Multiply	By	To Obtain
Atmospheres	33.9	Feet of water
Atmospheres	29.92	Inches of mercury
Atmospheres	10332	Kilograms/sq. m.
Atmospheres	14.7	Pounds/sq. in.
Atmospheres	760	mm of mercury
Bars	9.869×10^{-1}	Atmospheres
Bars	1.0×10^{6}	Dynes/sq. cm.
Bars	1.020×10^{4}	Kgs./sq. meter
Bars	14.5	Pounds/sq. in.
British Thermal Units	777.5	Foot-pounds
British Thermal Units	1054.6	Joules
British Thermal Units	0.2520	Kg.-calories
British Thermal Units	2.928×10^{-4}	K.W.-hours
B.T.U./hr.	0.2520	Kg. cal/Hr.
B.T.U./hr./sq. ft.	2.712	Kg.-cal/hr./sq. m.
B.T.U./hr./sq. ft./deg F.	4.882	Kg. cal/hr./sq. m./deg C.
B.T.U./sq. ft.	2.712	Kg. cal/sq. m.
B.T.U./sq. ft./in.	6.892	Kg. cal/sq.m./cm.
Celsius	(˚C x 1.8) + 32	Fahrenheit
Centimeters	0.0328	Feet
Centimeters	0.3937	Inches
Centimeters	0.01	Meters
Centimeters	$1. \times 10^{4}$	Microns
Centimeters/sec	0.03281	Feet/sec
Centipoises	0.000672	Lbs./ft.-sec.
Cubic centimeters	3.531×10^{-5}	Cubic feet
Cubic centimeters	6.102×10^{-2}	Cubic inches
Cubic centimeters	1.0×10^{-3}	Liters
Cubic feet	1728	Cubic inches
Cubic feet	0.03704	Cubic Yards
Cubic feet	7.481	Gallons
Cubic feet	28.32	Liters
Cubic feet/second	26930	Gallons/hour
Cubic inches	1.639×10^{-5}	Cubic meters
Cubic inches	4.329×10^{-3}	Gallons
Cubic meters	1.0×10^{6}	Cubic cm.
Cubic meters	35.31	Cubic feet
Cubic meters	1.308	Cubic yards
Degrees(angle)	1.745×10^{-2}	Radians
Dynes	1.020×10^{-6}	Kilograms
Dynes	2.248×10^{-6}	Pounds
Dynes/sq. cm.	9.870×10^{-7}	Atmosphere
Dynes/sq. cm.	1×10^{-6}	Bars
Dynes/sq. cm.	0.01020	Kgs./sq. meter
Dynes/sq.cm.	2.089×10^{-3}	Pounds/sq. ft.
Dynes/sq. cm.	1.450×10^{-5}	Pounds/sq. in.
Fahrenheit	5/9(˚F-32)	Celsius
Feet	30.48	Centimeters
Feet	3.048×10^{-4}	Kilometer
Feet	0.3048	Meters
Feet	304.8	Millimeters
Feet/minute	0.01667	Feet/second
Foot-pounds	1.356	Joules
Foot-pounds	3.241×10^{-4}	Kg.-calories
Foot-pounds	0.1383	Kg.-meters
Gallons (U.S.)	0.1337	Cubic feet
Gallons (U.S.)	231	Cubic inches
Gallons (U.S.)	3.785×10^{-3}	Cubic meters
Gallons (U.S.)	3.785	Liters
Gallons of water	8.337	Pounds of water
Gallons/hour	3.71×10^{-5}	Cu. ft./sec.
Grams	980.7	Dynes
Grams	2.205×10^{-3}	Pounds
Grams/cubic cm.	0.03613	Lbs./cu. in.
Grams/sq. cm.	1.422×10^{-2}	Lbs./sq. in.
Inches	2.54	Centimeters
Inches	0.0254	Meters
Inches	25.4	Millimeters
Inches of mercury	0.03342	Atmospheres
Inches of mercury	3.453×10^{-2}	Kgs./sq. cm.
Inches of mercury	0.4912	Lbs./sq. in.
Inches of water	2.458×10^{-3}	Atmosphere
Inches of water	0.07349	Inches of mercury
Inches of water	0.03609	Lbs./ sq. in.
