4	1.1	1.4	1.7	2.0	2.5	3.1	3.6	4.7	5.8	6.7	7.7	8.7	9.7	10.7
5	1.4	1.7	2.2	2.4	3.1	3.8	4.5	5.8	7.3	8.2	9.2	10.2	11.2	12.2
6	1.6	2.1	2.6	2.9	3.7	4.5	5.5	7.0	8.7	10.2	11.7	13.2	14.7	16.2
7	1.9	2.4	3.0	3.4	4.4	5.3	6.4	8.2	10.2	12.1	14.1	16.1	18.1	20.1
8	2.2	2.8	3.5	3.9	5.0	6.0	7.3	9.4	11.6	13.9	16.1	18.4	20.7	23.0
9	2.5	3.1	3.9	4.4	5.6	6.8	8.2	10.6	13.1	15.7	18.2	20.7	23.2	25.7
10	2.7	3.5	4.3	4.9	6.2	7.5	9.1	11.8	14.6	17.4	20.2	23.0	25.8	28.6
11	3.0	3.8	4.8	5.4	6.8	8.3	10.1	12.9	16.0	19.1	22.1	25.1	28.1	31.1
12	3.3	4.1	5.2	5.9	7.5	9.1	11.1	14.1	17.4	20.9	24.2	27.5	30.8	34.1
13	3.6	4.5	5.6	6.4	8.1	9.8	11.9	15.3	18.9	22.6	26.2	29.8	33.4	37.0
14	3.8	4.8	6.1	6.9	8.7	10.5	12.8	16.5	20.3	24.3	28.1	31.9	35.7	39.5
15	4.1	5.2	6.5	7.4	9.3	11.3	13.7	17.6	21.8	26.1	30.3	34.5	38.7	42.9
16	4.4	5.5	6.9	7.9	10.0	12.1	14.6	18.8	23.2	27.8	32.3	36.8	41.3	45.8
17	4.7	5.9	7.4	8.4	10.6	12.8	15.5	20.0	24.7	29.5	34.2	38.9	43.6	48.3
18	5.0	6.2	7.8	8.9	11.2	13.5	16.5	21.2	26.2	31.3	36.0	40.7	45.4	50.1
19	5.2	6.6	8.3	9.4	11.8	14.3	17.4	22.3	27.6	33.1	38.4	43.7	49.0	54.3
20	5.5	6.9	8.7	9.9	12.5	15.1	18.3	23.5	29.1	34.8	40.4	46.1	51.8	57.5
21	5.8	7.3	9.1	10.4	13.1	15.8	19.2	24.7	30.5	36.5	42.4	48.3	54.2	60.1
22	6.1	7.6	9.6	10.9	13.7	16.5	20.2	25.9	32.1	38.3	44.4	50.5	56.6	62.7
23	6.3	8.0	10.1	11.3	14.3	17.3	21.1	27.0	33.5	40.0	46.5	53.0	59.5	66.0
24	6.6	8.3	10.4	11.9	14.9	18.0	22.0	28.2	34.9	41.7	48.4	55.1	61.8	68.5
25	6.9	8.6	10.9	12.3	15.6	18.8	22.9	29.3	36.3	43.5	50.2	56.9	63.6	70.3
26	7.1	9.0	11.3	12.8	16.2	19.5	23.8	30.5	37.8	45.2	52.0	58.8	65.6	72.4
27	7.4	9.4	11.7	13.3	16.8	20.3	24.7	31.7	39.3	47.1	54.0	60.9	67.8	74.7
28	7.7	9.7	12.2	13.8	17.4	21.1	25.6	32.9	40.7	48.7	56.0	63.3	70.6	77.9
29	8.0	10.1	12.6	14.3	18.1	21.8	26.6	34.1	42.2	50.4	58.0	65.6	73.2	80.8
30	8.3	10.4	13.1	14.8	18.7	22.5	27.5	35.3	43.6	52.1	60.0	67.7	75.4	83.1
31	8.5	10.7	13.5	15.3	19.3	23.3	28.4	36.4	45.1	53.9	62.0	70.0	77.9	85.8
32	8.8	11.1	13.9	15.8	19.9	24.1	29.3	37.6	46.5	55.6	64.0	72.2	80.4	88.6
33	9.1	11.4	14.3	16.3	20.5	24.8	30.2	38.8	48.0	57.4	66.0	74.4	82.8	91.2
