Designation: E 988 – 96

Standard Temperature-Electromotive Force (EMF) Tables for Tungsten-Rhenium Thermocouples[1]

This standard is issued under the fixed designation E 988; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This standard consists of reference tables that give temperature-electromotive force (emf) relationships for 97 % Tungsten 3 % Rhenium versus 75 % Tungsten 25 % Rhenium and 95 % Tungsten 5 % Rhenium versus 74 % Tungsten 26 % Rhenium thermocouples. These are the refractory metal thermocouple types most commonly used in industry.

1.2 Also included is a list (Table 1) of initial calibration tolerances for the thermocouple types referred to in 1.1, and their respective compensating extension wires (Table 2).

1.3 These data are intended for industrial and laboratory use.

2. Referenced Documents

2.1 *ASTM Standards:*

E 380 Practice for Use of the International System of Units (SI) (the Modernized Metric System)[2]

3. Source of Data

3.1 The data in these tables are based upon the SI volt (see Practice E 380) and the International Temperature Scale of 1990.

3.2 All temperature-electromotive force data in Tables 3-6 have been developed from wire manufacturers' data.

3.3 These tables give emf values to three decimal places (1 μV) for each degree of temperature. Such tables are satisfactory for most industrial uses but may not be adequate for computer and similar applications. If greater precision is required, the reader should refer to the equations in Table 7 which permit further generation of the temperature-emf relationships. In addition, Tables 8 and 9 present polynomial approximations giving temperature as a function of the thermocouple EMF.

4. Identification of Thermocouple Types

4.1 Letter symbols have not been assigned. Identification is made by composition.

4.2 *W3Re/W25Re*—97 % Tungsten 3 % Rhenium (+) versus 75 % Tungsten 25 % Rhenium (−).

4.3 *W5Re/W26Re*—95 % Tungsten 5 % Rhenium (+) versus 74 % Tungsten 26 % Rhenium (−).

5. Initial Calibration Tolerances

5.1 Thermocouples and matched thermocouple wire are supplied to the initial calibration tolerances listed in Table 1.

6. List of Tables

6.1 Following is a list of tables included in this standard:

Table Number	Title
1	Initial Calibration Tolerances and Suggested Temperature Ranges for Thermocouples
2	Initial Calibration Tolerances and Suggested Temperature Ranges for Thermocouple Compensating Extension Wires
3	Temperature versus EMF for W3Re/W25Re from 0 to 2315°C
4	Temperature versus EMF for W3Re/W25Re from 32 to 4200°F
5	Temperature versus EMF for W5Re/W26Re from 0 to 2315°C
6	Temperature versus EMF for W5Re/W26Re from 32 to 4200°F
7	Equations Used to Derive Tables 3-6
8	Polynomial Coefficients for the Computation of Temperatures in °C as a Function of the Thermocouple EMF
9	Polynomial Coefficients for the Computation of Temperatures in °F as a Function of the Thermocouple EMF

7. Keywords

7.1 emf; rhenium; thermocouple; tungsten

[1] These tables are under the jurisdiction of ASTM Committee E-20 on Temperature Measurement and are the direct responsibility of Subcommittee E20.04 on Thermocouples.

Current edition approved Sept. 10, 1996. Published October 1996. Originally published as E 988 – 84. Last previous edition E 988 – 90.

[2] *Annual Book of ASTM Standards*, Vol 14.02.

TABLE 1 Initial Calibration Tolerances and Suggested Temperature Ranges for Thermocouples[A]

NOTE 1—Initial calibration tolerances in this table apply to new thermocouple wire, normally in the size range 0.125 to 0.5 mm in diameter (No. 36 to 24 Awg) and used at temperatures not exceeding the suggested upper temperatures of Table 1. If used at higher temperatures these initial calibration tolerances may not apply.

NOTE 2—Initial calibration tolerances apply to new wire as delivered to the user and do not allow for calibration drift during use. The magnitude of such changes depends on such factors as wire size, temperature, time of exposure, and environment.

NOTE 3—Where initial calibration tolerances are given in percent, the percentage applies to the temperature being measured when expressed in degrees Fahrenheit. To determine the tolerance in degrees Celsius multiply the tolerance in degrees Fahrenheit by 5/9.

NOTE 4—Tables 1 and 2 also describe suggested upper temperature limits for the thermocouples and extension wires. These limits apply to protected thermocouples, that is, thermocouples in inert or non-oxidizing atmospheres.

Thermocouple Type	Temperature Range	Initial Calibration Tolerances
W3%Re/W25%Re and W5%Re/W26%Re	0 to 426°C 32 to 800°F 426 to 2315°C 800 to 4200°F}	±4.4°C ±8°F ±1 % of actual temperature

[A] CAUTION—Users should be aware that certain characteristics of thermocouple materials including calibration may change in time with use; consequently, test results obtained at time of manufacture may not necessarily apply throughout an extended period of use.

TABLE 2 Initial Calibration Tolerances and Suggested Temperature Ranges for Thermocouple Compensating Extension Wires

Designation	Temperature Range	Initial Calibration Tolerances
For W3%Re/W25%Re 300P(+) 97.7Ni BAL Cr,Al,Si[A] 300N(−) 96Ni, 4W[A]	0 *to* 330°*C* 32 *to* 625°*F*}	±0.125 mV
203(+) 90Ni, 10Cr[B] 225(−) 98Ni, 2Cr[B]	0 *to* 260°*C* 32 *to* 500°*F*}	±0.110 mV
For W5%Re/W26%Re 405(+) 94.5Ni[B] 2 Mn 1 Si 1.5 AL 426(−) 80 Ni, 20 Cu[B]	0 *to* 871°*C* 32 *to* 1600°*F*}	±0.110 mV

[A] U.S. Patent 3,502,510 assigned to Engelhard Industries.
[B] Designation of Hoskins Mfg.

TABLE 3 Tungsten-3 % Rhenium versus Tungsten-25 % Rhenium Thermocouples—Thermoelectric Voltage as a Function of Temperature (°C)

EMF in Millivolts												Reference Junctions at 0°C
DEG C	0	1	2	3	4	5	6	7	8	9	10	DEG C
Thermoelectric Voltage in Millivolts												
0	0.000	0.010	0.019	0.029	0.039	0.048	0.058	0.068	0.078	0.088	0.098	**0**
10	0.098	0.108	0.118	0.128	0.138	0.148	0.159	0.169	0.179	0.189	0.200	**10**
20	0.200	0.210	0.221	0.231	0.242	0.252	0.263	0.273	0.284	0.295	0.305	**20**
30	0.305	0.316	0.327	0.338	0.349	0.360	0.371	0.382	0.393	0.404	0.415	**30**
40	0.415	0.426	0.437	0.448	0.460	0.471	0.482	0.494	0.505	0.517	0.528	**40**
50	0.528	0.540	0.551	0.563	0.574	0.586	0.598	0.609	0.621	0.633	0.645	**50**
60	0.645	0.657	0.668	0.680	0.692	0.704	0.716	0.728	0.741	0.753	0.765	**60**
70	0.765	0.777	0.789	0.802	0.814	0.826	0.839	0.851	0.863	0.876	0.888	**70**
80	0.888	0.901	0.914	0.926	0.939	0.951	0.964	0.977	0.990	1.002	1.015	**80**
90	1.015	1.028	1.041	1.054	1.067	1.080	1.093	1.106	1.119	1.132	1.145	**90**
100	1.145	1.158	1.172	1.185	1.198	1.212	1.225	1.238	1.252	1.265	1.278	**100**
110	1.278	1.292	1.305	1.319	1.333	1.346	1.360	1.374	1.387	1.401	1.415	**110**
120	1.415	1.428	1.442	1.456	1.470	1.484	1.498	1.512	1.526	1.540	1.554	**120**
130	1.554	1.568	1.582	1.596	1.610	1.624	1.639	1.653	1.667	1.681	1.696	**130**
140	1.696	1.710	1.725	1.739	1.753	1.768	1.782	1.797	1.811	1.826	1.841	**140**
150	1.841	1.855	1.870	1.884	1.899	1.914	1.929	1.943	1.958	1.973	1.988	**150**
160	1.988	2.003	2.018	2.033	2.048	2.063	2.078	2.093	2.108	2.123	2.138	**160**
170	2.138	2.153	2.168	2.183	2.199	2.214	2.229	2.244	2.260	2.275	2.290	**170**
180	2.290	2.306	2.321	2.337	2.352	2.368	2.383	2.399	2.414	2.430	2.445	**180**
190	2.445	2.461	2.477	2.492	2.508	2.524	2.539	2.555	2.571	2.587	2.603	**190**
200	2.603	2.618	2.634	2.650	2.666	2.682	2.698	2.714	2.730	2.746	2.762	**200**
210	2.762	2.778	2.794	2.810	2.826	2.843	2.859	2.875	2.891	2.907	2.924	**210**
220	2.924	2.940	2.956	2.973	2.989	3.005	3.022	3.038	3.055	3.071	3.088	**220**
230	3.088	3.104	3.121	3.137	3.154	3.170	3.187	3.203	3.220	3.237	3.253	**230**
240	3.253	3.270	3.287	3.303	3.320	3.337	3.354	3.371	3.387	3.404	3.421	**240**
250	3.421	3.438	3.455	3.472	3.489	3.506	3.523	3.540	3.557	3.574	3.591	**250**
260	3.591	3.608	3.625	3.642	3.659	3.676	3.693	3.711	3.728	3.745	3.762	**260**
270	3.762	3.780	3.797	3.814	3.831	3.849	3.866	3.883	3.901	3.918	3.936	**270**
280	3.936	3.953	3.970	3.988	4.005	4.023	4.040	4.058	4.075	4.093	4.111	**280**
290	4.111	4.128	4.146	4.163	4.181	4.199	4.216	4.234	4.252	4.269	4.287	**290**
300	4.287	4.305	4.323	4.340	4.358	4.376	4.394	4.412	4.430	4.447	4.465	**300**
310	4.465	4.483	4.501	4.519	4.537	4.555	4.573	4.591	4.609	4.627	4.645	**310**
320	4.645	4.663	4.681	4.699	4.717	4.735	4.753	4.772	4.790	4.808	4.826	**320**
330	4.826	4.844	4.862	4.881	4.899	4.917	4.935	4.954	4.972	4.990	5.009	**330**
340	5.009	5.027	5.045	5.064	5.082	5.100	5.119	5.137	5.156	5.174	5.192	**340**
350	5.192	5.211	5.229	5.248	5.266	5.285	5.303	5.322	5.340	5.359	5.378	**350**
360	5.378	5.396	5.415	5.433	5.452	5.471	5.489	5.508	5.527	5.545	5.564	**360**
370	5.564	5.583	5.601	5.620	5.639	5.658	5.676	5.695	5.714	5.733	5.752	**370**
380	5.752	5.770	5.789	5.808	5.827	5.846	5.865	5.884	5.902	5.921	5.940	**380**
390	5.940	5.959	5.978	5.997	6.016	6.035	6.054	6.073	6.092	6.111	6.130	**390**
400	6.130	6.149	6.168	6.187	6.206	6.225	6.245	6.264	6.283	6.302	6.321	**400**
410	6.321	6.340	6.359	6.378	6.398	6.417	6.436	6.455	6.474	6.494	6.513	**410**
420	6.513	6.532	6.551	6.571	6.590	6.609	6.628	6.648	6.667	6.686	6.706	**420**
430	6.706	6.725	6.744	6.764	6.783	6.802	6.822	6.841	6.861	6.880	6.899	**430**
440	6.899	6.919	6.938	6.958	6.977	6.997	7.016	7.035	7.055	7.074	7.094	**440**
450	7.094	7.113	7.133	7.152	7.172	7.191	7.211	7.231	7.250	7.270	7.289	**450**
460	7.289	7.309	7.328	7.348	7.368	7.387	7.407	7.427	7.446	7.466	7.485	**460**
470	7.485	7.505	7.525	7.544	7.564	7.584	7.604	7.623	7.643	7.663	7.682	**470**
480	7.682	7.702	7.722	7.742	7.761	7.781	7.801	7.821	7.840	7.860	7.880	**480**
490	7.880	7.900	7.920	7.939	7.959	7.979	7.999	8.019	8.038	8.058	8.078	**490**
500	8.078	8.098	8.118	8.138	8.158	8.178	8.197	8.217	8.237	8.257	8.277	**500**

