

MAXIMUM TEMPERATURE RANGE

Thermocouple Grade

- 328 to 1652°F
- 200 to 900°C

Extension Grade

32 to 392°F
0 to 200°C

LIMITS OF ERROR

(whichever is greater)

Standard: 1.7°C or 0.5% Above 0°C

1.7°C or 1.0% Below 0°C

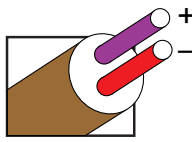
Special: 1.0°C or 0.4%

COMMENTS, BARE WIRE ENVIRONMENT:

Oxidizing or Inert; Limited Use in Vacuum or Reducing; Highest EMF Change per Degree

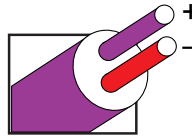
TEMPERATURE IN DEGREES °C

REFERENCE JUNCTION AT 0°C



Thermocouple Grade

Nickel-Chromium vs. Copper-Nickel



Extension Grade

Revised Thermocouple Reference Tables

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

Thermoelectric Voltage in Millivolts

°C	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	°C	°C	0	1	2	3	4	5	6	7	8	9	10	°C
-260	-9.835	-9.833	-9.831	-9.828	-9.825	-9.821	-9.817	-9.813	-9.808	-9.802	-9.797	-260	350	24.964	25.044	25.123	25.202	25.281	25.360	25.440	25.519	25.598	25.678	25.757	350
-250	-9.797	-9.790	-9.784	-9.777	-9.770	-9.762	-9.754	-9.746	-9.737	-9.728	-9.718	-250	360	25.557	25.836	25.916	25.995	26.075	26.154	26.233	26.313	26.392	26.472	26.552	360
-240	-9.718	-9.709	-9.698	-9.688	-9.677	-9.666	-9.654	-9.642	-9.630	-9.617	-9.604	-240	370	26.552	26.631	26.711	26.790	26.870	26.950	27.029	27.109	27.189	27.268	27.348	370
-230	-9.604	-9.591	-9.577	-9.563	-9.548	-9.534	-9.519	-9.503	-9.487	-9.471	-9.455	-230	380	27.348	27.428	27.507	27.587	27.667	27.747	27.827	27.907	27.986	28.066	28.146	380
-220	-9.455	-9.438	-9.421	-9.404	-9.386	-9.368	-9.350	-9.331	-9.313	-9.293	-9.274	-220	390	28.146	28.226	28.306	28.386	28.467	28.548	28.629	28.710	28.791	28.872	28.953	390
-210	-9.274	-9.254	-9.234	-9.214	-9.193	-9.172	-9.151	-9.129	-9.107	-9.085	-9.063	-210	400	28.953	29.033	29.113	29.193	29.273	29.353	29.433	29.513	29.593	29.673	29.753	400
-200	-9.063	-9.040	-9.019	-8.994	-8.971	-8.947	-8.923	-8.899	-8.874	-8.850	-8.825	-200	410	29.753	29.833	29.913	29.993	30.073	30.153	30.233	30.313	30.393	30.473	30.553	410
-190	-8.825	-8.799	-8.774	-8.748	-8.722	-8.696	-8.669	-8.643	-8.616	-8.588	-8.561	-190	420	30.553	30.633	30.713	30.793	30.873	30.953	31.033	31.113	31.193	31.273	31.353	420
-180	-8.561	-8.533	-8.505	-8.477	-8.449	-8.421	-8.391	-8.362	-8.333	-8.303	-8.273	-180	430	31.353	31.433	31.513	31.593	31.673	31.753	31.833	31.913	31.993	32.073	32.153	430
-170	-8.273	-8.243	-8.213	-8.183	-8.152	-8.121	-8.090	-8.059	-8.027	-7.995	-7.963	-170	440	32.153	32.233	32.313	32.393	32.473	32.553	32.633	32.713	32.793	32.873	32.953	440
-160	-7.963	-7.931	-7.899	-7.866	-7.833	-7.800	-7.767	-7.733	-7.700	-7.666	-7.632	-160	450	32.953	33.033	33.113	33.193	33.273	33.353	33.433	33.513	33.593	33.673	33.753	450
-150	-7.632	-7.597	-7.563	-7.528	-7.493	-7.458	-7.423	-7.387	-7.351	-7.315	-7.279	-150	460	33.753	33.833	33.913	33.993	34.073	34.153	34.233	34.313	34.393	34.473	34.553	460
-140	-7.279	-7.243	-7.206	-7.170	-7.133	-7.096	-7.058	-7.021	-6.983	-6.945	-6.907	-140	470	34.553	34.633	34.713	34.793	34.873	34.953	35.033	35.113	35.193	35.273	35.353	470
-130	-6.907	-6.869	-6.831	-6.792	-6.753	-6.714	-6.675	-6.636	-6.596	-6.556	-6.516	-130	480	35.353	35.433	35.513	35.593	35.673	35.753	35.833	35.913	35.993	36.073	36.153	480
-120	-6.516	-6.476	-6.436	-6.396	-6.355	-6.314	-6.273	-6.232	-6.191	-6.149	-6.107	-120	490	36.153	36.233	36.313	36.393	36.473	36.553	36.633	36.713	36.793	36.873	36.953	490
-110	-6.107	-6.065	-6.023	-5.981	-5.939	-5.896	-5.853	-5.810	-5.767	-5.724	-5.681	-110	500	36.953	37.033	37.113	37.193	37.273	37.353	37.433	37.513	37.593	37.673	37.753	500