Inches of water	0.1867	Cms.of mercury
Inches of water (at 4˚C)	2.54×10^{-3}	Kgs./sq. cm.
Inches-pounds/deg.	0.66	Kilogram-meters/rad.
Joules	9.486×10^{-4}	B.T.U.
Joules	0.7376	Foot-pounds
Joules	2.390×10^{-4}	Kg.-calories
Kilograms	980665	Dynes
Kilograms	1.0×10^{3}	Grams
Kilograms	2.205	Pounds
Kilogram-calories	3.968	B.T.U.
Kilogram-calories	3086	Foot-pounds
Kilogram-calories	4186	Joules
Kilogram-meters	7.233	Foot-pounds
Kilograms/cu. meters	3.613×10^{-5}	Pounds/cu. in.
Kilograms/sq. cm.	9.80665×10^{5}	Dynes/sq. cm.
Kilograms/sq. cm.	14.226	Pounds/sq. in.
Kilograms/sq. meter	9.678×10^{-5}	Atmospheres
Kilograms/sq. meters	9.804×10^{-5}	Bars
Kilometers	1.0×10^{5}	Centimeters
Kilometers	3281	Feet
Kilometers	3.937×10^{4}	Inches
Kilonewtons/sq. meter	0.145	Pounds/sq. in.
Kilospascals	0.145	Pounds/sq. in.
Liters	1.0×10^{3}	Cubic centimeters
Liters	0.0351	Cubic feet
Liters	0.2642	Gallons (U.S.)
Liters	1.0×10^{-3}	Cubic meters
Mega pascals (mPa)	145	Pounds/sq. in
Meters	3.281	Feet
Meters	39.37	Inches
Meters	100	Centimeters
Meters	0.001	Kilometers
Meters	1000	Millimeters
Meters/sec.	3.281	Feet/sec.
Microns	3.94×10^{-5}	Inches
Millimeters	0.1	Centimeters
Millimeters	0.003281	Feet
Millimeters	0.03937	Inches
Millimeters	1.0×10^{-6}	Kilometers
Millimeters	0.001	Meters
Newtons	1.0×10^{5}	Dynes
Newtons	0.2248	Pounds
Newtons/mm	5.71	Pounds/inch
Newton-Meters	8.8504	Inch-pounds
Newtons/sq. meter	1	Pascals
Ounces	28.35	Grams
Ounces (fluid)	0.02957	Liters
Pounds	444823	Dynes
Pounds	453.6	Grams
Pounds	0.4536	Kilograms
Pounds of water	0.01602	Cubic feet
Pounds of water	27.68	Cubic inches
Pounds of water	0.1198	Gallons
Pounds/cu. foot	0.01602	Grams/cu. cm.
Pounds/cubic foot	16.02	Kgs./cu. meter
Pounds/cubic foot	5.787×10^{-4}	Pounds/cu. in.
Pounds/cu. in.	2.768×10^{4}	Kgs./cu. meter
Pounds/cu. in.	1.728×10^{3}	Pounds/cu. ft.
Pounds/inch	17.86	Kilograms/meter
Pounds/inch	178.6	Grams/cm.
Pounds/square inch	2.036	Inches of mercury
Pounds/square inch	51.7	Mm of mercury
Pounds/square inch	703.1	Kgs./sq. meter
Radians	57.3	Degrees
Slugs	3.217×10^{1}	Pounds
Square centimeters	0.1550	Square inches
Square feet	929	Square cms.
Square feet	0.0929	Square meters
Square inches	645.2	Square mms.
Square inches	6.452	Square cms.
Square meters	1.55×10^{3}	Square inches
Square millimeters	1.0×10^{-2}	Square cms.
Square millimeters	1.55×10^{-3}	Square inches
Tons	0.02	Pounds/sq. in.

