

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

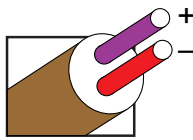
Special: 1.0°C or 0.4%

COMMENTS, BARE WIRE ENVIRONMENT:

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

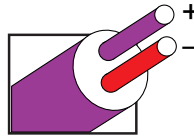
TEMPERATURE IN DEGREES °C

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

Z

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	28.466	28.546	28.626	28.706	28.786	28.866	28.946	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	28.946	29.026	29.106	29.186	29.266	29.346	29.427	29.507	29.587	29.667	29.747	400
-200	-9.063	-9.040	-9.017	-8.994	-8.971	-8.947	-8.923	-8.899	-8.874	-8.850	-8.825	-200	410	29.747	29.827	29.908	29.988	30.068	30.148	30.229	30.309	30.389	30.470	30.550	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	30.550	30.630	30.711	30.791	30.871	30.952	31.032	31.112	31.192	31.273	31.354	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	31.354	31.434	31.515	31.595	31.676	31.756	31.837	31.917	31.998	32.078	32.159	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	32.159	32.239	32.320	32.400	32.481	32.562	32.642	32.722	32.803	32.884	32.965	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	32.965	33.045	33.126	33.207	33.287	33.368	33.449	33.529	33.610	33.691	33.772	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	33.772	33.852	33.933	34.014	34.095	34.175	34.256	34.337	34.418	34.498	34.579	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	34.579	34.660	34.741	34.822	34.903	34.984	35.065	35.145	35.226	35.307	35.387	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	35.387	35.468	35.549	35.630	35.711	35.792	35.873	35.954	36.034	36.115	36.196	480
-120	-6.516	-6.476	-6.436	-6.396	-6.356	-6.316	-6.276	-6.236	-6.196	-6.149	-6.107	-120	490	36.196	36.277	36.358	36.439	36.520	36.601	36.682	36.763	36.844	36.924	37.005	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	37.005	37.086	37.167	37.248	37.329	37.410	37.491	37.572	37.653	37.734	37.815	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	37.815	37.896	37.977	38.058	38.139	38.220	38.300	38.381	38.462	38.543	38.624	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	38.624	38.705	38.786	38.867	38.948	39.029	39.110	39.191	39.272	39.353	39.434	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	39.434	39.515	39.596	39.677	39.758	39.839	39.920	40.001	40.082	40.163	40.243	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	40.243	40.324	40.405	40.486	40.567	40.648	40.729	40.810	40.891	40.972	41.053	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	41.053	41.134	41.215	41.296	41.377	41.457	41.538	41.619	41.700	41.781	41.862	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	41.862	41.943	42.024	42.105	42.185	42.266	42.347	42.428	42.509	42.590	42.671	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	42.671	42.752	42.833	42.914	42.995	43.076	43.157	43.238	43.319	43.400	43.481	570
-30	-2.255	-2.201	-2.147	-2.093	-2.038	-1.983	-1.929	-1.874	-1.820	-1.765	-1.709	-30	580	43.481	43.562	43.643	43.724	43.805	43.886	43.967	44.048	44.129	44.210	44.291	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	44.291	44.372	44.453	44.534	44.615	44.696	44.777	44.858	44.939	45.020	45.101	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	45.101	45.182	45.263	45.344	45.425	45.506	45.587	45.668	45.749	45.830	45.911	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	45.911	45.992	46.073	46.154	46.235	46.316	46.397	46.478	46.559	46.640	46.721	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	46.721	46.802	46.883	46.964	47.045	47.126	47.207	47.288	47.369	47.450	47.531	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	47.531	47.612	47.693	47.774	47.855	47.936	48.017	48.098	48.179	48.260	48.341	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	48.341	48.422	48.503	48.584	48.665	48.746	48.827	48.908	48.989	49.070	49.151	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	49.151	49.232	49.313	49.394	49.475	49.556	49.637	49.718	49.799	49.880	49.961	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	52.315	52.396	52.477	52.558	52.639	52.720	52.801	52.882	52.963	53.044	53.125	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	53.125	53.206	53.287	53.368	53.449	53.530	53.611	53.692	53.773	53.854	53.935	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	53.935	54.016	54.097	54.178	54.259	54.340	54.421	54.502	54.583	54.664	54.745	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	54.745	54.826	54.907	54.988	55.069	55.150	55.231	55.312	55.393	55.474	55.555	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	55.555	55.636	55.717	55.798	55.879	55.960	56.041	56.122	56.203	56.284	56.365	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	56.365	56.446	56.527	56.608	56.689	56.770	56.851	56.932	57.013	57.094	57.175	710
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