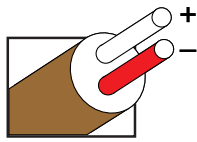


Revised Thermocouple Reference Tables

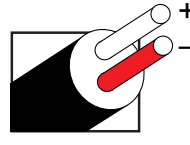
TYPE

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



Thermocouple Grade

Iron vs. Copper-Nickel



MAXIMUM TEMPERATURE RANGE

Thermocouple Grade

32 to 1382°F

0 to 750°C

Extension Grade

32 to 392°F

0 to 200°C

LIMITS OF ERROR

(whichever is greater)

Standard: 2.2°C or 0.75%

Special: 1.1°C or 0.4%

COMMENTS, BARE WIRE ENVIRONMENT:

Reducing, Vacuum, Inert; Limited Use in

Oxidizing at High Temperatures;

Not Recommended for Low Temperatures

TEMPERATURE IN DEGREES °C

REFERENCE JUNCTION AT 0°C

Extension Grade

Thermoelectric Voltage in Millivolts

°C	Thermoelectric Voltage in Millivolts										°C											
	-200	-180	-160	-140	-120	-100	-80	-60	-40	-20		0	20	40	60	80	100	120	140	160	180	200
-200	-8.095	-8.076	-8.057	-8.037	-8.017	-7.996	-7.976	-7.955	-7.934	-7.912	-7.890	-7.868	-7.846	-7.824	-7.801	-7.778	-7.755	-7.731	-7.707	-7.683	-7.659	-190
-180	-7.659	-7.634	-7.610	-7.585	-7.559	-7.534	-7.508	-7.482	-7.456	-7.429	-7.403	-7.377	-7.351	-7.324	-7.297	-7.270	-7.242	-7.214	-7.186	-7.158	-7.129	-170
-160	-7.123	-7.094	-7.064	-7.035	-7.005	-6.975	-6.944	-6.914	-6.883	-6.853	-6.821	-6.790	-6.759	-6.727	-6.695	-6.663	-6.631	-6.598	-6.566	-6.533	-6.500	-150
-140	-6.500	-6.467	-6.433	-6.400	-6.366	-6.332	-6.298	-6.263	-6.229	-6.194	-6.159	-6.124	-6.089	-6.054	-6.018	-5.982	-5.946	-5.910	-5.874	-5.838	-5.801	-130
-120	-5.801	-5.764	-5.727	-5.690	-5.653	-5.616	-5.578	-5.541	-5.503	-5.465	-5.426	-5.387	-5.348	-5.309	-5.270	-5.230	-5.191	-5.151	-5.111	-5.071	-5.031	-110
-100	-5.426	-5.388	-5.350	-5.311	-5.272	-5.233	-5.194	-5.155	-5.116	-5.076	-5.037	-5.000	-4.961	-4.921	-4.881	-4.841	-4.801	-4.761	-4.721	-4.681	-4.641	-90
-80	-4.633	-4.591	-4.550	-4.509	-4.467	-4.425	-4.384	-4.342	-4.300	-4.257	-4.215	-4.172	-4.129	-4.086	-4.043	-4.000	-3.957	-3.914	-3.872	-3.829	-3.786	-80
-60	-3.786	-3.742	-3.698	-3.654	-3.610	-3.566	-3.522	-3.478	-3.434	-3.389	-3.344	-3.300	-3.255	-3.211	-3.166	-3.121	-3.077	-3.032	-2.987	-2.942	-2.897	-60
-40	-2.893	-2.847	-2.801	-2.755	-2.709	-2.663	-2.617	-2.571	-2.524	-2.478	-2.431	-2.385	-2.339	-2.293	-2.247	-2.200	-2.154	-2.108	-2.061	-2.015	-1.969	-40
-20	-1.961	-1.913	-1.865	-1.818	-1.770	-1.722	-1.674	-1.626	-1.578	-1.530	-1.482	-1.434	-1.386	-1.338	-1.290	-1.242	-1.194	-1.146	-1.098	-1.050	-1.002	-20
0	-0.501	-0.451	-0.401	-0.351	-0.301	-0.251	-0.201	-0.151	-0.101	-0.050	0.000	0.050	0.100	0.150	0.200	0.250	0.300	0.350	0.400	0.450	0.500	0
0	0.000	0.050	0.101	0.151	0.202	0.253	0.303	0.354	0.405	0.456	0.507	0										100
10	0.507	0.558	0.609	0.660	0.712	0.762	0.813	0.865	0.916	0.968	1.019	10										110
20	1.019	1.071	1.122	1.174	1.226	1.277	1.329	1.381	1.433	1.485	1.537	20										120
30	1.537	1.589	1.641	1.693	1.745	1.797	1.849	1.902	1.954	2.006	2.059	30										130
40	2.059	2.111	2.164	2.216	2.269	2.322	2.374	2.427	2.480	2.532	2.585	40										140
50	2.585	2.638	2.691	2.744	2.797	2.850	2.903	2.956	3.009	3.062	3.116	50										150
60	3.116	3.169	3.222	3.275	3.328	3.382	3.436	3.489	3.543	3.596	3.650	60										160
70	3.650	3.703	3.757	3.810	3.864	3.918	3.971	4.025	4.079	4.133	4.187	70										170
80	4.187	4.240	4.294	4.348	4.402	4.456	4.510	4.564	4.618	4.672	4.726	80										180
90	4.726	4.781	4.835	4.889	4.943	4.997	5.052	5.106	5.160	5.215	5.269	90										190