Thermal Expansion Data

Linear Thermal Expansion between 70° F and indicated Temperature, inches/100 feet

MATERIALS

Temp. deg F	Carbon Steel Carbon-Moly Low-Chrome (thru 3 Cr Mo)	Austenitic Stainless Steels 18 Cr 8 Ni	5 Cr Mo thru 9 Cr Mo	12 Cr 17 Cr 27 Cr	310SS 25 Cr 20 Ni	Monel (400) 67 Ni 30 Cr	3 1/2 Nickel	Nickel 200	Alloy 800, 825	Alloy 600, 625, 691	Copper	Brass	70 Cu 30 Ni	Aluminum	Wrought Iron
-325	-2.37	-3.85	-2.22	-2.04	-3.00	-2.62	-2.22	—	—	—	—	-3.88	-3.15	-4.68	-2.70
-300	-2.24	-3.63	-2.10	-1.92	-2.83	-2.50	-2.10	-2.44	—	—	—	-3.64	-2.87	-4.46	-2.55
-275	-2.11	-3.41	-1.98	-1.80	-2.66	-2.38	-1.98	-2.35	—	—	—	-3.40	-2.70	-4.21	-2.40
-250	-1.98	-3.19	-1.86	-1.68	-2.49	-2.26	-1.86	-2.25	—	-2.30	—	-3.16	-2.53	-3.97	-2.25
-225	-1.85	-2.96	-1.74	-1.57	-2.32	-2.14	-1.74	-2.13	—	-2.17	—	-2.93	-2.36	-3.71	-2.10
-200	-1.71	-2.73	-1.62	-1.46	-2.15	-2.02	-1.62	-2.01	—	-2.04	—	-2.70	-2.19	-3.44	-1.95
-175	-1.58	-2.50	-1.50	-1.35	-1.98	-1.90	-1.50	-1.83	—	-1.87	—	-2.47	-2.12	-3.16	-1.81
-150	-1.45	-2.27	-1.37	-1.24	-1.81	-1.79	-1.38	-1.65	—	-1.7	—	-2.24	-1.95	-2.88	-1.67
-125	-1.30	-2.01	-1.23	-1.11	-1.60	-1.59	-1.23	-1.47	—	-1.54	—	-2.00	-1.74	-2.57	-1.49
-100	-1.15	-1.75	-1.08	-0.98	-1.39	-1.38	-1.08	-1.29	—	-1.37	-1.83	-1.76	-1.53	-2.27	-1.31
-75	-1.00	-1.50	-0.94	-0.85	-1.18	-1.18	-0.93	-1.11	—	-1.17	-1.57	-1.52	-1.33	-1.97	-1.13
-50	-0.84	-1.24	-0.79	-0.72	-0.98	-0.98	-0.78	-0.93	—	-0.97	-1.31	-1.29	-1.13	-1.67	-0.96
-25	-0.68	-0.98	-0.63	-0.57	-0.78	-0.77	-0.62	-0.75	—	-0.76	-1.05	-1.02	-0.89	-1.32	-0.76
0	-0.49	-0.72	-0.46	-0.42	-0.57	-0.57	-0.46	-0.56	—	-0.56	-0.79	-0.75	-0.66	-0.97	-0.56
25	-0.32	-0.46	-0.30	-0.27	-0.37	-0.37	-0.30	-0.36	—	-0.36	-0.51	-0.48	-0.42	-0.63	-0.36
50	-0.14	-0.21	-0.13	-0.12	-0.16	-0.20	-0.14	-0.16	—	-0.16	-0.22	-0.21	-0.19	-0.28	-0.16
70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	0.23	0.34	0.22	0.20	0.32	0.28	0.22	0.25	0.28	0.26	0.34	0.35	0.31	0.46	0.26
125	0.42	0.62	0.40	0.36	0.58	0.52	0.40	0.47	0.52	0.48	0.62	0.64	0.56	0.85	0.48
150	0.61	0.90	0.58	0.53	0.84	0.75	0.58	0.69	0.76	0.70	0.90	0.94	0.82	1.23	0.70
175	0.80	1.18	0.76	0.69	1.10	0.99	0.76	0.92	0.99	0.92	1.18	1.23	1.07	1.62	0.92
200	0.99	1.46	0.94	0.86	1.37	1.22	0.94	1.15	1.23	1.15	1.48	1.52	1.33	2.00	1.14