-100	-5.681	-5.637	-5.593	-5.549	-5.505	-5.461	-5.417	-5.372	-5.327	-5.282	-5.237	-100	510	37.753	37.833	37.913	37.993	38.073	38.153	38.233	38.313	38.393	38.473	38.553	510
-90	-5.237	-5.192	-5.147	-5.101	-5.055	-5.009	-4.963	-4.917	-4.871	-4.824	-4.777	-90	520	38.553	38.633	38.713	38.793	38.873	38.953	39.033	39.113	39.193	39.273	39.353	520
-80	-4.777	-4.731	-4.684	-4.636	-4.589	-4.542	-4.494	-4.446	-4.398	-4.350	-4.302	-80	530	39.353	39.433	39.513	39.593	39.673	39.753	39.833	39.913	39.993	40.073	40.153	530
-70	-4.302	-4.254	-4.205	-4.156	-4.107	-4.058	-4.009	-3.960	-3.911	-3.861	-3.811	-70	540	40.153	40.233	40.313	40.393	40.473	40.553	40.633	40.713	40.793	40.873	40.953	540
-60	-3.811	-3.761	-3.711	-3.661	-3.611	-3.561	-3.510	-3.459	-3.408	-3.357	-3.306	-60	550	40.953	41.033	41.113	41.193	41.273	41.353	41.433	41.513	41.593	41.673	41.753	550
-50	-3.306	-3.255	-3.204	-3.152	-3.100	-3.048	-2.996	-2.944	-2.892	-2.840	-2.787	-50	560	41.753	41.833	41.913	41.993	42.073	42.153	42.233	42.313	42.393	42.473	42.553	560
-40	-2.787	-2.735	-2.682	-2.629	-2.576	-2.523	-2.469	-2.416	-2.362	-2.309	-2.255	-40	570	42.553	42.633	42.713	42.793	42.873	42.953	43.033	43.113	43.193	43.273	43.353	570
-30	-2.255	-2.201	-2.147	-2.093	-2.038	-1.984	-1.929	-1.874	-1.820	-1.765	-1.709	-30	580	43.353	43.433	43.513	43.593	43.673	43.753	43.833	43.913	43.993	44.073	44.153	580
-20	-1.709	-1.654	-1.599	-1.543	-1.488	-1.432	-1.376	-1.320	-1.264	-1.208	-1.152	-20	590	44.153	44.233	44.313	44.393	44.473	44.553	44.633	44.713	44.793	44.873	44.953	590
-10	-1.152	-1.095	-1.039	-0.982	-0.925	-0.868	-0.811	-0.754	-0.697	-0.639	-0.582	-10	600	44.953	45.033	45.113	45.193	45.273	45.353	45.433	45.513	45.593	45.673	45.753	600
0	-0.582	-0.524	-0.466	-0.408	-0.350	-0.292	-0.234	-0.176	-0.117	-0.059	0.000	0	610	45.753	45.833	45.913	45.993	46.073	46.153	46.233	46.313	46.393	46.473	46.553	610
0	0.000	0.059	0.118	0.176	0.235	0.294	0.354	0.413	0.472	0.532	0.591	0	620	46.553	46.633	46.713	46.793	46.873	46.953	47.033	47.113	47.193	47.273	47.353	620
10	0.591	0.651	0.711	0.770	0.830	0.890	0.950	1.010	1.071	1.131	1.192	10	630	47.353	47.433	47.513	47.593	47.673	47.753	47.833	47.913	47.993	48.073	48.153	630
20	1.192	1.252	1.313	1.373	1.434	1.495	1.556	1.617	1.678	1.740	1.801	20	640	48.153	48.233	48.313	48.393	48.473	48.553	48.633	48.713	48.793	48.873	48.953	640
30	1.801	1.862	1.924	1.986	2.047	2.109	2.171	2.233	2.295	2.357	2.420	30	650	48.953	49.033	49.113	49.193	49.273	49.353	49.433	49.513	49.593	49.673	49.753	650
40	2.420	2.482	2.545	2.607	2.670	2.733	2.795	2.858	2.921	2.984	3.048	40	660	49.753	49.833	49.913	49.993	50.073	50.153	50.233	50.313	50.393	50.473	50.553	660
50	3.048	3.111	3.174	3.238	3.301	3.365	3.429	3.492	3.556	3.620	3.685	50	670	50.553	50.633	50.713	50.793	50.873	50.953	51.033	51.113	51.193	51.273	51.353	670
60	3.685	3.749	3.813	3.877	3.942	4.006	4.071	4.136	4.200	4.265	4.330	60	680	51.353	51.433	51.513	51.593	51.673	51.753	51.833	51.913	51.993	52.073	52.153	680
70	4.330	4.395	4.460	4.526	4.591	4.656	4.722	4.788	4.853	4.919	4.985	70	690	52.153	52.233	52.313	52.393	52.473	52.553	52.633	52.713	52.793	52.873	52.953	690
80	4.985	5.051	5.117	5.183	5.249	5.315	5.382	5.448	5.514	5.581	5.648	80	700	52.953	53.033	53.113	53.193	53.273	53.353	53.433	53.513	53.593	53.673	53.753	700
90	5.648	5.714	5.781	5.848	5.915	5.982	6.049	6.117	6.184	6.251	6.319	90	710	53.753	53.833	53.913	53.993	54.073	54.153	54.233	54.313	54.393	54.473	54.553	710
100	6.319	6.386	6.454	6.522	6.590	6.658																			