

MAXIMUM TEMPERATURE RANGE

Thermocouple Grade

- 328 to 2282°F
- 200 to 1250°C

Extension Grade

32 to 392°F
0 to 200°C

LIMITS OF ERROR

(whichever is greater)

Standard: 2.2°C or 0.75% Above 0°C

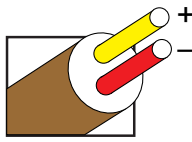
2.2°C or 2.0% Below 0°C

Special: 1.1°C or 0.4%

COMMENTS, BARE WIRE ENVIRONMENT:

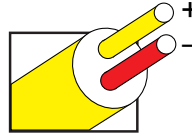
Clean Oxidizing and Inert; Limited Use in Vacuum or Reducing; Wide Temperature Range; Most Popular Calibration

TEMPERATURE IN DEGREES °F
REFERENCE JUNCTION AT 32°F



Thermocouple Grade

Nickel-Chromium vs. Nickel-Aluminum



Extension Grade

Revised Thermocouple Reference Tables

TYPE K
Reference Tables
N.I.S.T. Monograph 175
Revised to ITS-90

Z

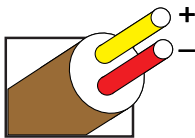
Thermoelectric Voltage in Millivolts

°F	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	°F	°F	0	1	2	3	4	5	6	7	8	9	10	°F	
-450								-6.458	-6.457	-6.457	-6.456	-6.456	-450	140	2.436	2.459	2.483	2.506	2.529	2.552	2.575	2.598	2.621	2.644	2.667	140
-440	-6.456	-6.455	-6.454	-6.454	-6.453	-6.452	-6.451	-6.450	-6.449	-6.448	-6.446	-440	150	2.667	2.690	2.713	2.736	2.759	2.782	2.805	2.828	2.851	2.874	2.897	150	
-430	-6.446	-6.445	-6.444	-6.443	-6.441	-6.440	-6.438	-6.436	-6.435	-6.433	-6.431	-430	160	2.897	2.920	2.944	2.967	2.990	3.013	3.036	3.059	3.082	3.105	3.128	160	
-420	-6.431	-6.429	-6.427	-6.425	-6.423	-6.421	-6.419	-6.416	-6.414	-6.411	-6.409	-420	170	3.128	3.151	3.174	3.197	3.220	3.244	3.267	3.290	3.313	3.336	3.359	170	
-410	-6.409	-6.406	-6.404	-6.401	-6.398	-6.395	-6.392	-6.389	-6.386	-6.383	-6.380	-410	180	3.359	3.382	3.405	3.428	3.451	3.474	3.497	3.520	3.544	3.567	3.590	180	
-400	-6.380	-6.377	-6.373	-6.370	-6.366	-6.363	-6.359	-6.355	-6.352	-6.348	-6.344	-400	190	3.590	3.613	3.636	3.659	3.682	3.705	3.728	3.751	3.774	3.797	3.820	190	
-390	-6.344	-6.340	-6.336	-6.332	-6.328	-6.323	-6.319	-6.315	-6.310	-6.306	-6.301	-390	200	3.820	3.843	3.866	3.889	3.912	3.935	3.958	3.981	4.004	4.027	4.050	200	
-380	-6.301	-6.296	-6.292	-6.287	-6.282	-6.277	-6.272	-6.267	-6.262	-6.257	-6.251	-380	210	4.050	4.073	4.096	4.119	4.142	4.165	4.188	4.211	4.234	4.257	4.280	210	
-370	-6.251	-6.246	-6.241	-6.235	-6.230	-6.224	-6.218	-6.213	-6.207	-6.201	-6.195	-370	220	4.280	4.303	4.326	4.349	4.372	4.395	4.417	4.440	4.463	4.486	4.509	220	