225	1.21	1.75	1.13	1.03	1.64	1.46	1.13	1.38	1.49	1.38	1.77	1.83	1.59	2.41	1.37
250	1.40	2.03	1.33	1.21	1.91	1.71	1.32	1.61	1.76	1.61	2.05	2.14	1.86	2.83	1.60
275	1.61	2.32	1.52	1.38	2.18	1.96	1.51	1.85	2.03	1.85	2.34	2.45	2.13	3.24	1.83
300	1.82	2.61	1.71	1.56	2.45	2.21	1.69	2.08	2.30	2.09	2.62	2.76	2.40	3.67	2.06
325	2.04	2.90	1.90	1.74	2.72	2.44	1.88	2.32	2.59	2.32	2.91	3.08	2.68	4.09	2.29
350	2.26	3.20	2.10	1.93	2.99	2.68	2.08	2.56	2.88	2.56	3.19	3.41	2.96	4.52	2.53
375	2.48	3.50	2.30	2.11	3.26	2.91	2.27	2.80	3.18	2.80	3.48	3.73	3.24	4.95	2.77
400	2.70	3.80	2.50	2.30	3.53	3.25	2.47	3.05	3.48	3.05	3.88	4.05	3.52	5.39	3.01
425	2.93	4.10	2.72	2.50	3.80	3.52	2.69	3.30	3.76	3.29	4.17	4.38	—	5.83	3.25
450	3.16	4.41	2.93	2.69	4.07	3.79	2.91	3.55	4.04	3.53	4.47	4.72	—	6.28	3.50
475	3.39	4.71	3.14	2.89	4.34	4.06	3.13	3.80	4.31	3.78	4.76	5.06	—	6.72	3.74
500	3.62	5.01	3.35	3.08	4.61	4.33	3.34	4.05	4.59	4.02	5.06	5.40	—	7.17	3.99
525	3.86	5.31	3.58	3.28	4.88	4.61	3.57	4.31	4.87	4.27	5.35	5.75	—	7.63	4.25
550	4.11	5.62	3.80	3.49	5.15	4.90	3.80	4.56	5.16	4.52	5.64	6.10	—	8.10	4.50
575	4.35	5.93	4.02	3.69	5.42	5.18	4.03	4.83	5.44	4.77	—	6.45	—	8.56	4.76
600	4.60	6.24	4.24	3.90	5.69	5.46	4.27	5.09	5.72	5.02	—	6.80	—	9.03	5.01
625	4.86	6.55	4.47	4.10	5.96	5.75	4.51	5.35	6.01	5.27	—	7.16	—	—	5.27
650	5.11	6.87	4.69	4.31	6.23	6.05	4.75	5.62	6.30	5.53	—	7.53	—	—	5.53
675	5.37	7.18	4.92	4.52	6.50	6.34	4.99	5.89	6.58	5.79	—	7.89	—	—	5.80
700	5.63	7.50	5.14	4.73	6.77	6.64	5.24	6.16	6.88	6.05	—	8.26	—	—	6.06
725	5.90	7.82	5.38	4.94	7.04	6.94	5.50	6.44	7.17	6.31	—	8.64	—	—	6.32
750	6.16	8.15	5.62	5.16	7.31	7.25	5.76	6.71	7.47	6.57	—	9.02	—	—	6.59
775	6.43	8.47	5.86	5.38	7.58	7.55	6.02	6.99	7.76	6.84	—	9.40	—	—	6.85
800	6.70	8.80	6.10	5.60	7.85	7.85	6.27	7.27	8.06	7.10	—	9.78	—	—	7.12
825	6.97	9.13	6.34	5.82	8.15	8.16	6.54	7.54	8.35	7.38	—	10.17	—	—	7.40
850	7.25	9.46	6.59	6.05	8.45	8.48	6.81	7.82	8.66	7.67	—	10.57	—	—	7.69
875	7.53	9.79	6.83	6.27	8.75	8.80	7.08	8.09	8.95	7.95	—	10.96	—	—	7.97
900	7.81	10.12	7.07	6.49	9.05	9.12	7.35	8.37	9.26	8.23	—	11.35	—	—	8.26
925	8.08	10.46	7.31	6.71	9.35	9.44	7.72	8.64	9.56	8.52	—	11.75	—	—	8.53
950	8.35	10.80	7.56	6.94	9.65	9.77	8.09	8.92	9.87	8.80	—	12.16	—	—	8.81
975	8.62	11.14	7.81	7.17	9.95	10.09	8.46	9.20	10.18	9.09	—	12.57	—	—	9.08