TABLE 3 *(continued)*

EMF in Millivolts												Reference Junctions at 0°C
DEG C	0	1	2	3	4	5	6	7	8	9	10	DEG C
Thermoelectric Voltage in Millivolts												
500	8.078	8.098	8.118	8.138	8.158	8.178	8.197	8.217	8.237	8.257	8.277	**500**
510	8.277	8.297	8.317	8.337	8.357	8.377	8.397	8.417	8.437	8.457	8.476	**510**
520	8.476	8.496	8.516	8.536	8.556	8.576	8.596	8.616	8.636	8.656	8.676	**520**
530	8.676	8.696	8.717	8.737	8.757	8.777	8.797	8.817	8.837	8.857	8.877	**530**
540	8.877	8.897	8.917	8.937	8.957	8.977	8.997	9.018	9.038	9.058	9.078	**540**
550	9.078	9.098	9.118	9.138	9.158	9.178	9.199	9.219	9.239	9.259	9.279	**550**
560	9.279	9.299	9.320	9.340	9.360	9.380	9.400	9.420	9.441	9.461	9.481	**560**
570	9.481	9.501	9.521	9.542	9.562	9.582	9.602	9.622	9.643	9.663	9.683	**570**
580	9.683	9.703	9.723	9.744	9.764	9.784	9.804	9.825	9.845	9.865	9.885	**580**
590	9.885	9.906	9.926	9.946	9.966	9.987	10.007	10.027	10.048	10.068	10.088	**590**
600	10.088	10.108	10.129	10.149	10.169	10.190	10.210	10.230	10.250	10.271	10.291	**600**
610	10.291	10.311	10.332	10.352	10.372	10.393	10.413	10.433	10.454	10.474	10.494	**610**
620	10.494	10.515	10.535	10.555	10.576	10.596	10.616	10.637	10.657	10.677	10.698	**620**
630	10.698	10.718	10.738	10.759	10.779	10.799	10.820	10.840	10.860	10.881	10.901	**630**
640	10.901	10.921	10.942	10.962	10.983	11.003	11.023	11.044	11.064	11.084	11.105	**640**
650	11.105	11.125	11.146	11.166	11.186	11.207	11.227	11.247	11.268	11.288	11.309	**650**
660	11.309	11.329	11.349	11.370	11.390	11.410	11.431	11.451	11.472	11.492	11.512	**660**
670	11.512	11.533	11.553	11.574	11.594	11.614	11.635	11.655	11.676	11.696	11.716	**670**
680	11.716	11.737	11.757	11.778	11.798	11.818	11.839	11.859	11.880	11.900	11.921	**680**
690	11.921	11.941	11.961	11.982	12.002	12.023	12.043	12.063	12.084	12.104	12.125	**690**
700	12.125	12.145	12.165	12.186	12.206	12.227	12.247	12.268	12.288	12.308	12.329	**700**
710	12.329	12.349	12.370	12.390	12.410	12.431	12.451	12.472	12.492	12.513	12.533	**710**
720	12.533	12.553	12.574	12.594	12.615	12.635	12.656	12.676	12.696	12.717	12.737	**720**
730	12.737	12.758	12.778	12.799	12.819	12.840	12.860	12.880	12.901	12.921	12.942	**730**
740	12.942	12.962	12.983	13.003	13.023	13.044	13.064	13.085	13.105	13.126	13.146	**740**
750	13.146	13.167	13.187	13.207	13.228	13.248	13.269	13.289	13.310	13.330	13.351	**750**
760	13.351	13.371	13.392	13.412	13.433	13.453	13.473	13.494	13.514	13.535	13.555	**760**
770	13.555	13.576	13.596	13.617	13.637	13.658	13.678	13.699	13.719	13.740	13.760	**770**
780	13.760	13.781	13.801	13.822	13.842	13.863	13.883	13.904	13.924	13.945	13.965	**780**
790	13.965	13.986	14.006	14.027	14.047	14.068	14.088	14.109	14.129	14.150	14.170	**790**
800	14.170	14.191	14.211	14.232	14.252	14.273	14.293	14.314	14.334	14.355	14.375	**800**
810	14.375	14.395	14.416	14.436	14.457	14.477	14.498	14.518	14.539	14.559	14.580	**810**
820	14.580	14.600	14.621	14.641	14.662	14.682	14.703	14.723	14.744	14.764	14.784	**820**
830	14.784	14.805	14.825	14.846	14.866	14.887	14.907	14.928	14.948	14.969	14.989	**830**
840	14.989	15.009	15.030	15.050	15.071	15.091	15.112	15.132	15.152	15.173	15.193	**840**
850	15.193	15.214	15.234	15.255	15.275	15.295	15.316	15.336	15.357	15.377	15.398	**850**
860	15.398	15.418	15.438	15.459	15.479	15.500	15.520	15.540	15.561	15.581	15.602	**860**
870	15.602	15.622	15.642	15.663	15.683	15.703	15.724	15.744	15.765	15.785	15.805	**870**
880	15.805	15.826	15.846	15.866	15.887	15.907	15.928	15.948	15.968	15.989	16.009	**880**
890	16.009	16.029	16.050	16.070	16.090	16.111	16.131	16.151	16.172	16.192	16.212	**890**
900	16.212	16.233	16.253	16.273	16.294	16.314	16.334	16.354	16.375	16.395	16.415	**900**
910	16.415	16.436	16.456	16.476	16.497	16.517	16.537	16.557	16.578	16.598	16.618	**910**
920	16.618	16.638	16.659	16.679	16.699	16.720	16.740	16.760	16.780	16.801	16.821	**920**
930	16.821	16.841	16.861	16.881	16.902	16.922	16.942	16.962	16.983	17.003	17.023	**930**
940	17.023	17.043	17.063	17.084	17.104	17.124	17.144	17.164	17.185	17.205	17.225	**940**
950	17.225	17.245	17.265	17.285	17.306	17.326	17.346	17.366	17.386	17.406	17.427	**950**
960	17.427	17.447	17.467	17.487	17.507	17.527	17.547	17.568	17.588	17.608	17.628	**960**
970	17.628	17.648	17.668	17.688	17.708	17.728	17.748	17.769	17.789	17.809	17.829	**970**
980	17.829	17.849	17.869	17.889	17.909	17.929	17.949	17.969	17.989	18.009	18.029	**980**
990	18.029	18.049	18.069	18.090	18.110	18.130	18.150	18.170	18.190	18.210	18.230	**990**
1000	18.230	18.250	18.270	18.290	18.310	18.330	18.350	18.370	18.390	18.410	18.430	**1000**