100	5.269	5.323	5.378	5.432	5.487	5.541	5.595	5.650	5.705	5.759	5.814	100										200
110	5.814	5.868	5.923	5.977	6.032	6.087	6.141	6.196	6.251	6.306	6.360	110										210
120	6.360	6.415	6.470	6.525	6.579	6.634	6.689	6.744	6.799	6.854	6.909	120										220
130	6.909	6.964	7.019	7.074	7.129	7.184	7.239	7.294	7.349	7.404	7.459	130										230
140	7.459	7.514	7.569	7.624	7.679	7.734	7.789	7.844	7.900	7.955	8.010	140										240
150	8.010	8.065	8.120	8.175	8.231	8.286	8.341	8.396	8.452	8.507	8.562	150										250
160	8.562	8.618	8.673	8.728	8.783	8.839	8.894	8.949	9.005	9.060	9.115	160										260
170	9.115	9.171	9.226	9.282	9.337	9.392	9.448	9.503	9.559	9.614	9.669	170										270
180	9.669	9.725	9.780	9.836	9.891	9.947	10.002	10.057	10.113	10.168	10.224	180										280
190	10.224	10.279	10.335	10.390	10.446	10.501	10.557	10.612	10.668	10.723	10.779	190										290
200	10.779	10.834	10.890	10.945	11.001	11.056	11.112	11.167	11.223	11.278	11.334	200										300
210	11.334	11.389	11.445	11.501	11.556	11.612	11.667	11.723	11.778	11.834	11.889	210										310
220	11.889	11.945	12.000	12.056	12.112	12.167	12.223	12.278	12.334	12.389	12.445	220										320
230	12.445	12.500	12.556	12.612	12.667	12.723	12.778	12.834	12.889	12.944	13.000	230										330
240	13.000	13.056	13.111	13.167	13.222	13.278	13.334	13.389	13.444	13.500	13.555	240										340
250	13.555	13.611	13.666	13.722	13.777	13.833	13.888	13.944	13.999	14.055	14.110	250										350
260	14.110	14.166	14.221	14.277	14.332	14.388	14.443	14.499	14.554	14.609	14.665	260										360
270	14.665	14.720	14.776	14.831	14.887	14.942	14.998	15.053	15.109	15.164	15.219	270										370
280	15.219	15.275	15.330	15.386	15.441	15.496	15.552	15.607	15.663	15.718	15.773	280										380
290	15.773	15.829	15.884	15.940	15.995	16.050	16.106	16.161	16.216	16.272	16.327	290										390
300	16.327	16.383	16.438	16.494	16.549	16.604	16.659	16.715	16.770	16.825	16.881	300										400
310	16.881	16.936	16.991	17.046	17.102	17.157	17.212	17.268	17.323	17.378	17.434	310										410
320	17.434	17.489	17.544	17.599	17.655	17.710	17.765	17.820	17.876	17.931	17.986	320										420
330	17.986	18.041	18.097	18.152	18.207	18.262	18.318	18.373	18.428	18.483	18.538	330										430
340	18.538	18.594	18.649	18.704	18.759	18.814	18.870	18.925	18.980	19.035	19.090	340										440
350	19.090	19.146	19.201	19.256	19.311	19.366	19.422	19.477	19.532	19.587	19.642	350										450
360	19.642	19.697	19.753	19.808	19.863	19.918	19.973	20.028	20.083	20.139	20.194	360										460
370	20.194	20.249	20.304	20.359	20.414	20.469	20.525	20.580	20.635	20.690	20.745	370										470
380	20.745	20.800	20.855	20.911	20.966	21.021	21.076	21.131	21.186	21.241	21.297	380										480
390	21.297	21.352	21.407	21.462	21.517	21.572	21.627	21.683	21.738	21.793	21.848	390										490
400	21.848	21.903	21.958	22.014	22.069	22.124	22.179	22.234	22.289	22.345	22.400	400										500
410	22.400	22.455	22.510	22.565	22.620	22.675	22.731	22.786	22.841	22.896	22.952	410										510
420	22.952	23.007	23.062	23.117	23.172	23.228	23.283	23.338	23.393	23.449	23.504	420										520
430	23.504	23.559	23.614	23.670	23.725	23.780	23.835	23.891	23.946	24.001	24.057	430										530
440	24.057	24.112	24.167	24.223	24.278	24.333	24.389	24.444	24.499	24.555	24.610	440										540
450	24.610	24.665	24.721	24.776	24.832	24.887																