1000	8.89	11.48	8.06	7.40	10.25	10.42	8.83	9.49	10.49	9.37	—	12.98	—	—	9.36
1025	9.17	11.82	8.30	7.62	10.55	10.75	8.98	9.77	10.80	9.66	—	13.39	—	—	—
1050	9.46	12.16	8.55	7.95	10.85	11.09	9.14	10.05	11.11	9.94	—	13.81	—	—	—
1075	9.75	12.50	8.80	8.18	11.15	11.43	9.29	10.34	11.42	10.23	—	14.23	—	—	—
1100	10.04	12.84	9.05	8.31	11.45	11.77	9.45	10.63	11.74	10.51	—	14.65	—	—	—
1125	10.31	13.18	9.28	8.53	11.78	12.11	9.78	10.92	12.05	10.80	—	—	—	—	—
1150	10.57	13.52	9.52	8.76	12.11	12.47	10.11	11.21	12.38	11.09	—	—	—	—	—
1175	10.83	13.86	9.76	8.98	12.44	12.81	10.44	11.50	12.69	11.37	—	—	—	—	—
1200	11.10	14.20	10.00	9.20	12.77	13.15	10.78	11.80	13.02	11.66	—	—	—	—	—
1225	11.38	14.54	10.26	9.42	13.10	13.50	—	12.09	13.36	11.98	—	—	—	—	—
1250	11.66	14.88	10.53	9.65	13.43	13.86	—	12.39	13.71	12.29	—	—	—	—	—
1275	11.94	15.22	10.79	9.88	13.76	14.22	—	12.69	14.04	12.61	—	—	—	—	—
1300	12.22	15.56	11.06	10.11	14.09	14.58	—	12.99	14.39	12.93	—	—	—	—	—
1325	12.50	15.90	11.30	10.33	14.39	14.94	—	13.29	14.74	13.25	—	—	—	—	—
1350	12.78	16.24	11.55	10.56	14.69	15.30	—	13.59	15.10	13.56	—	—	—	—	—
1375	13.06	16.58	11.80	10.78	14.99	15.66	—	13.90	15.44	13.88	—	—	—	—	—
1400	13.34	16.92	12.05	11.01	15.29	16.02	—	14.20	15.80	14.20	—	—	—	—	—
1425	—	17.30	—	—	—	—	—	14.51	16.16	14.51	—	—	—	—	—
1450	—	17.69	—	—	—	—	—	14.82	16.53	14.83	—	—	—	—	—
1475	—	18.08	—	—	—	—	—	15.13	16.88	15.14	—	—	—	—	—
1500	—	18.47	—	—	—	—	—	15.44	17.25	15.45	—	—	—	—	—
1525	—	—	—	—	—	—	—	15.76	17.61	15.77	—	—	—	—	—
1550	—	—	—	—	—	—	—	16.07	17.98	16.08	—	—	—	—	—
1575	—	—	—	—	—	—	—	16.39	18.35	16.40	—	—	—	—	—
1600	—	—	—	—	—	—	—	16.71	18.73	16.71	—	—	—	—	—

Notes:
1. Table shows expansion resulting from change in temperature from 70°F to indicated temperature.
2. This Table is for information only and it is not to be implied that materials are suitable for all temperature ranges shown.
3. The thermal expansion values in this table may be interpolated to determine values for intermediate temperatures.

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Temperature Conversions

°C.	Temp. °C. or °F. -459.69 to -19	°F.	°C.	Temp. °C. or °F. -18 to 53	°F.	°C.	Temp. °C. or °F. 54 to 350	°F.	°C.	Temp. °C. or °F. 360 to 1,070	°F.	°C.	Temp. °C. or °F. 1,080 to 1,790	°F.	°C.	Temp. °C. or °F. 1,800 to 3,000	°F.