TABLE 3 *(continued)*

EMF in Millivolts												Reference Junctions at 0°C
DEG C	0	1	2	3	4	5	6	7	8	9	10	DEG C
Thermoelectric Voltage in Millivolts												
1000	18.230	18.250	18.270	18.290	18.310	18.330	18.350	18.370	18.390	18.410	18.430	**1000**
1010	18.430	18.450	18.469	18.489	18.509	18.529	18.549	18.569	18.589	18.609	18.629	**1010**
1020	18.629	18.649	18.669	18.689	18.709	18.729	18.749	18.768	18.788	18.808	18.828	**1020**
1030	18.828	18.848	18.868	18.888	18.908	18.928	18.947	18.967	18.987	19.007	19.027	**1030**
1040	19.027	19.047	19.067	19.086	19.106	19.126	19.146	19.166	19.186	19.205	19.225	**1040**
1050	19.225	19.245	19.265	19.285	19.304	19.324	19.344	19.364	19.384	19.403	19.423	**1050**
1060	19.423	19.443	19.463	19.482	19.502	19.522	19.542	19.561	19.581	19.601	19.621	**1060**
1070	19.621	19.640	19.660	19.680	19.700	19.719	19.739	19.759	19.778	19.798	19.818	**1070**
1080	19.818	19.837	19.857	19.877	19.896	19.916	19.936	19.955	19.975	19.995	20.014	**1080**
1090	20.014	20.034	20.054	20.073	20.093	20.113	20.132	20.152	20.171	20.191	20.211	**1090**
1100	20.211	20.230	20.250	20.269	20.289	20.309	20.328	20.348	20.367	20.387	20.406	**1100**
1110	20.406	20.426	20.446	20.465	20.485	20.504	20.524	20.543	20.563	20.582	20.602	**1110**
1120	20.602	20.621	20.641	20.660	20.680	20.699	20.719	20.738	20.758	20.777	20.797	**1120**
1130	20.797	20.816	20.836	20.855	20.875	20.894	20.914	20.933	20.952	20.972	20.991	**1130**
1140	20.991	21.011	21.030	21.050	21.069	21.088	21.108	21.127	21.147	21.166	21.185	**1140**
1150	21.185	21.205	21.224	21.243	21.263	21.282	21.301	21.321	21.340	21.360	21.379	**1150**
1160	21.379	21.398	21.418	21.437	21.456	21.475	21.495	21.514	21.533	21.553	21.572	**1160**
1170	21.572	21.591	21.611	21.630	21.649	21.668	21.688	21.707	21.726	21.745	21.765	**1170**
1180	21.765	21.784	21.803	21.822	21.842	21.861	21.880	21.899	21.918	21.938	21.957	**1180**
1190	21.957	21.976	21.995	22.014	22.034	22.053	22.072	22.091	22.110	22.129	22.149	**1190**
1200	22.149	22.168	22.187	22.206	22.225	22.244	22.263	22.283	22.302	22.321	22.340	**1200**
1210	22.340	22.359	22.378	22.397	22.416	22.435	22.454	22.473	22.493	22.512	22.531	**1210**
1220	22.531	22.550	22.569	22.588	22.607	22.626	22.645	22.664	22.683	22.702	22.721	**1220**
1230	22.721	22.740	22.759	22.778	22.797	22.816	22.835	22.854	22.873	22.892	22.911	**1230**
1240	22.911	22.930	22.949	22.968	22.987	23.006	23.024	23.043	23.062	23.081	23.100	**1240**
1250	23.100	23.119	23.138	23.157	23.176	23.195	23.214	23.232	23.251	23.270	23.289	**1250**
1260	23.289	23.308	23.327	23.346	23.364	23.383	23.402	23.421	23.440	23.459	23.477	**1260**
1270	23.477	23.496	23.515	23.534	23.553	23.571	23.590	23.609	23.628	23.647	23.665	**1270**
1280	23.665	23.684	23.703	23.722	23.740	23.759	23.778	23.797	23.815	23.834	23.853	**1280**
1290	23.853	23.871	23.890	23.909	23.928	23.946	23.965	23.984	24.002	24.021	24.040	**1290**
1300	24.040	24.058	24.077	24.096	24.114	24.133	24.152	24.170	24.189	24.208	24.226	**1300**
1310	24.226	24.245	24.263	24.282	24.301	24.319	24.338	24.356	24.375	24.394	24.412	**1310**
1320	24.412	24.431	24.449	24.468	24.486	24.505	24.523	24.542	24.561	24.579	24.598	**1320**
1330	24.598	24.616	24.635	24.653	24.672	24.690	24.709	24.727	24.746	24.764	24.783	**1330**
1340	24.783	24.801	24.820	24.838	24.856	24.875	24.893	24.912	24.930	24.949	24.967	**1340**
1350	24.967	24.985	25.004	25.022	25.041	25.059	25.078	25.096	25.114	25.133	25.151	**1350**
1360	25.151	25.169	25.188	25.206	25.224	25.243	25.261	25.280	25.298	25.316	25.335	**1360**
1370	25.335	25.353	25.371	25.389	25.408	25.426	25.444	25.463	25.481	25.499	25.517	**1370**
1380	25.517	25.536	25.554	25.572	25.591	25.609	25.627	25.645	25.664	25.682	25.700	**1380**
1390	25.700	25.718	25.736	25.755	25.773	25.791	25.809	25.827	25.846	25.864	25.882	**1390**
1400	25.882	25.900	25.918	25.936	25.955	25.973	25.991	26.009	26.027	26.045	26.063	**1400**
1410	26.063	26.082	26.100	26.118	26.136	26.154	26.172	26.190	26.208	26.226	26.244	**1410**
1420	26.244	26.262	26.281	26.299	26.317	26.335	26.353	26.371	26.389	26.407	26.425	**1420**
1430	26.425	26.443	26.461	26.479	26.497	26.515	26.533	26.551	26.569	26.587	26.605	**1430**
1440	26.605	26.623	26.641	26.659	26.677	26.695	26.712	26.730	26.748	26.766	26.784	**1440**
1450	26.784	26.802	26.820	26.838	26.856	26.874	26.892	26.909	26.927	26.945	26.963	**1450**
1460	26.963	26.981	26.999	27.017	27.035	27.052	27.070	27.088	27.106	27.124	27.141	**1460**
1470	27.141	27.159	27.177	27.195	27.213	27.230	27.248	27.266	27.284	27.302	27.319	**1470**
1480	27.319	27.337	27.355	27.373	27.390	27.408	27.426	27.444	27.461	27.479	27.497	**1480**
1490	27.497	27.514	27.532	27.550	27.567	27.585	27.603	27.621	27.638	27.656	27.673	**1490**
1500	27.673	27.691	27.709	27.726	27.744	27.762	27.779	27.797	27.815	27.832	27.850	**1500**