-360	-6.195	-6.189	-6.183	-6.177	-6.171	-6.165	-6.158	-6.152	-6.146	-6.139	-6.133	-360	230	4.509	4.532	4.555	4.578	4.601	4.623	4.646	4.669	4.692	4.715	4.738	230	
-350	-6.133	-6.126	-6.119	-6.113	-6.106	-6.099	-6.092	-6.085	-6.078	-6.071	-6.064	-350	240	4.738	4.760	4.783	4.806	4.829	4.852	4.874	4.897	4.920	4.943	4.965	240	
-340	-6.064	-6.057	-6.049	-6.042	-6.035	-6.027	-6.020	-6.012	-6.004	-5.997	-5.989	-340	250	4.965	4.988	5.011	5.034	5.056	5.079	5.102	5.124	5.147	5.170	5.192	250	
-330	-5.989	-5.981	-5.973	-5.965	-5.957	-5.949	-5.941	-5.933	-5.925	-5.917	-5.908	-330	260	5.192	5.215	5.238	5.260	5.283	5.306	5.328	5.351	5.374	5.396	5.419	260	
-320	-5.908	-5.900	-5.891	-5.883	-5.874	-5.866	-5.857	-5.848	-5.840	-5.831	-5.822	-320	270	5.419	5.441	5.464	5.487	5.509	5.532	5.554	5.577	5.599	5.622	5.644	270	
-310	-5.822	-5.813	-5.804	-5.795	-5.786	-5.776	-5.767	-5.758	-5.749	-5.739	-5.730	-310	280	5.644	5.667	5.690	5.712	5.735	5.757	5.779	5.802	5.824	5.847	5.869	280	
-300	-5.730	-5.720	-5.711	-5.701	-5.691	-5.682	-5.672	-5.662	-5.652	-5.642	-5.632	-300	290	5.869	5.892	5.914	5.937	5.959	5.982	6.004	6.026	6.049	6.071	6.094	290	
-290	-5.632	-5.622	-5.612	-5.602	-5.592	-5.581	-5.571	-5.561	-5.550	-5.540	-5.529	-290	300	6.094	6.116	6.138	6.161	6.183	6.205	6.228	6.250	6.272	6.295	6.317	300	
-280	-5.529	-5.519	-5.508	-5.497	-5.487	-5.476	-5.465	-5.454	-5.443	-5.432	-5.421	-280	310	6.317	6.339	6.362	6.384	6.406	6.429	6.451	6.473	6.496	6.518	6.540	310	
-270	-5.421	-5.410	-5.399	-5.388	-5.377	-5.365	-5.354	-5.343	-5.331	-5.320	-5.308	-270	320	6.540	6.562	6.585	6.607	6.629	6.652	6.674	6.696	6.718	6.741	6.763	320	
-260	-5.308	-5.296	-5.285	-5.273	-5.261	-5.250	-5.238	-5.226	-5.214	-5.202	-5.190	-260	330	6.763	6.785	6.807	6.829	6.852	6.874	6.896	6.918	6.941	6.963	6.985	330	
-250	-5.190	-5.178	-5.166	-5.153	-5.141	-5.129	-5.117	-5.104	-5.092	-5.079	-5.067	-250	340	6.985	7.007	7.029	7.052	7.074	7.096	7.118	7.140	7.163	7.185	7.207	340	
-240	-5.067	-5.054	-5.042	-5.029	-5.016	-5.003	-4.991	-4.978	-4.965	-4.952	-4.939	-240	350	7.207	7.229	7.251	7.273	7.296	7.318	7.340	7.362	7.384	7.407	7.429	350	
-230	-4.939	-4.926	-4.913	-4.900	-4.886	-4.873	-4.860	-4.847	-4.833	-4.820	-4.806	-230	360	7.429	7.451	7.473	7.495	7.517	7.540	7.562	7.584	7.606	7.628	7.650	360	
-220	-4.806	-4.793	-4.779	-4.766	-4.752	-4.738	-4.724	-4.711	-4.697	-4.683	-4.669	-220	370	7.650	7.673	7.695	7.717	7.739	7.761	7.783	7.806	7.828	7.850	7.872	370	
