

# PIPE THERMAL EXPANSION

## IN INCHES PER 100 FEET



The table below shows expansion resulting from change in temperature from 70°F to indicate temperature. This table is to be used as an informational guide only, and it is not implied that materials are suitable for all temperature ranges shown. Data for Inconel is based on information provided by the International Nickel Co., and all other data is based on Appendix B of the code for power piping ANSI

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°F	SAT. STEAM VACUUM IN HG <sup>1</sup>	CARBON CMO, 3CR MO STEEL	AUSTEN. STAINL. STEEL	5 T09 CR MO STEEL	FERRIT STAINL. STEEL	MONEL 400	INCONEL 600	25CR 20NI	ALUMINUM	GREY CAST IRON	BRASS	WROUGHT IRON	70CU 30NI
-325		-2.37	-3.85	-2.22	-2.04	-2.62		-3.00	-4.69		-3.88	-2.70	-3.15
-300		-2.24	-3.62	-2.10	-1.93	-2.50		-2.83	-4.43		-3.64	-2.55	-2.98
-275		-2.11	-3.40	-1.98	-1.81	-2.38		-2.66	-4.17		-3.41	-2.41	-2.81
-250		-1.98	-3.17	-1.85	-1.70	-2.26	-2.30	-2.49	-3.91		-3.18	-2.26	-2.63
-225		-1.84	-2.95	-1.73	-1.58	-2.14	-2.17	-2.32	-3.66		-2.94	-2.11	-2.46
-200		-1.71	-2.72	-1.61	-1.47	-2.03	-2.04	-2.15	-3.40		-2.71	-1.96	-2.29
-175		-1.58	-2.49	-1.49	-1.35	-1.91	-1.87	-1.98	-3.14		-2.47	-1.82	-2.12
-150		-1.45	-2.27	-1.37	-1.24	-1.79	-1.70	-1.81	-2.88		-2.24	-1.67	-1.95
-125		-1.30	-2.01	-1.23	-1.12	-1.59	-1.54	-1.60	-2.58		-2.00	-1.49	-1.76
-100		-1.15	-1.75	-1.09	-0.99	-1.38	-1.37	-1.39	-2.27		-1.76	-1.32	-1.55
-75		-1.00	-1.50	-0.94	-0.86	-1.18	-1.17	-1.19	-1.97		-1.53	-1.14	-1.34
-50		-0.84	-1.24	-0.78	-0.72	-0.98	-0.97	-0.98	-1.67		-1.29	-0.96	-1.12
-25		-0.67	-0.98	-0.63	-0.58	-0.77	-0.76	-0.76	-1.32		-1.03	-0.77	-0.90
0		-0.50	-0.72	-0.47	-0.43	-0.57	-0.56	-0.57	-0.97		-0.75	-0.57	-0.67
25		-0.32	-0.46	-0.30	-0.27	-0.37	-0.36	-0.37	-0.63		-0.48	-0.37	-0.43
50		-0.14	-0.21	-0.14	-0.12	-0.16	-0.16	-0.16	-0.28		-0.22	0.17	-0.19
70	29.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	27.99	0.22	0.33	0.21	0.19	0.27	0.26	0.27	0.45	0.21	0.34	0.25	0.30
125	2538	0.41	0.61	0.39	0.35	0.50	0.48	0.50	0.83	0.38	0.63	0.47	0.55
150	22.16	0.60	0.89	0.57	0.52	0.74	0.70	0.73	1.22	0.55	0.92	0.69	0.81
175	16.03	0.80	1.17	0.75	0.69	0.98	0.93	0.97	1.61	0.73	1.22	0.91	1.07
200	6.45	1.00	1.46	0.94	0.86	1.22	1.15	1.21	2.00	0.90	1.52	1.14	1.33
225	4	1.20	1.74	1.13	1.03	1.47	1.39	1.45	2.42	1.08	1.83	1.37	1.60
250	15	1.40	2.03	1.32	1.21	1.71	1.63	1.69	2.83	1.26	2.13	1.60	1.86
275	31	1.61	2.32	1.51	1.38	1.96	1.86	1.94	3.25	1.45	2.45	1.83	2.13
300	52	1.82	2.61	1.71	0.56	2.21	2.10	2.19	3.67	1.64	2.76	2.06	2.40
325	81	2.04	2.91	1.91	1.74	2.47	2.34	2.44	4.09	1.83	3.08	2.30	2.68
350	119	2.25	3.20	2.11	1.93	2.72	2.57	2.69	4.52	2.02	3.40	2.54	2.96
375	176	2.48	3.50	2.31	2.11	2.98	2.81	2.94	4.95	2.22	3.72	2.77	3.24
400	232	2.70	3.80	2.50	2.30	3.25	3.05	3.20	5.39	2.42	4.05	3.01	3.52
425	312	2.93	4.10	2.72	2.49	3.51	3.30	3.46	5.83	2.62	4.38	3.25	
450	408	3.16	4.40	2.93	2.68	3.78	3.54	3.72	6.27	2.82	4.72	3.50	
475	525	3.39	4.70	3.14	2.88	4.06	3.79	3.98	6.72	3.03	5.06	3.74	
500	665	3.62	5.01	3.35	3.08	4.33	4.03	4.24	7.17	3.24	5.40	3.99	
525	835	3.86	5.31	3.57	3.28	4.61	4.28	4.51	7.63	3.45	5.75	4.24	
550	1035	4.10	5.62	3.79	3.48	4.89	4.53	4.78	8.09	3.67	6.09	4.50	
575	1260	4.35	5.93	4.01	3.69	5.17	4.77	5.05	8.56	3.89	6.44	4.75	
600	1528	4.60	6.24	4.24	3.90	5.46	5.02	5.33	9.03	4.11	6.80	5.01	
625	1838	4.85	6.56	4.46	4.10	5.75	5.29	5.60		4.34	7.16	5.27	
650	2185	5.11	6.87	4.68	4.31	6.04	5.54	5.88		4.57	7.52	5.53	

<sup>1</sup> Saturated steam vacuum in HG: Below 212°F pressure, Above 212°F PSIG