TABLE 3 *(continued)*

EMF in Millivolts												Reference Junctions at 0°C
DEG C	0	1	2	3	4	5	6	7	8	9	10	DEG C
Thermoelectric Voltage in Millivolts												
1500	27.673	27.691	27.709	27.726	27.744	27.762	27.779	27.797	27.815	27.832	27.850	**1500**
1510	27.850	27.867	27.885	27.903	27.920	27.938	27.955	27.973	27.990	28.008	28.026	**1510**
1520	28.026	28.043	28.061	28.078	28.096	28.113	28.131	28.148	28.166	28.183	28.201	**1520**
1530	28.201	28.218	28.236	28.253	28.271	28.288	28.306	28.323	28.341	28.358	28.375	**1530**
1540	28.375	28.393	28.410	28.428	28.445	28.463	28.480	28.497	28.515	28.532	28.550	**1540**
1550	28.550	28.567	28.584	28.602	28.619	28.636	28.654	28.671	28.688	28.706	28.723	**1550**
1560	28.723	28.740	28.758	28.775	28.792	28.810	28.827	28.844	28.862	28.879	28.896	**1560**
1570	28.896	28.913	28.931	28.948	28.965	28.982	29.000	29.017	29.034	29.051	29.069	**1570**
1580	29.069	29.086	29.103	29.120	29.137	29.155	29.172	29.189	29.206	29.223	29.241	**1580**
1590	29.241	29.258	29.275	29.292	29.309	29.326	29.343	29.361	29.378	29.395	29.412	**1590**
1600	29.412	29.429	29.446	29.463	29.480	29.497	29.514	29.532	29.549	29.566	29.583	**1600**
1610	29.583	29.600	29.617	29.634	29.651	29.668	29.685	29.702	29.719	29.736	29.753	**1610**
1620	29.753	29.770	29.787	29.804	29.821	29.838	29.855	29.872	29.889	29.906	29.923	**1620**
1630	29.923	29.939	29.956	29.973	29.990	30.007	30.024	30.041	30.058	30.075	30.092	**1630**
1640	30.092	30.108	30.125	30.142	30.159	30.176	30.193	30.210	30.226	30.243	30.260	**1640**
1650	30.260	30.277	30.294	30.311	30.327	30.344	30.361	30.378	30.394	30.411	30.428	**1650**
1660	30.428	30.445	30.461	30.478	30.495	30.512	30.528	30.545	30.562	30.579	30.595	**1660**
1670	30.595	30.612	30.629	30.645	30.662	30.679	30.695	30.712	30.729	30.745	30.762	**1670**
1680	30.762	30.779	30.795	30.812	30.828	30.845	30.862	30.878	30.895	30.911	30.928	**1680**
1690	30.928	30.944	30.961	30.978	30.994	31.011	31.027	31.044	31.060	31.077	31.093	**1690**
1700	31.093	31.110	31.126	31.143	31.159	31.176	31.192	31.209	31.225	31.242	31.258	**1700**
1710	31.258	31.275	31.291	31.307	31.324	31.340	31.357	31.373	31.389	31.406	31.422	**1710**
1720	31.422	31.439	31.455	31.471	31.488	31.504	31.520	31.537	31.553	31.569	31.586	**1720**
1730	31.586	31.602	31.618	31.635	31.651	31.667	31.684	31.700	31.716	31.732	31.749	**1730**
1740	31.749	31.765	31.781	31.797	31.814	31.830	31.846	31.862	31.878	31.895	31.911	**1740**
1750	31.911	31.927	31.943	31.959	31.976	31.992	32.008	32.024	32.040	32.056	32.072	**1750**
1760	32.072	32.088	32.105	32.121	32.137	32.153	32.169	32.185	32.201	32.217	32.233	**1760**
1770	32.233	32.249	32.265	32.281	32.297	32.313	32.329	32.345	32.361	32.377	32.393	**1770**
1780	32.393	32.409	32.425	32.441	32.457	32.473	32.489	32.505	32.521	32.537	32.553	**1780**
1790	32.553	32.569	32.585	32.600	32.616	32.632	32.648	32.664	32.680	32.696	32.712	**1790**
1800	32.712	32.727	32.743	32.759	32.775	32.791	32.806	32.822	32.838	32.854	32.870	**1800**
1810	32.870	32.885	32.901	32.917	32.933	32.948	32.964	32.980	32.995	33.011	33.027	**1810**
1820	33.027	33.042	33.058	33.074	33.090	33.105	33.121	33.136	33.152	33.168	33.183	**1820**
1830	33.183	33.199	33.215	33.230	33.246	33.261	33.277	33.292	33.308	33.324	33.339	**1830**
1840	33.339	33.355	33.370	33.386	33.401	33.417	33.432	33.448	33.463	33.479	33.494	**1840**
1850	33.494	33.510	33.525	33.540	33.556	33.571	33.587	33.602	33.618	33.633	33.648	**1850**
1860	33.648	33.664	33.679	33.694	33.710	33.725	33.741	33.756	33.771	33.786	33.802	**1860**
1870	33.802	33.817	33.832	33.848	33.863	33.878	33.893	33.909	33.924	33.939	33.954	**1870**
1880	33.954	33.970	33.985	34.000	34.015	34.030	34.046	34.061	34.076	34.091	34.106	**1880**
1890	34.106	34.121	34.136	34.152	34.167	34.182	34.197	34.212	34.227	34.242	34.257	**1890**
1900	34.257	34.272	34.287	34.302	34.317	34.332	34.347	34.362	34.377	34.392	34.407	**1900**
1910	34.407	34.422	34.437	34.452	34.467	34.482	34.497	34.512	34.527	34.542	34.556	**1910**
1920	34.556	34.571	34.586	34.601	34.616	34.631	34.646	34.660	34.675	34.690	34.705	**1920**
1930	34.705	34.720	34.734	34.749	34.764	34.779	34.793	34.808	34.823	34.838	34.852	**1930**
1940	34.852	34.867	34.882	34.896	34.911	34.926	34.940	34.955	34.970	34.984	34.999	**1940**
1950	34.999	35.013	35.028	35.043	35.057	35.072	35.086	35.101	35.115	35.130	35.144	**1950**
1960	35.144	35.159	35.173	35.188	35.202	35.217	35.231	35.246	35.260	35.275	35.289	**1960**
1970	35.289	35.303	35.318	35.332	35.347	35.361	35.375	35.390	35.404	35.418	35.433	**1970**
1980	35.433	35.447	35.461	35.476	35.490	35.504	35.518	35.533	35.547	35.561	35.575	**1980**
1990	35.575	35.590	35.604	35.618	35.632	35.646	35.660	35.675	35.689	35.703	35.717	**1990**
2000	35.717	35.731	35.745	35.759	35.773	35.787	35.801	35.816	35.830	35.844	35.858	**2000**

TABLE 3 *(continued)*

EMF in Millivolts												Reference Junctions at 0°C
DEG C	0	1	2	3	4	5	6	7	8	9	10	DEG C
Thermoelectric Voltage in Millivolts												
2000	35.717	35.731	35.745	35.759	35.773	35.787	35.801	35.816	35.830	35.844	35.858	**2000**
2010	35.858	35.872	35.886	35.900	35.914	35.927	35.941	35.955	35.969	35.983	35.997	**2010**
2020	35.997	36.011	36.025	36.039	36.053	36.067	36.080	36.094	36.108	36.122	36.136	**2020**
2030	36.136	36.149	36.163	36.177	36.191	36.204	36.218	36.232	36.246	36.259	36.273	**2030**
2040	36.273	36.287	36.300	36.314	36.328	36.341	36.355	36.368	36.382	36.396	36.409	**2040**
2050	36.409	36.423	36.436	36.450	36.463	36.477	36.490	36.504	36.517	36.531	36.544	**2050**
2060	36.544	36.558	36.571	36.585	36.598	36.611	36.625	36.638	36.652	36.665	36.678	**2060**
2070	36.678	36.692	36.705	36.718	36.731	36.745	36.758	36.771	36.784	36.798	36.811	**2070**
2080	36.811	36.824	36.837	36.850	36.864	36.877	36.890	36.903	36.916	36.929	36.942	**2080**
2090	36.942	36.955	36.969	36.982	36.995	37.008	37.021	37.034	37.047	37.060	37.073	**2090**
2100	37.073	37.086	37.099	37.111	37.124	37.137	37.150	37.163	37.176	37.189	37.202	**2100**
2110	37.202	37.214	37.227	37.240	37.253	37.266	37.278	37.291	37.304	37.317	37.329	**2110**
2120	37.329	37.342	37.355	37.367	37.380	37.393	37.405	37.418	37.430	37.443	37.456	**2120**
2130	37.456	37.468	37.481	37.493	37.506	37.518	37.531	37.543	37.556	37.568	37.580	**2130**
2140	37.580	37.593	37.605	37.618	37.630	37.642	37.655	37.667	37.679	37.692	37.704	**2140**
2150	37.704	37.716	37.729	37.741	37.753	37.765	37.777	37.790	37.802	37.814	37.826	**2150**
2160	37.826	37.838	37.850	37.862	37.875	37.887	37.899	37.911	37.923	37.935	37.947	**2160**
2170	37.947	37.959	37.971	37.983	37.995	38.006	38.018	38.030	38.042	38.054	38.066	**2170**
2180	38.066	38.078	38.089	38.101	38.113	38.125	38.137	38.148	38.160	38.172	38.183	**2180**
2190	38.183	38.195	38.207	38.218	38.230	38.242	38.253	38.265	38.276	38.288	38.299	**2190**
2200	38.299	38.311	38.323	38.334	38.345	38.357	38.368	38.380	38.391	38.403	38.414	**2200**
2210	38.414	38.425	38.437	38.448	38.459	38.471	38.482	38.493	38.504	38.515	38.527	**2210**
2220	38.527	38.538	38.549	38.560	38.571	38.582	38.594	38.605	38.616	38.627	38.638	**2220**
2230	38.638	38.649	38.660	38.671	38.682	38.693	38.704	38.715	38.725	38.736	38.747	**2230**
2240	38.747	38.758	38.769	38.780	38.790	38.801	38.812	38.823	38.833	38.844	38.855	**2240**
2250	38.855	38.865	38.876	38.887	38.897	38.908	38.918	38.929	38.940	38.950	38.961	**2250**
2260	38.961	38.971	38.982	38.992	39.002	39.013	39.023	39.034	39.044	39.054	39.065	**2260**
2270	39.065	39.075	39.085	39.095	39.106	39.116	39.126	39.136	39.146	39.157	39.167	**2270**
2280	39.167	39.177	39.187	39.197	39.207	39.217	39.227	39.237	39.247	39.257	39.267	**2280**
2290	39.267	39.277	39.287	39.296	39.306	39.316	39.326	39.336	39.345	39.355	39.365	**2290**
2300	39.365	39.375	39.384	39.394	39.404	39.413	39.423	39.432	39.442	39.452	39.461	**2300**
2310	39.461	39.471	39.480	39.490	39.499	39.508						**2310**

TABLE 4 Tungsten-3 % Rhenium versus Tungsten-25 % Rhenium Thermocouples—Thermoelectric Voltage as a Function of Temperature (°F)