-210	-4.669	-4.655	-4.641	-4.627	-4.613	-4.599	-4.584	-4.570	-4.556	-4.542	-4.527	-210	380	7.872	7.894	7.917	7.939	7.961	7.983	8.005	8.027	8.050	8.072	8.094	380	
-200	-4.527	-4.513	-4.498	-4.484	-4.469	-4.455	-4.440	-4.425	-4.411	-4.396	-4.381	-200	390	8.094	8.116	8.138	8.161	8.183	8.205	8.227	8.250	8.272	8.294	8.316	390	
-190	-4.381	-4.366	-4.351	-4.336	-4.321	-4.306	-4.291	-4.276	-4.261	-4.246	-4.231	-190	400	8.316	8.338	8.361	8.383	8.405	8.427	8.450	8.472	8.494	8.516	8.539	400	
-180	-4.231	-4.215	-4.200	-4.185	-4.169	-4.154	-4.138	-4.123	-4.107	-4.091	-4.076	-180	410	8.539	8.561	8.583	8.605	8.628	8.650	8.672	8.694	8.717	8.739	8.761	410	
-170	-4.076	-4.060	-4.044	-4.029	-4.013	-3.997	-3.981	-3.965	-3.949	-3.933	-3.917	-170	420	8.761	8.784	8.806	8.828	8.851	8.873	8.895	8.918	8.940	8.962	8.985	420	
-160	-3.917	-3.901	-3.884	-3.868	-3.852	-3.836	-3.820	-3.803	-3.787	-3.771	-3.754	-160	430	8.985	9.007	9.029	9.052	9.074	9.096	9.119	9.141	9.163	9.186	9.208	430	
-150	-3.754	-3.738	-3.721	-3.705	-3.688	-3.671	-3.655	-3.638	-3.621	-3.604	-3.587	-150	440	9.208	9.231	9.253	9.275	9.298	9.320	9.343	9.365	9.388	9.410	9.432	440	
-140	-3.587	-3.571	-3.554	-3.537	-3.520	-3.503	-3.486	-3.469	-3.451	-3.434	-3.417	-140	450	9.432	9.455	9.477	9.500	9.522	9.545	9.567	9.590	9.612	9.635	9.657	450	
-130	-3.417	-3.400	-3.382	-3.365	-3.348	-3.330	-3.313	-3.296	-3.278	-3.260	-3.243	-130	460	9.657	9.680	9.702	9.725	9.747	9.770	9.792	9.815	9.837	9.860	9.882	460	
-120	-3.243	-3.225	-3.207	-3.190	-3.172	-3.154	-3.136	-3.119	-3.101	-3.083	-3.065	-120	470	9.882	9.905	9.927	9.950	9.973	9.995	10.018	10.040	10.063	10.086	10.108	470	
-110	-3.065	-3.047	-3.029	-3.011	-2.993	-2.975	-2.957	-2.939	-2.920	-2.902	-2.884	-110	480	10.108	10.131	10.153	10.176	10.199	10.221	10.244	10.267	10.289	10.312	10.334	480	
-100	-2.884	-2.865	-2.847	-2.829	-2.810	-2.792	-2.773	-2.755	-2.736	-2.718	-2.699	-100	490	10.334	10.357	10.380	10.402	10.425	10.448	10.471	10.493	10.516	10.539	10.561	490	
-90	-2.699	-2.680	-2.662	-2.643	-2.624	-2.605	-2.587	-2.568	-2.549	-2.530	-2.511	-90	500	10.561	10.584	10.607	10.629	10.652	10.675	10.698	10.720	10.743	10.766	10.789	500	
-80	-2.511	-2.492	-2.473	-2.454	-2.435	-2.416	-2.397	-2.378	-2.359	-2.339	-2.320	-80	510	10.789	10.811	10.834	10.857	10.880	10.903	10.925	10.948	10.971	10.994	11.017	510	
-70	-2.320	-2.301	-2.282	-2.262	-2.243	-2.223	-2.204	-2.185	-2.165	-2.146	-2.126	-70	520													