-273.16	-459.69		-27.78	-18	-0.4	12.2	54	129.2	182.2	360	680.0	582.2	1,080	1,976.0	982.2	1,800	3,272.0
-267.78	-450		-27.23	-17	1.4	12.8	55	131.0	187.8	370	698.0	587.8	1,090	1,994.0	987.8	1,810	3,290.0
-262.22	-440		-26.67	-16	3.2	13.3	56	132.8	193.3	380	716.0	593.3	1,100	2,012.0	993.3	1,820	3,308.0
-256.67	-430		-26.12	-15	5.0	13.9	57	134.6	198.9	390	734.0	598.9	1,110	2,030.0	998.9	1,830	3,326.0
-251.11	-420		-25.56	-14	6.8	14.4	58	136.4	204.4	400	752.0	604.4	1,120	2,048.0	1,004.4	1,840	3,344.0
-245.56	-410		-25.00	-13	8.6	15.0	59	138.2	210.0	410	770.0	610.0	1,130	2,066.0	1,010.0	1,850	3,362.0
-240.00	-400		-24.44	-12	10.4	15.6	60	140.0	215.6	420	788.0	615.6	1,140	2,084.0	1,015.6	1,860	3,380.0
-234.44	-390		-23.89	-11	12.2	16.1	61	141.8	221.1	430	806.0	621.1	1,150	2,102.0	1,021.1	1,870	3,398.0
-228.89	-380		-23.33	-10	14.0	16.7	62	143.6	226.7	440	824.6	626.7	1,160	2,120.0	1,026.7	1,880	3,416.0
-223.33	-370		-22.78	-9	15.8	17.2	63	145.4	232.2	450	842.0	632.2	1,170	2,138.0	1,032.2	1,890	3,434.0
-217.78	-360		-22.22	-8	17.6	17.8	64	147.2	237.8	460	860.0	637.8	1,180	2,156.0	1,037.8	1,900	3,452.0
-212.22	-350		-21.67	-7	19.4	18.3	65	149.0	243.3	470	878.0	643.3	1,190	2,174.0	1,043.3	1,910	3,470.0
-206.67	-340		-21.11	-6	21.2	18.9	66	150.8	248.9	480	896.0	648.9	1,200	2,192.0	1,048.9	1,920	3,488.0
-201.11	-330		-20.56	-5	23.0	19.4	67	152.6	254.4	490	914.0	654.4	1,210	2,210.0	1,054.4	1,930	3,506.0
-195.56	-320		-20.00	-4	24.8	20.0	68	154.4	260.0	500	932.0	660.0	1,220	2,228.0	1,060.0	1,940	3,524.0
-190.00	-310		-19.44	-3	26.6	20.6	69	156.2	265.6	510	950.0	665.6	1,230	2,246.0	1,065.6	1,950	3,542.0
-184.44	-300		-18.89	-2	28.4	21.1	70	158.0	271.1	520	968.0	671.1	1,240	2,264.0	1,071.1	1,960	3,560.0
-178.89	-290		-18.33	-1	30.2	21.7	71	159.8	276.7	530	986.0	676.7	1,250	2,282.0	1,076.7	1,970	3,578.0
-173.33	-280		-17.8	0	32.0	22.2	72	161.6	282.2	540	1004.0	682.2	1,260	2,300.0	1,082.2	1,980	3,596.0
-169.53	-273.16	-459.69	-17.2	1	33.8	22.8	73	163.4	287.8	550	1022.2	687.8	1,270	2,318.0	1,087.8	1,990	3,614.0
-168.89	-272	-457.6	-16.7	2	35.6	23.3	74	165.2	293.3	560	1040.0	693.3	1,280	2,336.0	1,093.3	2,000	3,632.0
-167.78	-270	-454.0	-16.1	3	37.4	23.9	75	167.0	298.9	570	1058.0	698.9	1,290	2,354.0	1,098.9	2,010	3,650.0
-162.22	-260	-436.0	-15.6	4	39.2	24.4	76	168.8	304.4	580	1076.0	704.4	1,300	2,372.0	1,104.4	2,020	3,668.0
-156.67	-250	-418.0	-15.0	5	41.0	25.0	77	170.6	310.0	590	1094.0	710.0	1,310	2,390.0	1,110.0	2,030	3,686.0
-151.11	-240	-400.00	-14.4	6	42.8	25.6	78	172.4	315.6	600	1112.0	715.6	1,320	2,408.0	1,115.6	2,040	3,704.0