EMF in Millivolts												Reference Junctions at 32°F
DEG F	0	1	2	3	4	5	6	7	8	9	10	DEG F
Thermoelectric Voltage in Millivolts												
30			0.000	0.005	0.011	0.016	0.021	0.027	0.032	0.038	0.043	**30**
40	0.043	0.048	0.054	0.059	0.065	0.070	0.076	0.081	0.087	0.092	0.098	**40**
50	0.098	0.103	0.109	0.115	0.120	0.126	0.131	0.137	0.143	0.148	0.154	**50**
60	0.154	0.160	0.165	0.171	0.177	0.183	0.188	0.194	0.200	0.206	0.211	**60**
70	0.211	0.217	0.223	0.229	0.235	0.240	0.246	0.252	0.258	0.264	0.270	**70**
80	0.270	0.276	0.282	0.288	0.294	0.299	0.305	0.311	0.317	0.323	0.329	**80**
90	0.329	0.335	0.342	0.348	0.354	0.360	0.366	0.372	0.378	0.384	0.390	**90**
100	0.390	0.396	0.403	0.409	0.415	0.421	0.427	0.433	0.440	0.446	0.452	**100**
110	0.452	0.458	0.465	0.471	0.477	0.484	0.490	0.496	0.503	0.509	0.515	**110**
120	0.515	0.522	0.528	0.534	0.541	0.547	0.554	0.560	0.566	0.573	0.579	**120**
130	0.579	0.586	0.592	0.599	0.605	0.612	0.618	0.625	0.632	0.638	0.645	**130**
140	0.645	0.651	0.658	0.664	0.671	0.678	0.684	0.691	0.698	0.704	0.711	**140**
150	0.711	0.718	0.724	0.731	0.738	0.745	0.751	0.758	0.765	0.772	0.778	**150**
160	0.778	0.785	0.792	0.799	0.806	0.812	0.819	0.826	0.833	0.840	0.847	**160**
170	0.847	0.854	0.861	0.868	0.875	0.881	0.888	0.895	0.902	0.909	0.916	**170**
180	0.916	0.923	0.930	0.937	0.944	0.951	0.958	0.966	0.973	0.980	0.987	**180**
190	0.987	0.994	1.001	1.008	1.015	1.022	1.030	1.037	1.044	1.051	1.058	**190**
200	1.058	1.065	1.073	1.080	1.087	1.094	1.102	1.109	1.116	1.123	1.131	**200**
210	1.131	1.138	1.145	1.153	1.160	1.167	1.175	1.182	1.189	1.197	1.204	**210**
220	1.204	1.212	1.219	1.226	1.234	1.241	1.249	1.256	1.264	1.271	1.278	**220**
230	1.278	1.286	1.293	1.301	1.308	1.316	1.324	1.331	1.339	1.346	1.354	**230**
240	1.354	1.361	1.369	1.377	1.384	1.392	1.399	1.407	1.415	1.422	1.430	**240**
250	1.430	1.438	1.445	1.453	1.461	1.468	1.476	1.484	1.492	1.499	1.507	**250**
260	1.507	1.515	1.523	1.530	1.538	1.546	1.554	1.562	1.569	1.577	1.585	**260**
270	1.585	1.593	1.601	1.609	1.617	1.624	1.632	1.640	1.648	1.656	1.664	**270**
280	1.664	1.672	1.680	1.688	1.696	1.704	1.712	1.720	1.728	1.736	1.744	**280**
290	1.744	1.752	1.760	1.768	1.776	1.784	1.792	1.800	1.808	1.816	1.824	**290**
300	1.824	1.832	1.841	1.849	1.857	1.865	1.873	1.881	1.889	1.898	1.906	**300**
310	1.906	1.914	1.922	1.930	1.939	1.947	1.955	1.963	1.971	1.980	1.988	**310**
320	1.988	1.996	2.004	2.013	2.021	2.029	2.038	2.046	2.054	2.063	2.071	**320**
330	2.071	2.079	2.088	2.096	2.104	2.113	2.121	2.130	2.138	2.146	2.155	**330**
340	2.155	2.163	2.172	2.180	2.188	2.197	2.205	2.214	2.222	2.231	2.239	**340**
350	2.239	2.248	2.256	2.265	2.273	2.282	2.290	2.299	2.307	2.316	2.325	**350**
360	2.325	2.333	2.342	2.350	2.359	2.368	2.376	2.385	2.393	2.402	2.411	**360**
370	2.411	2.419	2.428	2.437	2.445	2.454	2.463	2.471	2.480	2.489	2.497	**370**
380	2.497	2.506	2.515	2.524	2.532	2.541	2.550	2.559	2.567	2.576	2.585	**380**
390	2.585	2.594	2.603	2.611	2.620	2.629	2.638	2.647	2.655	2.664	2.673	**390**
400	2.673	2.682	2.691	2.700	2.709	2.718	2.726	2.735	2.744	2.753	2.762	**400**
410	2.762	2.771	2.780	2.789	2.798	2.807	2.816	2.825	2.834	2.843	2.852	**410**
420	2.852	2.861	2.870	2.879	2.888	2.897	2.906	2.915	2.924	2.933	2.942	**420**
430	2.942	2.951	2.960	2.969	2.978	2.987	2.996	3.005	3.014	3.024	3.033	**430**
440	3.033	3.042	3.051	3.060	3.069	3.078	3.088	3.097	3.106	3.115	3.124	**440**
450	3.124	3.133	3.143	3.152	3.161	3.170	3.179	3.189	3.198	3.207	3.216	**450**
460	3.216	3.226	3.235	3.244	3.253	3.263	3.272	3.281	3.290	3.300	3.309	**460**
470	3.309	3.318	3.328	3.337	3.346	3.356	3.365	3.374	3.384	3.393	3.402	**470**
480	3.402	3.412	3.421	3.431	3.440	3.449	3.459	3.468	3.477	3.487	3.496	**480**
490	3.496	3.506	3.515	3.525	3.534	3.543	3.553	3.562	3.572	3.581	3.591	**490**
500	3.591	3.600	3.610	3.619	3.629	3.638	3.648	3.657	3.667	3.676	3.686	**500**

TABLE 4 *(continued)*

EMF in Millivolts												Reference Junctions at 32°F
DEG F	0	1	2	3	4	5	6	7	8	9	10	DEG F
Thermoelectric Voltage in Millivolts												
500	3.591	3.600	3.610	3.619	3.629	3.638	3.648	3.657	3.667	3.676	3.686	**500**
510	3.686	3.695	3.705	3.714	3.724	3.734	3.743	3.753	3.762	3.772	3.781	**510**
520	3.781	3.791	3.801	3.810	3.820	3.829	3.839	3.849	3.858	3.868	3.878	**520**
530	3.878	3.887	3.897	3.907	3.916	3.926	3.936	3.945	3.955	3.965	3.974	**530**
540	3.974	3.984	3.994	4.003	4.013	4.023	4.033	4.042	4.052	4.062	4.071	**540**
550	4.071	4.081	4.091	4.101	4.111	4.120	4.130	4.140	4.150	4.159	4.169	**550**
560	4.169	4.179	4.189	4.199	4.208	4.218	4.228	4.238	4.248	4.258	4.267	**560**
570	4.267	4.277	4.287	4.297	4.307	4.317	4.327	4.336	4.346	4.356	4.366	**570**
580	4.366	4.376	4.386	4.396	4.406	4.416	4.426	4.435	4.445	4.455	4.465	**580**
590	4.465	4.475	4.485	4.495	4.505	4.515	4.525	4.535	4.545	4.555	4.565	**590**
600	4.565	4.575	4.585	4.595	4.605	4.615	4.625	4.635	4.645	4.655	4.665	**600**
610	4.665	4.675	4.685	4.695	4.705	4.715	4.725	4.735	4.745	4.755	4.766	**610**
620	4.766	4.776	4.786	4.796	4.806	4.816	4.826	4.836	4.846	4.856	4.866	**620**
630	4.866	4.877	4.887	4.897	4.907	4.917	4.927	4.937	4.948	4.958	4.968	**630**
640	4.968	4.978	4.988	4.998	5.009	5.019	5.029	5.039	5.049	5.060	5.070	**640**
650	5.070	5.080	5.090	5.100	5.111	5.121	5.131	5.141	5.151	5.162	5.172	**650**
660	5.172	5.182	5.192	5.203	5.213	5.223	5.233	5.244	5.254	5.264	5.275	**660**
670	5.275	5.285	5.295	5.305	5.316	5.326	5.336	5.347	5.357	5.367	5.378	**670**
680	5.378	5.388	5.398	5.409	5.419	5.429	5.440	5.450	5.460	5.471	5.481	**680**
690	5.481	5.491	5.502	5.512	5.522	5.533	5.543	5.554	5.564	5.574	5.585	**690**
700	5.585	5.595	5.606	5.616	5.626	5.637	5.647	5.658	5.668	5.678	5.689	**700**
710	5.689	5.699	5.710	5.720	5.731	5.741	5.752	5.762	5.772	5.783	5.793	**710**
720	5.793	5.804	5.814	5.825	5.835	5.846	5.856	5.867	5.877	5.888	5.898	**720**
730	5.898	5.909	5.919	5.930	5.940	5.951	5.961	5.972	5.982	5.993	6.003	**730**
740	6.003	6.014	6.025	6.035	6.046	6.056	6.067	6.077	6.088	6.098	6.109	**740**
750	6.109	6.120	6.130	6.141	6.151	6.162	6.172	6.183	6.194	6.204	6.215	**750**
760	6.215	6.225	6.236	6.247	6.257	6.268	6.278	6.289	6.300	6.310	6.321	**760**
770	6.321	6.332	6.342	6.353	6.364	6.374	6.385	6.395	6.406	6.417	6.427	**770**
780	6.427	6.438	6.449	6.459	6.470	6.481	6.491	6.502	6.513	6.524	6.534	**780**
790	6.534	6.545	6.556	6.566	6.577	6.588	6.598	6.609	6.620	6.631	6.641	**790**
800	6.641	6.652	6.663	6.673	6.684	6.695	6.706	6.716	6.727	6.738	6.749	**800**
810	6.749	6.759	6.770	6.781	6.792	6.802	6.813	6.824	6.835	6.845	6.856	**810**
820	6.856	6.867	6.878	6.889	6.899	6.910	6.921	6.932	6.942	6.953	6.964	**820**
830	6.964	6.975	6.986	6.997	7.007	7.018	7.029	7.040	7.051	7.061	7.072	**830**
840	7.072	7.083	7.094	7.105	7.116	7.126	7.137	7.148	7.159	7.170	7.181	**840**
850	7.181	7.191	7.202	7.213	7.224	7.235	7.246	7.257	7.268	7.278	7.289	**850**
860	7.289	7.300	7.311	7.322	7.333	7.344	7.355	7.365	7.376	7.387	7.398	**860**
870	7.398	7.409	7.420	7.431	7.442	7.453	7.464	7.475	7.485	7.496	7.507	**870**
880	7.507	7.518	7.529	7.540	7.551	7.562	7.573	7.584	7.595	7.606	7.617	**880**
890	7.617	7.628	7.639	7.649	7.660	7.671	7.682	7.693	7.704	7.715	7.726	**890**
900	7.726	7.737	7.748	7.759	7.770	7.781	7.792	7.803	7.814	7.825	7.836	**900**
910	7.836	7.847	7.858	7.869	7.880	7.891	7.902	7.913	7.924	7.935	7.946	**910**
920	7.946	7.957	7.968	7.979	7.990	8.001	8.012	8.023	8.034	8.045	8.056	**920**
930	8.056	8.067	8.078	8.089	8.100	8.111	8.122	8.133	8.144	8.155	8.167	**930**
940	8.167	8.178	8.189	8.200	8.211	8.222	8.233	8.244	8.255	8.266	8.277	**940**
950	8.277	8.288	8.299	8.310	8.321	8.332	8.343	8.355	8.366	8.377	8.388	**950**
960	8.388	8.399	8.410	8.421	8.432	8.443	8.454	8.465	8.476	8.488	8.499	**960**
970	8.499	8.510	8.521	8.532	8.543	8.554	8.565	8.576	8.588	8.599	8.610	**970**
980	8.610	8.621	8.632	8.643	8.654	8.665	8.676	8.688	8.699	8.710	8.721	**980**
990	8.721	8.732	8.743	8.754	8.765	8.777	8.788	8.799	8.810	8.821	8.832	**990**
1000	8.832	8.843	8.855	8.866	8.877	8.888	8.899	8.910	8.922	8.933	8.944	**1000**