Revised Thermocouple Reference Tables

TYPE K

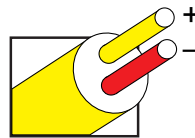
Reference Tables
N.I.S.T.
Monograph 175
Revised to
ITS-90



Thermocouple Grade

Nickel-Chromium
VS.
Nickel-Aluminum

Extension Grade



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TEMPERATURE IN DEGREES °F
REFERENCE JUNCTION AT 32°F

Thermoelectric Voltage in Millivolts

°F	0	1	2	3	4	5	6	7	8	9	10	°F	1300	1310	1320	1330	1340	1350	1360	1370	1380	1390	1400	1410	1420	1430	1440	1450	1460	1470	1480	1490	1500	1510	1520	1530	1540	1550	1560	1570	1580	1590	1600	1610	1620	1630	1640	1650	1660	1670	1680	1690	1700	1710	1720	1730	1740	1750	1760	1770	1780	1790	1800	1810	1820	1830	1840	1850	1860	1870	1880	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
700	15.179	15.203	15.226	15.250	15.273	15.296	15.320	15.343	15.366	15.390	15.413	700	30.000	30.015	30.030	30.045	30.060	30.075	30.090	30.105	30.120	30.135	30.150	1300	29.315	29.330	29.345	29.360	29.375	29.390	29.405	29.420	29.435	29.450	29.465	29.480	29.495	29.510	29.525	29.540	29.555	29.570	29.585	29.600	29.615	29.630	29.645	29.660	29.675	29.690	29.705	29.720	29.735	29.750	29.765	29.780	29.795	29.810	29.825	29.840	29.855	29.870	29.885	29.900	29.915	29.930	29.945	29.960	29.975	29.990	30.005	30.020	30.035	30.050	30.065	30.080	30.095	30.110	30.125	30.140	30.155	30.170	30.185	30.200	30.215	30.230	30.245	30.260	30.275	30.290	30.305	30.320	30.335	30.350	30.365	30.380	30.395	30.410	30.425	30.440	30.455	30.470	30.485	30.500	30.515	30.530	30.545	30.560	30.575	30.590	30.605	30.620	30.635	30.650	30.665	30.680	30.695	30.710	30.725	30.740	30.755	30.770	30.785	30.800	30.815	30.830	30.845	30.860	30.875	30.890	30.905	30.920	30.935	30.950	30.965	30.980	30.995	31.010	31.025	31.040	31.055	31.070	31.085	31.100	31.115	31.130	31.145	31.160	31.175	31.190	31.205	31.220	31.235	31.250	31.265	31.280	31.295	31.310	31.325	31.340	31.355	31.370	31.385	31.400	31.415	31.430	31.445	31.460	31.475	31.490	31.505	31.520	31.535	31.550	31.565	31.580	31.595	31.610	31.625	31.640	31.655	31.670	31.685	31.700	31.715	31.730	31.745	31.760	31.775	31.790	31.805	31.820	31.835	31.850	31.865	31.880	31.895	31.910	31.925	31.940	31.955	31.970	31.985	31.999	32.014	32.029	32.044	32.059	32.074	32.089	32.104	32.119	32.134	32.149	32.164	32.179	32.194	32.209	32.224	32.239	32.254	32.269	32.284	32.299	32.314	32.329	32.344	32.359	32.374	32.389	32.404	32.419	32.434	32.449	32.464	32.479	32.494	32.509	32.524	32.539	32.554	32.569	32.584	32.599	32.614	32.629	