-145.56	-230	-382.0	-13.9	7	44.6	26.1	79	174.2	321.1	610	1130.0	721.1	1,330	2,426.0	1,121.1	2,050	3,722.0
-140.00	-220	-364.0	-13.3	8	46.4	26.7	80	176.0	326.7	620	1148.0	726.7	1,340	2,444.0	1,126.7	2,060	3,740.0
-134.44	-210	-346.0	-12.8	9	48.2	27.2	81	177.8	332.2	630	1166.0	732.2	1,350	2,462.0	1,132.2	2,070	3,758.0
-128.89	-200	-328.0	-12.2	10	50.0	27.8	82	179.6	337.8	640	1184.0	737.8	1,360	2,480.0	1,137.8	2,080	3,776.0
-123.33	-190	-310.0	-11.7	11	51.8	28.3	83	181.4	343.3	650	1202.0	743.3	1,370	2,498.0	1,143.3	2,090	3,794.0
-117.78	-180	-292.0	-11.1	12	53.6	28.9	84	183.2	348.9	660	1220.0	748.9	1,380	2,516.0	1,148.9	2,100	3,812.0
-112.22	-170	-274.0	-10.6	13	55.4	29.4	85	185.0	354.4	670	1238.0	754.4	1,390	2,534.0	1,154.4	2,110	3,830.0
-106.67	-160	-256.0	-10.0	14	57.2	30.0	86	186.8	360.0	680	1256.0	760.0	1,400	2,552.0	1,160.0	2,120	3,848.0
-101.11	-150	-238.0	-9.44	15	59.0	30.6	87	188.6	365.6	690	1274.0	765.6	1,410	2,570.0	1,165.6	2,130	3,866.0
-95.56	-140	-220.0	-8.89	16	60.8	31.1	88	190.4	371.1	700	1292.0	771.1	1,420	2,588.0	1,171.1	2,140	3,884.0
-90.00	-130	-202.0	-8.33	17	62.6	31.7	89	192.2	376.7	710	1310.0	776.7	1,430	2,606.0	1,176.7	2,150	3,902.0
-84.44	-120	-184.0	-7.78	18	64.4	32.2	90	194.0	382.2	720	1328.0	782.2	1,440	2,624.0	1,182.2	2,160	3,920.0
-78.89	-110	-166.0	-7.22	19	66.2	32.8	91	195.8	387.8	730	1346.0	787.8	1,450	2,642.0	1,187.8	2,170	3,938.0
-73.33	-100	-143.0	-6.67	20	68.0	33.3	92	197.6	393.3	740	1364.0	793.3	1,460	2,660.0	1,193.3	2,180	3,956.0
-70.56	-95	-139.0	-6.11	21	69.8	33.9	93	199.4	398.9	750	1382.0	798.9	1,470	2,678.0	1,198.9	2,190	3,974.0
-67.78	-90	-130.0	-5.56	22	71.6	34.4	94	201.2	404.4	760	1400.0	804.4	1,480	2,696.0	1,204.4	2,200	3,992.0
-65.00	-85	-121.0	-5.00	23	73.4	35.0	95	203.0	410.0	770	1418.0	810.0	1,490	2,714.0	1,210.0	2,210	4,010.0
-62.22	-80	-112.0	-4.44	24	75.2	35.6	96	204.8	415.6	780	1436.0	815.6	1,500	2,732.0	1,215.6	2,220	4,028.0
-59.45	-75	-103.0	-3.89	25	77.0	36.1	97	206.6	421.1	790	1454.0	821.1	1,510	2,750.0	1,221.1	2,230	4,046.0
-56.67	-70	-94.0	-3.33	26	78.8	36.7	98	208.4	426.7	800	1472.0	826.7	1,520	2,768.0	1,226.7	2,240	4,064.0
-53.89	-65	-85.0	-2.78	27	80.6	37.2	99	210.2	432.2	810	1490.0	832.2	1,530	2,786.0	1,232.2	2,250	4,032.0
-51.11	-60	-76.0	-2.22	28	82.4	37.8	100	212.0	437.8	820	1508.0	837.8	1,540	2,804.0	1,237.8	2,260	4,100.0
-48.34	-55	-67.0	-1.67	29	84.2	43.3	110	230.0	443.3	830	1526.0	843.3	1,550	2,822.0	1,243.3	2,270	4,118.0
-45.56	-50	-58.0	-1.11	30	86.0	48.9	120	248.0	448.9	840	1544.0	848.9	1,560	2,840.0	1,248.9	2,280	4,136.0