34	9.4	11.7	14.7	16.8	21.2	25.6	31.1	40.0	49.5	59.1	68.0	76.7	85.4	94.1
35	9.6	12.1	15.2	17.3	21.8	26.3	32.1	41.1	50.9	60.8	70.0	79.0	88.0	97.0
36	9.9	12.5	15.6	17.8	22.4	27.0	33.1	42.3	52.4	62.6	72.0	81.3	90.6	100.0
37	10.2	12.8	16.1	18.3	23.0	27.8	33.9	43.5	53.8	64.3	74.0	83.5	93.0	102.5
38	10.5	13.2	16.5	18.8	23.7	28.5	34.8	44.6	55.2	66.0	76.0	85.8	95.8	105.8
39	10.7	13.5	16.9	19.3	24.3	29.3	35.7	45.8	56.7	67.8	78.0	88.0	98.0	108.0
40	11.0	13.8	17.4	19.8	24.9	30.1	36.6	47.1	58.2	69.5	80.0	90.2	100.5	110.8
41	11.3	14.2	17.8	20.3	25.5	30.8	37.6	48.2	59.6	71.3	82.0	92.5	103.0	113.5
42	11.5	14.5	18.2	20.8	26.1	31.6	38.5	49.4	61.1	73.0	84.0	94.8	105.8	116.8
43	11.8	14.9	18.7	21.3	26.8	32.3	39.4	50.6	62.5	74.8	86.0	97.0	108.0	119.0
44	12.1	15.2	19.1	21.8	27.4	33.1	40.3	51.7	64.0	76.5	88.0	99.3	110.5	121.8
45	12.4	15.6	19.5	22.2	28.0	33.8	41.2	52.9	65.5	78.2	90.0	101.6	113.2	124.8
46	12.7	15.9	20.0	22.7	28.6	34.6	42.2	54.0	67.0	80.0	92.0	103.8	115.8	127.8
47	12.9	16.3	20.4	23.2	29.2	35.3	43.1	55.2	68.4	81.7	94.0	106.0	118.0	130.0
48	13.2	16.6	20.8	23.7	29.9	36.1	43.9	56.4	69.8	83.5	96.0	108.0	120.0	132.0
49	13.5	17.0	21.3	24.2	30.5	36.8	44.8	57.6	71.2	85.1	98.0	110.5	123.0	135.0
50	13.8	17.3	21.7	24.7	31.1	37.6	45.8	58.7	72.7	87.0	100.0	112.8	125.8	138.8

TABLE SHOWING EXPANSION OF WROUGHT IRON PIPE

Initial	Increase in Length per 100 Ft. when Heated to									
Temperature	160°	180°	200°	212°	228°	240°	250°	259°	267°	274°
Zero, in.	1.28	1.44	1.60	1.69	1.82	1.92	2.00	2.07	2.13	2.20
32° in.	1.02	1.18	1.34	1.43	1.56	1.66	1.74	1.81	1.87	1.94
64° in.	0.77	0.93	1.09	1.18	1.31	1.41	1.49	1.56	1.61	1.69
	Hot Water			Water Boils	5 lb.	10 lb.	15 lb.	20 lb.	25 lb.	30 lb.

Wrought iron pipe expands, in inches, per 100 ft., 4/5 of the increase in temperature of steam or water it is subjected to, over the temperature at the time of installation, divided by 100.

Example—Temperature when installed, 32°, 10 lb. pressure=240°, difference 208°, 4/5 of which equals 1.66 in. expansion per 100 ft.