32.644	32.659	32.674	32.689	32.704	32.719	32.734	32.749	32.764	32.779	32.794	32.809	32.824	32.839	32.854	32.869	32.884	32.899	32.914	32.929	32.944	32.959	32.974	32.989	32.999	33.014	33.029	33.044	33.059	33.074	33.089	33.104	33.119	33.134	33.149	33.164	33.179	33.194	33.209	33.224	33.239	33.254	33.269	33.284	33.299	33.314	33.329	33.344	33.359	33.374	33.389	33.404	33.419	33.434	33.449	33.464	33.479	33.494	33.509	33.524	33.539	33.554	33.569	33.584	33.599	33.614	33.629	33.644	33.659	33.674	33.689	33.704	33.719	33.734	33.749	33.764	33.779	33.794	33.809	33.824	33.839	33.854	33.869	33.884	33.899	33.914	33.929	33.944	33.959	33.974	33.989	33.999	34.014	34.029	34.044	34.059	34.074	34.089	34.104	34.119	34.134	34.149	34.164	34.179	34.194	34.209	34.224	34.239	34.254	34.269	34.284	34.299	34.314	34.329	34.344	34.359	34.374	34.389	34.404	34.419	34.434	34.449	34.464	34.479	34.494	34.509	34.524	34.539	34.554	34.569	34.584	34.599	34.614	34.629	34.644	34.659	34.674	34.689	34.704	34.719	34.734	34.749	34.764	34.779	34.794	34.809	34.824	34.839	34.854	34.869	34.884	34.899	34.914	34.929	34.944	34.959	34.974	34.989	34.999	35.014	35.029	35.044	35.059	35.074	35.089	35.104	35.119	35.134	35.149	35.164	35.179	35.194	35.209	35.224	35.239	35.254	35.269	35.284	35.299	35.314	35.329	35.344	35.359	35.374	35.389	35.404	35.419	35.434	35.449	35.464	35.479	35.494	35.509	35.524	35.539	35.554	35.569	35.584	35.599	35.614	35.629	35.644	35.659	35.674	35.689	35.704	35.719	35.734	35.749	35.764	35.779	35.794	35.809	35.824	35.839	35.854	35.869	35.884	35.899	35.914	35.929	35.944	35.959	35.974	35.989	35.999	36.014	36.029	36.044	36.059	36.074	36.089	36.104	36.119	36.134	36.149	36.164	36.179	36.194	36.209	36.224	36.239	36.254	36.269	36.284	36.299	36.314	36.329	36.344	36.359	36.374	36.389	36.404	36.419	36.434	36.449	36.464	36.479	36.494	36.509	36.524	36.539	36.554	36.569	36.584	36.599	36.614	36.629	36.644	36.659	36.674	36.689	36.704	36.719	36.734	36.749	36.764	36.779	36.794	36.809	36.824	36.839	36.854	36.869	36.884	36.899	36.914	36.929	36.944	36.959	36.974	36.989	36.999	37.014	37.029	37.044	37.059	37.074	37.089	37.104	37.119	37.134	37.149	37.164	37.179	37.194	37.209	37.224	37.239	37.254	37.269	37.284	37.299	37.314	37.329	37.344	37.359	37.374	37.389	37.404	37.419	37.434	37.449	37.464	37.479	37.494	37.509	37.524	37.539	37.554	37.569	37.584	37.599	37.614	37.629	37.644	37.659	37.674	37.689	37.704	37.719	37.734	37.749	37.764	37.779	37.794	37.809	37.824	37.839	37.854	37.869	37.884	37.899	