

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

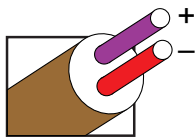
Special: 1.0°C or 0.4%

COMMENTS, BARE WIRE ENVIRONMENT:

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

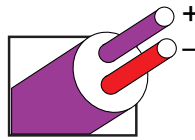
TEMPERATURE IN DEGREES °C

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	-9.293	-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	31.193	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	-6.355	-6.314	-6.273	-6.232	-6.191	-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	43.156	43.237	43.318	43.399	43.479	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	43.479	43.560	43.641	43.722	43.803	43.884	43.965	44.046	44.127	44.208	44.288	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	44.288	44.369	44.450	44.531	44.612	44.693	44.774	44.855	44.936	45.017	45.098	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	45.098	45.179	45.260	45.341	45.422	45.503	45.584	45.665	45.746	45.827	45.908	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	45.908	45.989	46.070	46.151	46.232	46.313	46.394	46.475	46.556	46.637	46.718	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	46.718	46.799	46.880	46.961	47.042	47.123	47.204	47.285	47.366	47.447	47.528	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	47.528	47.609	47.690	47.771	47.852	47.933	48.014	48.095	48.176	48.257	48.338	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	48.338	48.419	48.500	48.581	48.662	48.743	48.824	48.905	48.986	49.067	49.148	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	49.148	49.229	49.310	49.391	49.472	49.553	49.634	49.715	49.796	49.877	49.958	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	700	53.125	53.199	53.273	53.347	53.421	53.495	53.569	53.643	53.717	53.791	53.865	700
60	3.685	3.749	3.813	3.877	3.942	4.006	4.071	4.136	4.200	4.265	4.330	60	710	53.988	54.062	54.136	54.210	54.284	54.358	54.432	54.506	54.580	54.654	54.728	710
70	4.330	4.395	4.460	4.526	4.591	4.656	4.722	4.788	4.853	4.919	4.985	70	720	54.728	54.802	54.876	54.950	55.024	55.098	55.172	55.246	55.320	55.394	55.468	720
80	4.985	5.051	5.117	5.183	5.249	5.315	5.382	5.448	5.514	5.581	5.648	80	730	55.468	55.542	55.616	55.690	55.764	55.838	55.912	55.986	56.060	56.134	56.208	730
90	5.648	5.714	5.781	5.848	5.915	5.982	6.049	6.117	6.184	6.251	6.319	90	740	56.208	56.282	56.356	56.430	56.504	56.578	56.652	56.726	56.800	56.874	56.948	740
100	6.319	6.386	6																						