TABLE 4 *(continued)*

EMF in Millivolts												Reference Junctions at 32°F
DEG F	0	1	2	3	4	5	6	7	8	9	10	DEG F
Thermoelectric Voltage in Millivolts												
1000	8.832	8.843	8.855	8.866	8.877	8.888	8.899	8.910	8.922	8.933	8.944	**1000**
1010	8.944	8.955	8.966	8.977	8.988	9.000	9.011	9.022	9.033	9.044	9.055	**1010**
1020	9.055	9.067	9.078	9.089	9.100	9.111	9.123	9.134	9.145	9.156	9.167	**1020**
1030	9.167	9.178	9.190	9.201	9.212	9.223	9.234	9.246	9.257	9.268	9.279	**1030**
1040	9.279	9.290	9.302	9.313	9.324	9.335	9.346	9.358	9.369	9.380	9.391	**1040**
1050	9.391	9.402	9.414	9.425	9.436	9.447	9.458	9.470	9.481	9.492	9.503	**1050**
1060	9.503	9.515	9.526	9.537	9.548	9.559	9.571	9.582	9.593	9.604	9.616	**1060**
1070	9.616	9.627	9.638	9.649	9.661	9.672	9.683	9.694	9.705	9.717	9.728	**1070**
1080	9.728	9.739	9.750	9.762	9.773	9.784	9.795	9.807	9.818	9.829	9.840	**1080**
1090	9.840	9.852	9.863	9.874	9.885	9.897	9.908	9.919	9.930	9.942	9.953	**1090**
1100	9.953	9.964	9.975	9.987	9.998	10.009	10.021	10.032	10.043	10.054	10.066	**1100**
1110	10.066	10.077	10.088	10.099	10.111	10.122	10.133	10.144	10.156	10.167	10.178	**1110**
1120	10.178	10.190	10.201	10.212	10.223	10.235	10.246	10.257	10.268	10.280	10.291	**1120**
1130	10.291	10.302	10.314	10.325	10.336	10.347	10.359	10.370	10.381	10.393	10.404	**1130**
1140	10.404	10.415	10.426	10.438	10.449	10.460	10.472	10.483	10.494	10.505	10.517	**1140**
1150	10.517	10.528	10.539	10.551	10.562	10.573	10.585	10.596	10.607	10.618	10.630	**1150**
1160	10.630	10.641	10.652	10.664	10.675	10.686	10.698	10.709	10.720	10.731	10.743	**1160**
1170	10.743	10.754	10.765	10.777	10.788	10.799	10.811	10.822	10.833	10.845	10.856	**1170**
1180	10.856	10.867	10.878	10.890	10.901	10.912	10.924	10.935	10.946	10.958	10.969	**1180**
1190	10.969	10.980	10.992	11.003	11.014	11.026	11.037	11.048	11.059	11.071	11.082	**1190**
1200	11.082	11.093	11.105	11.116	11.127	11.139	11.150	11.161	11.173	11.184	11.195	**1200**
1210	11.195	11.207	11.218	11.229	11.241	11.252	11.263	11.275	11.286	11.297	11.309	**1210**
1220	11.309	11.320	11.331	11.343	11.354	11.365	11.377	11.388	11.399	11.410	11.422	**1220**
1230	11.422	11.433	11.444	11.456	11.467	11.478	11.490	11.501	11.512	11.524	11.535	**1230**
1240	11.535	11.546	11.558	11.569	11.580	11.592	11.603	11.614	11.626	11.637	11.648	**1240**
1250	11.648	11.660	11.671	11.682	11.694	11.705	11.716	11.728	11.739	11.750	11.762	**1250**
1260	11.762	11.773	11.784	11.796	11.807	11.818	11.830	11.841	11.852	11.864	11.875	**1260**
1270	11.875	11.886	11.898	11.909	11.921	11.932	11.943	11.955	11.966	11.977	11.989	**1270**
1280	11.989	12.000	12.011	12.023	12.034	12.045	12.057	12.068	12.079	12.091	12.102	**1280**
1290	12.102	12.113	12.125	12.136	12.147	12.159	12.170	12.181	12.193	12.204	12.215	**1290**
1300	12.215	12.227	12.238	12.249	12.261	12.272	12.283	12.295	12.306	12.317	12.329	**1300**
1310	12.329	12.340	12.351	12.363	12.374	12.386	12.397	12.408	12.420	12.431	12.442	**1310**
1320	12.442	12.454	12.465	12.476	12.488	12.499	12.510	12.522	12.533	12.544	12.556	**1320**
1330	12.556	12.567	12.578	12.590	12.601	12.612	12.624	12.635	12.647	12.658	12.669	**1330**
1340	12.669	12.681	12.692	12.703	12.715	12.726	12.737	12.749	12.760	12.771	12.783	**1340**
1350	12.783	12.794	12.805	12.817	12.828	12.840	12.851	12.862	12.874	12.885	12.896	**1350**
1360	12.896	12.908	12.919	12.930	12.942	12.953	12.964	12.976	12.987	12.998	13.010	**1360**
1370	13.010	13.021	13.033	13.044	13.055	13.067	13.078	13.089	13.101	13.112	13.123	**1370**
1380	13.123	13.135	13.146	13.158	13.169	13.180	13.192	13.203	13.214	13.226	13.237	**1380**
1390	13.237	13.248	13.260	13.271	13.282	13.294	13.305	13.317	13.328	13.339	13.351	**1390**
1400	13.351	13.362	13.373	13.385	13.396	13.408	13.419	13.430	13.442	13.453	13.464	**1400**
1410	13.464	13.476	13.487	13.498	13.510	13.521	13.533	13.544	13.555	13.567	13.578	**1410**
1420	13.578	13.589	13.601	13.612	13.624	13.635	13.646	13.658	13.669	13.681	13.692	**1420**
1430	13.692	13.703	13.715	13.726	13.737	13.749	13.760	13.772	13.783	13.794	13.806	**1430**
1440	13.806	13.817	13.829	13.840	13.851	13.863	13.874	13.885	13.897	13.908	13.920	**1440**
1450	13.920	13.931	13.942	13.954	13.965	13.977	13.988	13.999	14.011	14.022	14.033	**1450**
1460	14.033	14.045	14.056	14.068	14.079	14.090	14.102	14.113	14.125	14.136	14.147	**1460**
1470	14.147	14.159	14.170	14.182	14.193	14.204	14.216	14.227	14.238	14.250	14.261	**1470**
1480	14.261	14.273	14.284	14.295	14.307	14.318	14.329	14.341	14.352	14.364	14.375	**1480**
1490	14.375	14.386	14.398	14.409	14.421	14.432	14.443	14.455	14.466	14.477	14.489	**1490**
1500	14.489	14.500	14.512	14.523	14.534	14.546	14.557	14.568	14.580	14.591	14.603	**1500**