37.914	37.929	37.944	37.959	37.974	37.989	37.999	38.014	38.029	38.044	38.059	38.074	38.089	38.104	38.119	38.134	38.149	38.164	38.179	38.194	38.209	38.224	38.239	38.254	38.269	38.284	38.299	38.314	38.329	38.344	38.359	38.374	38.389	38.404	38.419	38.434	38.449	38.464	38.479	38.494	38.509	38.524	38.539	38.554	38.569	38.584	38.599	38.614	38.629	38.644	38.659	38.674	38.689	38.704	38.719	38.734	38.749	38.764	38.779	38.794	38.809	38.824	38.839	38.854	38.869	38.884	38.899	38.914	38.929	38.944	38.959	38.974	38.989	38.999	39.014	39.029	39.044	39.059	39.074	39.089	39.104	39.119	39.134	39.149	39.164	39.179	39.194	39.209	39.224	39.239	39.254	39.269	39.284	39.299	39.314	39.329	39.344	39.359	39.374	39.389	39.404	39.419	39.434	39.449	39.464	39.479	39.494	39.509	39.524	39.539	39.554	39.569	39.584	39.599	39.614	39.629	39.644	39.659	39.674	39.689	39.704	39.719	39.734	39.749	39.764	39.779	39.794	39.809	39.824	39.839	39.854	39.869	39.884	39.899	39.914	39.929	39.944	39.959	39.974	39.989	39.999	40.014	40.029	40.044	40.059	40.074	40.089	40.104	40.119	40.134	40.149	40.164	40.179	40.194	40.209	40.224	40.239	40.254	40.269	40.284	40.299	40.314	40.329	40.344	40.359	40.374	40.389	40.404	40.419	40.434	40.449	40.464	40.479	40.494	40.509	40.524	40.539	40.554	40.569	40.584	40.599	40.614	40.629	40.644	40.659	40.674	40.689	40.704	40.719	40.734	40.749	40.764	40.779	40.794	40.809	40.824	40.839	40.854	40.869	40.884	40.899	40.914	40.929	40.944	40.959	40.974	40.989	40.999	41.014	41.029	41.044	41.059	41.074	41.089	41.104	41.119	41.134	41.149	41.164	41.179	41.194	41.209	41.224	41.239	41.254	41.269	41.284	41.299	41.314	41.329	41.344	41.359	41.374	41.389	41.404	41.419	41.434	41.449	41.464	41.479	41.494	41.509	41.524	41.539	41.554	41.569	41.584	41.599	41.614	41.629	41.644	41.659	41.674	41.689	41.704	41.719	41.734	41.749	41.764	41.779	41.794	41.809	41.824	41.839	41.854	41.869	41.884	41.899	41.914	41.929	41.944	41.959	41.974	41.989	41.999	42.014	42.029	42.044	42.059	42.074	42.089	42.104	42.119	42.134	42.149	42.164	42.179	42.194	42.209	42.224	42.239	42.254	42.269	42.284	42.299	42.314	42.329	42.344	42.359	42.374	42.389	42.404	42.419	42.434	42.449	42.464	42.479	42.494	42.509	42.524	42.539	42.554	42.569	42.584	42.599	42.614	42.629	42.644	42.659	42.674	42.689	42.704	42.719	42.734	42.749	42.764	42.779	42.794	42.809	42.824	42.839	42.854	42.869	42.884	42.899	42.914	42.929	42.944	42.959	42.974	42.989	42.999	43.014	43.029	43.044	43.059	43.074	43.089	43.104	43.119	43.134	43.149	43.164

