

**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)

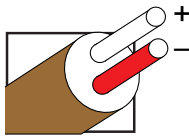
**Standard:** 2.2°C or 0.75%

**Special:** 1.1°C or 0.4%

**COMMENTS, BARE WIRE ENVIRONMENT:**

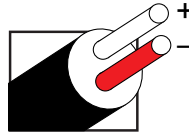
Reducing, Vacuum, Inert; Limited Use in Oxidizing at High Temperatures; Not Recommended for Low Temperatures

**TEMPERATURE IN DEGREES °F**  
**REFERENCE JUNCTION AT 32°F**



**Thermocouple Grade**

**Iron vs. Copper-Nickel**



**Revised Thermocouple Reference Tables**

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



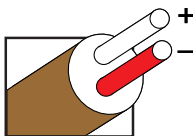
**Thermoelectric Voltage in Millivolts**

Table with columns for temperature in °F and °C, and rows for thermoelectric voltage in millivolts. The table is organized into sections for different temperature ranges and includes a 'Type J' label on the right side.

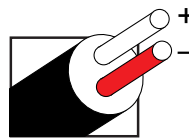
# Revised Thermocouple Reference Tables

## TYPE J

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



Iron vs. Copper-Nickel



Extension Grade

Thermocouple 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	1000	1010	1020	1030	1040	1050	1060	1070	1080	1090	1100	1110	1120	1130	1140	1150	1160	1170	1180	1190	1200	1210	1220	1230	1240	1250	1260	1270	1280	1290	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	°F	0	1	2	3	4	5	6	7	8	9	10	°F																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
950	27.953	27.985	28.016	28.047	28.078	28.109	28.141	28.172	28.203	28.234	28.266	950	1600	50.060	50.095	50.130	50.165	50.200	50.235	50.271	50.306	50.341	50.376	50.411	1600	1600	50.411	50.446	50.481	50.517	50.552	50.587	50.622	50.657	50.692	50.727	50.762	1610	50.762	50.797	50.832	50.867	50.902	50.937	50.972	51.007	51.042	51.077	51.112	1620	51.112	51.147	51.181	51.216	51.251	51.286	51.321	51.356	51.391	51.425	51.460	1630	51.460	51.495	51.530	51.565	51.599	51.634	51.669	51.704	51.738	51.773	51.808	1640	51.808	51.843	51.877	51.912	51.947	51.981	52.016	52.051	52.085	52.120	52.154	1650	52.154	52.189	52.224	52.259	52.293	52.327	52.362	52.396	52.431	52.465	52.500	1660	52.500	52.534	52.569	52.603	52.638	52.672	52.707	52.741	52.776	52.810	52.844	1670	52.844	52.879	52.913	52.947	52.982	53.016	53.050	53.085	53.119	53.153	53.188	1680	53.188	53.222	53.256	53.290	53.325	53.359	53.393	53.427	53.462	53.496	53.530	1690	53.530	53.564	53.598	53.632	53.667	53.701	53.735	53.769	53.803	53.837	53.871	1700	53.871	53.905	53.939	53.973	54.007	54.041	54.075	54.109	54.143	54.177	54.211	1710	54.211	54.245	54.279	54.313	54.347	54.381	54.415	54.449	54.483	54.517	54.551	1720	54.551	54.584	54.618	54.652	54.686	54.719	54.753	54.787	54.821	54.855	54.888	1730	54.888	54.922	54.956	54.990	55.023	55.057	55.091	55.124	55.158	55.192	55.225	1740	55.225	55.259	55.293	55.326	55.360	55.393	55.427	55.461	55.494	55.528	55.561	1750	55.561	55.595	55.628	55.662	55.695	55.729	55.762	55.796	55.829	55.863	55.896	1760	55.896	55.930	55.963	55.997	56.030	56.063	56.097	56.130	56.164	56.197	56.230	1770	56.230	56.264	56.297	56.330	56.363	56.397	56.430	56.464	56.497	56.530	56.564	1780	56.564	56.597	56.630	56.663	56.697	56.730	56.763	56.796	56.829	56.863	56.896	1790	56.896	56.929	56.962	56.995	57.028	57.062	57.095	57.128	57.161	57.194	57.227	1800	57.227	57.260	