TABLE 4 *(continued)*

EMF in Millivolts												Reference Junctions at 32°F
DEG F	0	1	2	3	4	5	6	7	8	9	10	DEG F
Thermoelectric Voltage in Millivolts												
1500	14.489	14.500	14.512	14.523	14.534	14.546	14.557	14.568	14.580	14.591	14.603	**1500**
1510	14.603	14.614	14.625	14.637	14.648	14.659	14.671	14.682	14.693	14.705	14.716	**1510**
1520	14.716	14.728	14.739	14.750	14.762	14.773	14.784	14.796	14.807	14.819	14.830	**1520**
1530	14.830	14.841	14.853	14.864	14.875	14.887	14.898	14.909	14.921	14.932	14.944	**1530**
1540	14.944	14.955	14.966	14.978	14.989	15.000	15.012	15.023	15.034	15.046	15.057	**1540**
1550	15.057	15.068	15.080	15.091	15.103	15.114	15.125	15.137	15.148	15.159	15.171	**1550**
1560	15.171	15.182	15.193	15.205	15.216	15.227	15.239	15.250	15.261	15.273	15.284	**1560**
1570	15.284	15.295	15.307	15.318	15.330	15.341	15.352	15.364	15.375	15.386	15.398	**1570**
1580	15.398	15.409	15.420	15.432	15.443	15.454	15.466	15.477	15.488	15.500	15.511	**1580**
1590	15.511	15.522	15.534	15.545	15.556	15.568	15.579	15.590	15.602	15.613	15.624	**1590**
1600	15.624	15.636	15.647	15.658	15.670	15.681	15.692	15.703	15.715	15.726	15.737	**1600**
1610	15.737	15.749	15.760	15.771	15.783	15.794	15.805	15.817	15.828	15.839	15.851	**1610**
1620	15.851	15.862	15.873	15.885	15.896	15.907	15.919	15.930	15.941	15.952	15.964	**1620**
1630	15.964	15.975	15.986	15.998	16.009	16.020	16.032	16.043	16.054	16.065	16.077	**1630**
1640	16.077	16.088	16.099	16.111	16.122	16.133	16.145	16.156	16.167	16.178	16.190	**1640**
1650	16.190	16.201	16.212	16.224	16.235	16.246	16.257	16.269	16.280	16.291	16.303	**1650**
1660	16.303	16.314	16.325	16.336	16.348	16.359	16.370	16.382	16.393	16.404	16.415	**1660**
1670	16.415	16.427	16.438	16.449	16.460	16.472	16.483	16.494	16.506	16.517	16.528	**1670**
1680	16.528	16.539	16.551	16.562	16.573	16.584	16.596	16.607	16.618	16.629	16.641	**1680**
1690	16.641	16.652	16.663	16.675	16.686	16.697	16.708	16.720	16.731	16.742	16.753	**1690**
1700	16.753	16.765	16.776	16.787	16.798	16.810	16.821	16.832	16.843	16.854	16.866	**1700**
1710	16.866	16.877	16.888	16.899	16.911	16.922	16.933	16.944	16.956	16.967	16.978	**1710**
1720	16.978	16.989	17.001	17.012	17.023	17.034	17.045	17.057	17.068	17.079	17.090	**1720**
1730	17.090	17.102	17.113	17.124	17.135	17.146	17.158	17.169	17.180	17.191	17.203	**1730**
1740	17.203	17.214	17.225	17.236	17.247	17.259	17.270	17.281	17.292	17.303	17.315	**1740**
1750	17.315	17.326	17.337	17.348	17.359	17.371	17.382	17.393	17.404	17.415	17.427	**1750**
1760	17.427	17.438	17.449	17.460	17.471	17.483	17.494	17.505	17.516	17.527	17.538	**1760**
1770	17.538	17.550	17.561	17.572	17.583	17.594	17.606	17.617	17.628	17.639	17.650	**1770**
1780	17.650	17.661	17.673	17.684	17.695	17.706	17.717	17.728	17.740	17.751	17.762	**1780**
1790	17.762	17.773	17.784	17.795	17.807	17.818	17.829	17.840	17.851	17.862	17.873	**1790**
1800	17.873	17.885	17.896	17.907	17.918	17.929	17.940	17.951	17.963	17.974	17.985	**1800**
1810	17.985	17.996	18.007	18.018	18.029	18.041	18.052	18.063	18.074	18.085	18.096	**1810**
1820	18.096	18.107	18.118	18.130	18.141	18.152	18.163	18.174	18.185	18.196	18.207	**1820**
1830	18.207	18.219	18.230	18.241	18.252	18.263	18.274	18.285	18.296	18.307	18.319	**1830**
1840	18.319	18.330	18.341	18.352	18.363	18.374	18.385	18.396	18.407	18.418	18.430	**1840**
1850	18.430	18.441	18.452	18.463	18.474	18.485	18.496	18.507	18.518	18.529	18.540	**1850**
1860	18.540	18.552	18.563	18.574	18.585	18.596	18.607	18.618	18.629	18.640	18.651	**1860**
1870	18.651	18.662	18.673	18.684	18.695	18.707	18.718	18.729	18.740	18.751	18.762	**1870**
1880	18.762	18.773	18.784	18.795	18.806	18.817	18.828	18.839	18.850	18.861	18.872	**1880**
1890	18.872	18.883	18.894	18.905	18.917	18.928	18.939	18.950	18.961	18.972	18.983	**1890**
1900	18.983	18.994	19.005	19.016	19.027	19.038	19.049	19.060	19.071	19.082	19.093	**1900**
1910	19.093	19.104	19.115	19.126	19.137	19.148	19.159	19.170	19.181	19.192	19.203	**1910**
1920	19.203	19.214	19.225	19.236	19.247	19.258	19.269	19.280	19.291	19.302	19.313	**1920**
1930	19.313	19.324	19.335	19.346	19.357	19.368	19.379	19.390	19.401	19.412	19.423	**1930**
1940	19.423	19.434	19.445	19.456	19.467	19.478	19.489	19.500	19.511	19.522	19.533	**1940**
1950	19.533	19.544	19.555	19.566	19.577	19.588	19.599	19.610	19.621	19.632	19.643	**1950**
1960	19.643	19.654	19.664	19.675	19.686	19.697	19.708	19.719	19.730	19.741	19.752	**1960**
1970	19.752	19.763	19.774	19.785	19.796	19.807	19.818	19.829	19.840	19.851	19.861	**1970**
1980	19.861	19.872	19.883	19.894	19.905	19.916	19.927	19.938	19.949	19.960	19.971	**1980**
1990	19.971	19.982	19.993	20.003	20.014	20.025	20.036	20.047	20.058	20.069	20.080	**1990**
2000	20.080	20.091	20.102	20.113	20.123	20.134	20.145	20.156	20.167	20.178	20.189	**2000**

TABLE 4 *(continued)*

EMF in Millivolts												Reference Junctions at 32°F
DEG F	0	1	2	3	4	5	6	7	8	9	10	DEG F
Thermoelectric Voltage in Millivolts												
2000	20.080	20.091	20.102	20.113	20.123	20.134	20.145	20.156	20.167	20.178	20.189	**2000**
2010	20.189	20.200	20.211	20.222	20.232	20.243	20.254	20.265	20.276	20.287	20.298	**2010**
2020	20.298	20.309	20.319	20.330	20.341	20.352	20.363	20.374	20.385	20.396	20.406	**2020**
2030	20.406	20.417	20.428	20.439	20.450	20.461	20.472	20.482	20.493	20.504	20.515	**2030**
2040	20.515	20.526	20.537	20.548	20.558	20.569	20.580	20.591	20.602	20.613	20.624	**2040**
2050	20.624	20.634	20.645	20.656	20.667	20.678	20.689	20.699	20.710	20.721	20.732	**2050**
2060	20.732	20.743	20.753	20.764	20.775	20.786	20.797	20.808	20.818	20.829	20.840	**2060**
2070	20.840	20.851	20.862	20.872	20.883	20.894	20.905	20.916	20.926	20.937	20.948	**2070**
2080	20.948	20.959	20.970	20.980	20.991	21.002	21.013	21.024	21.034	21.045	21.056	**2080**
2090	21.056	21.067	21.078	21.088	21.099	21.110	21.121	21.131	21.142	21.153	21.164	**2090**
2100	21.164	21.175	21.185	21.196	21.207	21.218	21.228	21.239	21.250	21.261	21.271	**2100**
2110	21.271	21.282	21.293	21.304	21.314	21.325	21.336	21.347	21.357	21.368	21.379	**2110**
2120	21.379	21.390	21.400	21.411	21.422	21.433	21.443	21.454	21.465	21.475	21.486	**2120**
2130	21.486	21.497	21.508	21.518	21.529	21.540	21.551	21.561	21.572	21.583	21.593	**2130**
2140	21.593	21.604	21.615	21.626	21.636	21.647	21.658	21.668	21.679	21.690	21.700	**2140**
2150	21.700	21.711	21.722	21.733	21.743	21.754	21.765	21.775	21.786	21.797	21.807	**2150**
2160	21.807	21.818	21.829	21.839	21.850	21.861	21.871	21.882	21.893	21.903	21.914	**2160**
2170	21.914	21.925	21.936	21.946	21.957	21.968	21.978	21.989	21.999	22.010	22.021	**2170**
2180	22.021	22.031	22.042	22.053	22.063	22.074	22.085	22.095	22.106	22.117	22.127	**2180**
2190	22.127	22.138	22.149	22.159	22.170	22.180	22.191	22.202	22.212	22.223	22.234	**2190**
2200	22.234	22.244	22.255	22.266	22.276	22.287	22.297	22.308	22.319	22.329	22.340	**2200**
2210	22.340	22.350	22.361	22.372	22.382	22.393	22.403	22.414	22.425	22.435	22.446	**2210**
2220	22.446	22.456	22.467	22.478	22.488	22.499	22.509	22.520	22.531	22.541	22.552	**2220**
2230	22.552	22.562	22.573	22.584	22.594	22.605	22.615	22.626	22.636	22.647	22.658	**2230**
2240	22.658	22.668	22.679	22.689	22.700	22.710	22.721	22.731	22.742	22.753	22.763	**2240**
2250	22.763	22.774	22.784	22.795	22.805	22.816	22.826	22.837	22.848	22.858	22.869	**2250**
2260	22.869	22.879	22.890	22.900	22.911	22.921	22.932	22.942	22.953	22.963	22.974	**2260**
2270	22.974	22.984	22.995	23.006	23.016	23.027	23.037	23.048	23.058	23.069	23.079	**2270**
2280	23.079	23.090	23.100	23.111	23.121	23.132	23.142	23.153	23.163	23.174	23.184	**2280**
2290	23.184	23.195	23.205	23.216	23.226	23.237	23.247	23.258	23.268	23.279	23.289	**2290**
2300	23.289	23.300	23.310	23.320	23.331	23.341	23.352	23.362	23.373	23.383	23.394	**2300**
2310	23.394	23.404	23.415	23.425	23.436	23.446	23.457	23.467	23.477	23.488	23.498	**2310**
2320	23.498	23.509	23.519	23.530	23.540	23.551	23.561	23.571	23.582	23.592	23.603	**2320**
2330	23.603	23.613	23.624	23.634	23.644	23.655	23.665	23.676	23.686	23.697	23.707	**2330**
2340	23.707	23.717	23.728	23.738	23.749	23.759	23.770	23.780	23.790	23.801	23.811	**2340**
2350	23.811	23.822	23.832	23.842	23.853	23.863	23.874	23.884	23.894	23.905	23.915	**2350**
2360	23.915	23.926	23.936	23.946	23.957	23.967	23.977	23.988	23.998	24.009	24.019	**2360**
2370	24.019	24.029	24.040	24.050	24.060	24.071	24.081	24.092	24.102	24.112	24.123	**2370**
2380	24.123	24.133	24.143	24.154	24.164	24.174	24.185	24.195	24.205	24.216	24.226	**2380**
2390	24.226	24.237	24.247	24.257	24.268	24.278	24.288	24.299	24.309	24.319	24.330	**2390**
2400	24.330	24.340	24.350	24.361	24.371	24.381	24.391	24.402	24.412	24.422	24.433	**2400**
2410	24.433	24.443	24.453	24.464	24.474	24.484	24.495	24.505	24.515	24.526	24.536	**2410**
2420	24.536	24.546	24.556	24.567	24.577	24.587	24.598	24.608	24.618	24.628	24.639	**2420**
2430	24.639	24.649	24.659	24.670	24.680	24.690	24.700	24.711	24.721	24.731	24.742	**2430**
2440	24.742	24.752	24.762	24.772	24.783	24.793	24.803	24.813	24.824	24.834	24.844	**2440**
2450	24.844	24.854	24.865	24.875	24.885	24.895	24.906	24.916	24.926	24.936	24.947	**2450**
2460	24.947	24.957	24.967	24.977	24.988	24.998	25.008	25.018	25.028	25.039	25.049	**2460**
2470	25.049	25.059	25.069	25.080	25.090	25.100	25.110	25.120	25.131	25.141	25.151	**2470**
2480	25.151	25.161	25.171	25.182	25.192	25.202	25.212	25.222	25.233	25.243	25.253	**2480**
2490	25.253	25.263	25.273	25.284	25.294	25.304	25.314	25.324	25.335	25.345	25.355	**2490**
2500	25.355	25.365	25.375	25.385	25.396	25.406	25.416	25.426	25.436	25.446	25.457	**2500**