MAXIMUM TEMPERATURE RANGE

Thermocouple Grade

- 328 to 2282°F
- 200 to 1250°C

Extension Grade

- 32 to 392°F
- 0 to 200°C

LIMITS OF ERROR

(whichever is greater)

Standard: 2.2°C or 0.75% Above 0°C

2.2°C or 2.0% Below 0°C

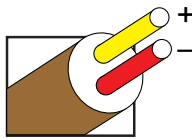
Special: 1.1°C or 0.4%

COMMENTS, BARE WIRE ENVIRONMENT:

Clean Oxidizing and Inert; Limited Use in Vacuum or Reducing; Wide Temperature Range; Most Popular Calibration

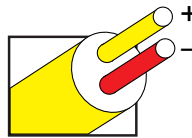
TEMPERATURE IN DEGREES °F

REFERENCE JUNCTION AT 32°F



Thermocouple Grade

**Nickel-Chromium
vs.
Nickel-Aluminum**



Extension Grade

Revised Thermocouple Reference Tables

TYPE K
Reference Tables
N.I.S.T. Monograph 175
Revised to ITS-90

Z

Thermoelectric Voltage in Millivolts

°F	0	1	2	3	4	5	6	7	8	9	10	°F	°F	0	1	2	3	4	5	6	7	8	9	10	°F
1900	42.741	42.762	42.783	42.805	42.826	42.848	42.869	42.891	42.912	42.933	42.955	1900	2250	50.006	50.026	50.046	50.066	50.086	50.106	50.126	50.146	50.166	50.186	50.206	2250
1910	42.955	42.976	42.998	43.019	43.040	43.062	43.083	43.104	43.126	43.147	43.169	1910	2260	50.206	50.226	50.246	50.266	50.286	50.306	50.326	50.346	50.366	50.385	50.405	2260
1920	43.169	43.190	43.211	43.233	43.254	43.275	43.297	43.318	43.339	43.361	43.382	1920	2270	50.405	50.425	50.445	50.465	50.485	50.505	50.525	50.545	50.564	50.584	50.604	2270
1930	43.382	43.403	43.425	43.446	43.467	43.489	43.510	43.531	43.552	43.574	43.595	1930	2280	50.604	50.624	50.644	50.664	50.684	50.703	50.723	50.743	50.763	50.783	50.802	2280
1940	43.595	43.616	43.638	43.659	43.680	43.701	43.723	43.744	43.765	43.787	43.808	1940	2290	50.802	50.822	50.842	50.862	50.882	50.901	50.921	50.941	50.961	50.981	51.000	2290
1950	43.808	43.829	43.850	43.872	43.893	43.914	43.935	43.957	43.978	43.999	44.020	1950	2300	51.000	51.020	51.040	51.060	51.079	51.099	51.119	51.139	51.158	51.178	51.198	2300
1960	44.020	44.041	44.063	44.084	44.105	44.126	44.147	44.169	44.190	44.211	44.232	1960	2310	51.198	51.217	51.237	51.257	51.276	51.296	51.316	51.336	51.355	51.375	51.395	2310
1970	44.232	44.253	44.275	44.296	44.317	44.338	44.359	44.380	44.402	44.423	44.444	1970	2320	51.395	51.414	51.434	51.453	51.473	51.493	51.512	51.532	51.552	51.571	51.591	2320
1980	44.444	44.465	44.486	44.507	44.528	44.550	44.571	44.592	44.613	44.634	44.655	1980	2330	51.591	51.611	51.630	51.650	51.669	51.689	51.708	51.728	51.748	51.767	51.787	2330
1990	44.655	44.676	44.697	44.719	44.740	44.761	44.782	44.803	44.824	44.845	44.866	1990	2340	51.787	51.806	51.826	51.845	51.865	51.885	51.904	51.924	51.943	51.963	51.982	2340
2000	44.866	44.887	44.908	44.929	44.950	44.971	44.992	45.014	45.035	45.056	45.077	2000	2350	51.982	52.002	52.021	52.041	52.060	52.080	52.099	52.119	52.138	52.158	52.177	2350
2010	45.077	45.098	45.119	45.140	45.161	45.182	45.203	45.224	45.245	45.266	45.287	2010	2360	52.177	52.197	52.216	52.235	52.255	52.274	52.294	52.313	52.333	52.352	52.371	2360
2020	45.287	45.308	45.329	45.350	45.371	45.392	45.413	45.434	45.455	45.476	45.497	2020	2370	52.371	52.391	52.410	52.430	52.449	52.468	52.488	52.507	52.527	52.546	52.565	2370