-42.78	-45	-49.0	-0.56	31	87.8	54.4	130	266.0	454.4	850	1562.0	854.4	1,570	2,858.0	1,254.4	2,290	4,154.0
-40.00	-40	-40.0	0	32	89.6	60.0	140	284.0	460.0	860	1580.0	860.0	1,580	2,876.0	1,260.0	2,300	4,172.0
-39.45	-39	-38.2	0.56	33	91.4	65.6	150	302.0	465.6	870	1598.0	865.6	1590	2,894.0	1,265.6	2,310	4,190.0
-39.89	-38	-36.4	1.11	34	93.2	71.1	160	320.0	471.1	880	1616.0	871.1	1,600	2,912.0	1,271.1	2,320	4,208.0
-38.34	-37	-34.6	1.67	35	95.0	76.7	170	338.0	476.7	890	1634.0	876.7	1,610	2,930.0	1,276.7	2,330	4,226.0
-37.78	-36	-32.8	2.22	36	96.8	82.2	180	356.0	482.2	900	1652.0	882.2	1,620	2,948.0	1,282.2	2,340	4,244.0
-37.23	-35	-31.0	2.78	37	98.6	87.8	190	374.0	487.8	910	1670.0	887.8	1,630	2,966.0	1,287.8	2,350	4,262.0
-36.67	-34	-29.2	3.33	38	100.4	93.3	200	392.0	493.3	920	1688.0	893.3	1,640	2,984.0	1,293.3	2,360	4,280.0
-36.12	-33	-27.4	3.89	39	102.2	98.9	210	410.0	498.9	930	1706.0	898.9	1,650	3,002.0	1,298.9	2,370	4,298.0
-35.56	-32	-25.6	4.44	40	104.2	104.4	220	428.0	504.4	940	1724.0	904.4	1,660	3,020.0	1,304.4	2,380	4,316.0
-35.00	-31	-23.8	5.00	41	105.8	110.0	230	446.0	510.0	950	1742.0	910.0	1,670	3,038.0	1,310.0	2,390	4,334.0
-34.44	-30	-22.0	5.56	42	107.6	115.6	240	464.0	515.6	960	1760.0	915.6	1,680	3,056.0	1,343.3	2,450	4,442.0
-33.89	-29	-20.2	6.11	43	109.4	121.1	250	482.0	521.1	970	1778.0	921.1	1,690	3,074.0	1,371.1	2,500	4,532.0
-33.33	-28	-18.4	6.67	44	111.2	126.7	260	500.0	526.7	980	1796.0	926.7	1,700	3,092.0	1,398.9	2,550	4,622.0
-32.78	-27	-16.6	7.22	45	113.0	132.2	270	518.0	532.2	990	1814.0	932.2	1,710	3,110.0	1,426.7	2,600	4,712.0
-32.22	-26	-14.8	7.78	46	114.8	137.8	280	536.0	537.8	1000	1832.0	937.8	1,720	3,128.0	1,454.4	2,650	4,802.0
-31.67	-25	-13.0	8.33	47	116.6	143.3	290	554.0	543.3	1010	1850.0	943.3	1,730	3,146.0	1,482.2	2,700	4,892.0
-31.11	-24	-11.2	8.89	48	118.4	148.9	300	572.0	548.9	1020	1868.0	948.9	1,740	3,164.0	1,510.0	2,750	4,982.0
-30.56	-23	-9.4	9.44	49	120.2	154.4	310	590.0	554.4	1030	1886.0	954.4	1,750	3,182.0	1,537.8	2,800	5,072.0
-30.00	-22	-7.6	10.0	50	122.0	160.0	320	608.0	560.0	1040	1904.0	960.0	1,760	3,200.0	1,565.1	2,850	5,162.0
-29.45	-21	-5.8	10.6	51	123.8	165.6	330	626.0	565.6	1050	1922.0	965.6	1,770	3,218.0	1,593.3	2,900	5,252.0
-28.89	-20	-4.0	11.1	52	125.6	171.1	340	644.0	571.1	1060	1940.0	971.1	1,780	3,236.0	1,621.1	2,950	5,342.0
-28.31	-19	-2.2	11.7	53	127.4	176.7	350	662.0	576.7	1070	1958.0	976.7	1,790	3,254.0	1,648.9	3,000	5,432.0

$$°C. = \frac{5}{9}\,(°F. - 32), \quad °F. = \left(\frac{9}{5}\,°C\right) + 32$$