57.293	57.326	57.360	57.393	57.426	57.459	57.492	57.525	57.558	1810	57.558	57.591	57.624	57.657	57.690	57.723	57.756	57.789	57.822	57.855	57.888	1820	57.888	57.921	57.954	57.987	58.020	58.053	58.086	58.119	58.152	58.185	58.218	1830	58.218	58.251	58.284	58.317	58.350	58.383	58.416	58.449	58.482	58.515	58.548	1840	58.548	58.581	58.614	58.647	58.680	58.713	58.746	58.779	58.812	58.845	58.878	1850	58.878	58.911	58.944	58.977	59.010	59.043	59.076	59.109	59.142	59.175	59.208	1860	59.208	59.241	59.274	59.307	59.340	59.373	59.406	59.439	59.472	59.505	59.538	1870	59.538	59.571	59.604	59.637	59.670	59.703	59.736	59.769	59.802	59.835	59.868	1880	59.868	59.901	59.934	59.967	59.999	60.032	60.065	60.098	60.131	60.164	60.197	1890	60.197	60.230	60.263	60.296	60.329	60.362	60.395	60.428	60.461	60.494	60.527	1900	60.527	60.560	60.593	60.626	60.659	60.692	60.725	60.758	60.791	60.824	60.857	1910	60.857	60.890	60.923	60.956	60.989	61.022	61.055	61.088	61.121	61.154	61.187	1920	61.187	61.220	61.253	61.286	61.319	61.352	61.385	61.418	61.451	61.484	61.517	1930	61.517	61.550	61.583	61.616	61.649	61.682	61.715	61.748	61.781	61.814	61.847	1940	61.847	61.880	61.913	61.946	61.979	62.012	62.045	62.078	62.111	62.144	62.177	1950	62.177	62.210	62.243	62.276	62.309	62.342	62.375	62.408	62.441	62.474	62.507	1960	62.507	62.540	62.573	62.606	62.639	62.672	62.705	62.738	62.771	62.804	62.837	1970	62.837	62.870	62.903	62.936	62.969	63.002	63.035	63.068	63.101	63.134	63.167	1980	63.167	63.200	63.233	63.266	63.299	63.332	63.365	63.398	63.431	63.464	63.497	1990	63.497	63.530	63.563	63.596	63.629	63.662	63.695	63.728	63.761	63.794	63.827	2000	63.827	63.860	63.893	63.926	63.959	63.992	64.025	64.058	64.091	64.124	64.157	2010	64.157	64.190	64.223	64.256	64.289	64.322	64.355	64.388	64.421	64.454	64.487	2020	64.487	64.520	64.553	64.586	64.619	64.652	64.685	64.718	64.751	64.784	64.817	2030	64.817	64.850	64.883	64.916	64.949	64.982	65.015	65.048	65.081	65.114	65.147	2040	65.147	65.180	65.213	65.246	65.279	65.312	65.345	65.378	65.411	65.444	65.477	2050	65.477	65.510	65.543	65.576	65.609	65.642	65.675	65.708	65.741	65.774	65.807	2060	65.807	65.840	65.873	65.906	65.939	65.972	66.005	66.038	66.071	66.104	66.137	2070	66.137	66.170	66.203	66.236	66.269	66.302	66.335	66.368	66.401	66.434	66.467	2080	66.467	66.500	66.533	66.566	66.599	66.632	66.665	66.698	66.731	66.764	66.797	2090	66.797	66.830	66.863	66.896	66.929	66.962	66.995	67.028	67.061	67.094	67.127	2100	67.127	67.160	67.193	67.226	67.259	67.292	67.325	67.358	67.391	67.424	67.457	2110	67.457	67.490	67.523	67.556	67.589	67.622	67.655	67.688	67.721	67.754	67.787	2120	67.787	67.820	67.853	67.886	67.919	67.952	67.985	68.018	68.051	68.084	68.117	2130	68.117	68.150	68.183	68.216	68.249	68.282	68.315	68.348	68.381	68.414	68.447	2140	68.447	68.480	68.513	68.546	68.579	68.612	68.645	68.678	68.711	68.744	68.777	2150	68.777	68.810	68.843	68.876	68.909	68.942	68.975	69.008	69.041	69.074	69.107	2160	69.107	69.140	69.173	69.206	69.239	69.272	69.305	69.338	69.371	69.404	69.437	2170	69.437	69.470	69.503	69.536	69.569	69.602	69.635	69.668	69.701	69.734	69.767	2180	69.767	69.800	69.833	69.866	69.899	69.932	69.965	69.998	70.031	70.064	70.097	2190	70.097	70.130	70.163	70.196	70.229	70.262	70.295	70.328	70.361	70.394	70.427