2030	45.497	45.518	45.539	45.560	45.580	45.601	45.622	45.643	45.664	45.685	45.706	2030	2380	52.565	52.585	52.604	52.623	52.643	52.662	52.681	52.701	52.720	52.739	52.759	2380
2040	45.706	45.727	45.748	45.769	45.790	45.811	45.832	45.852	45.873	45.894	45.915	2040	2390	52.706	52.726	52.745	52.765	52.784	52.804	52.823	52.843	52.862	52.882	52.901	2390
2050	45.915	45.936	45.957	45.978	45.999	46.019	46.040	46.061	46.082	46.103	46.124	2050	2400	52.952	52.971	52.990	53.010	53.029	53.048	53.067	53.087	53.106	53.125	53.144	2400
2060	46.124	46.145	46.165	46.186	46.207	46.228	46.249	46.269	46.290	46.311	46.332	2060	2410	53.144	53.163	53.183	53.202	53.221	53.240	53.260	53.279	53.298	53.317	53.336	2410
2070	46.332	46.353	46.373	46.394	46.415	46.436	46.457	46.477	46.498	46.519	46.540	2070	2420	53.336	53.355	53.375	53.394	53.413	53.432	53.451	53.470	53.490	53.509	53.528	2420
2080	46.540	46.560	46.581	46.602	46.623	46.643	46.664	46.685	46.706	46.726	46.747	2080	2430	53.528	53.547	53.566	53.585	53.604	53.623	53.643	53.662	53.681	53.700	53.719	2430
2090	46.747	46.768	46.789	46.809	46.830	46.851	46.871	46.892	46.913	46.933	46.954	2090	2440	53.719	53.738	53.757	53.776	53.795	53.814	53.833	53.852	53.871	53.890	53.910	2440
2100	46.954	46.975	46.995	47.016	47.037	47.057	47.078	47.099	47.119	47.140	47.161	2100	2450	53.910	53.929	53.948	53.967	53.986	54.005	54.024	54.043	54.062	54.081	54.100	2450
2110	47.161	47.181	47.202	47.223	47.243	47.264	47.284	47.305	47.326	47.346	47.367	2110	2460	54.100	54.119	54.138	54.157	54.176	54.195	54.214	54.233	54.252	54.271	54.289	2460
2120	47.367	47.387	47.408	47.429	47.449	47.470	47.490	47.511	47.531	47.552	47.573	2120	2470	54.289	54.308	54.327	54.346	54.365	54.384	54.403	54.422	54.441	54.460	54.479	2470
2130	47.573	47.593	47.614	47.634	47.655	47.675	47.696	47.716	47.737	47.757	47.778	2130	2480	54.479	54.498	54.517	54.536	54.554	54.573	54.592	54.611	54.630	54.649	54.668	2480
2140	47.778	47.798	47.819	47.839	47.860	47.880	47.901	47.921	47.942	47.962	47.983	2140	2490	54.668	54.687	54.705	54.724	54.743	54.762	54.781	54.800	54.819	54.837	54.856	2490
2150	47.983	48.003	48.024	48.044	48.065	48.085	48.105	48.126	48.146	48.167	48.187	2150	2500	54.856	54.875	54.894									2500
2160	48.187	48.208	48.228	48.248	48.269	48.289	48.310	48.330	48.350	48.371	48.391	2160													
2170	48.391	48.411	48.432	48.452	48.473	48.493	48.513	48.534	48.554	48.574	48.595	2170													
2180	48.595	48.615	48.635	48.656	48.676	48.696	48.717	48.737	48.757	48.777	48.798	2180													
2190	48.798	48.818	48.838	48.859	48.879	48.899	48.919	48.940	48.960	48.980	49.000	2190													
2200	49.000	49.021	49.041	49.061	49.081	49.101	49.122	49.142	49.162	49.182	49.202	2200													
2210	49.202	49.223	49.243	49.263	49.283	49.303	49.323	49.344	49.364	49.384	49.404	2210													
2220	49.404	49.424	49.444	49.465	49.485	49.505	49.525	49.545	49.565	49.585	49.605	2220													
2230	49.605	49.625	49.645	49.666	49.686	49.706	49.726	49.746	49.766	49.786	49.806	2230													
2240	49.806	49.826	49.846	49.866	49.886	49.906	49.926	49.946	49.966	49.986	50.006	2240													
°F	0	1	2	3	4	5	6	7	8	9	10	°F	°F	0	1	2	3	4	5	6	7	8	9	10	°F