TABLE 4 *(continued)*

EMF in Millivolts												Reference Junctions at 32°F
DEG F	0	1	2	3	4	5	6	7	8	9	10	DEG F
Thermoelectric Voltage in Millivolts												
2500	25.355	25.365	25.375	25.385	25.396	25.406	25.416	25.426	25.436	25.446	25.457	**2500**
2510	25.457	25.467	25.477	25.487	25.497	25.507	25.517	25.528	25.538	25.548	25.558	**2510**
2520	25.558	25.568	25.578	25.589	25.599	25.609	25.619	25.629	25.639	25.649	25.659	**2520**
2530	25.659	25.670	25.680	25.690	25.700	25.710	25.720	25.730	25.740	25.751	25.761	**2530**
2540	25.761	25.771	25.781	25.791	25.801	25.811	25.821	25.831	25.842	25.852	25.862	**2540**
2550	25.862	25.872	25.882	25.892	25.902	25.912	25.922	25.932	25.942	25.953	25.963	**2550**
2560	25.963	25.973	25.983	25.993	26.003	26.013	26.023	26.033	26.043	26.053	26.063	**2560**
2570	26.063	26.073	26.084	26.094	26.104	26.114	26.124	26.134	26.144	26.154	26.164	**2570**
2580	26.164	26.174	26.184	26.194	26.204	26.214	26.224	26.234	26.244	26.254	26.264	**2580**
2590	26.264	26.274	26.285	26.295	26.305	26.315	26.325	26.335	26.345	26.355	26.365	**2590**
2600	26.365	26.375	26.385	26.395	26.405	26.415	26.425	26.435	26.445	26.455	26.465	**2600**
2610	26.465	26.475	26.485	26.495	26.505	26.515	26.525	26.535	26.545	26.555	26.565	**2610**
2620	26.565	26.575	26.585	26.595	26.605	26.615	26.625	26.635	26.645	26.655	26.665	**2620**
2630	26.665	26.675	26.685	26.695	26.705	26.714	26.724	26.734	26.744	26.754	26.764	**2630**
2640	26.764	26.774	26.784	26.794	26.804	26.814	26.824	26.834	26.844	26.854	26.864	**2640**
2650	26.864	26.874	26.884	26.894	26.904	26.913	26.923	26.933	26.943	26.953	26.963	**2650**
2660	26.963	26.973	26.983	26.993	27.003	27.013	27.023	27.033	27.042	27.052	27.062	**2660**
2670	27.062	27.072	27.082	27.092	27.102	27.112	27.122	27.132	27.141	27.151	27.161	**2670**
2680	27.161	27.171	27.181	27.191	27.201	27.211	27.221	27.230	27.240	27.250	27.260	**2680**
2690	27.260	27.270	27.280	27.290	27.300	27.309	27.319	27.329	27.339	27.349	27.359	**2690**
2700	27.359	27.369	27.379	27.388	27.398	27.408	27.418	27.428	27.438	27.447	27.457	**2700**
2710	27.457	27.467	27.477	27.487	27.497	27.507	27.516	27.526	27.536	27.546	27.556	**2710**
2720	27.556	27.566	27.575	27.585	27.595	27.605	27.615	27.624	27.634	27.644	27.654	**2720**
2730	27.654	27.664	27.673	27.683	27.693	27.703	27.713	27.723	27.732	27.742	27.752	**2730**
2740	27.752	27.762	27.771	27.781	27.791	27.801	27.811	27.820	27.830	27.840	27.850	**2740**
2750	27.850	27.860	27.869	27.879	27.889	27.899	27.908	27.918	27.928	27.938	27.947	**2750**
2760	27.947	27.957	27.967	27.977	27.987	27.996	28.006	28.016	28.026	28.035	28.045	**2760**
2770	28.045	28.055	28.065	28.074	28.084	28.094	28.103	28.113	28.123	28.133	28.142	**2770**
2780	28.142	28.152	28.162	28.172	28.181	28.191	28.201	28.210	28.220	28.230	28.240	**2780**
2790	28.240	28.249	28.259	28.269	28.278	28.288	28.298	28.308	28.317	28.327	28.337	**2790**
2800	28.337	28.346	28.356	28.366	28.375	28.385	28.395	28.404	28.414	28.424	28.434	**2800**
2810	28.434	28.443	28.453	28.463	28.472	28.482	28.492	28.501	28.511	28.521	28.530	**2810**
2820	28.530	28.540	28.550	28.559	28.569	28.579	28.588	28.598	28.607	28.617	28.627	**2820**
2830	28.627	28.636	28.646	28.656	28.665	28.675	28.685	28.694	28.704	28.714	28.723	**2830**
2840	28.723	28.733	28.742	28.752	28.762	28.771	28.781	28.790	28.800	28.810	28.819	**2840**
2850	28.819	28.829	28.839	28.848	28.858	28.867	28.877	28.887	28.896	28.906	28.915	**2850**
2860	28.915	28.925	28.935	28.944	28.954	28.963	28.973	28.982	28.992	29.002	29.011	**2860**
2870	29.011	29.021	29.030	29.040	29.050	29.059	29.069	29.078	29.088	29.097	29.107	**2870**
2880	29.107	29.116	29.126	29.136	29.145	29.155	29.164	29.174	29.183	29.193	29.202	**2880**
2890	29.202	29.212	29.221	29.231	29.241	29.250	29.260	29.269	29.279	29.288	29.298	**2890**
2900	29.298	29.307	29.317	29.326	29.336	29.345	29.355	29.364	29.374	29.383	29.393	**2900**
2910	29.393	29.402	29.412	29.421	29.431	29.440	29.450	29.459	29.469	29.478	29.488	**2910**
2920	29.488	29.497	29.507	29.516	29.526	29.535	29.545	29.554	29.564	29.573	29.583	**2920**
2930	29.583	29.592	29.602	29.611	29.621	29.630	29.640	29.649	29.658	29.668	29.677	**2930**
2940	29.677	29.687	29.696	29.706	29.715	29.725	29.734	29.743	29.753	29.762	29.772	**2940**
2950	29.772	29.781	29.791	29.800	29.810	29.819	29.828	29.838	29.847	29.857	29.866	**2950**
2960	29.866	29.876	29.885	29.894	29.904	29.913	29.923	29.932	29.941	29.951	29.960	**2960**
2970	29.960	29.970	29.979	29.988	29.998	30.007	30.017	30.026	30.035	30.045	30.054	**2970**
2980	30.054	30.063	30.073	30.082	30.092	30.101	30.110	30.120	30.129	30.138	30.148	**2980**
2990	30.148	30.157	30.167	30.176	30.185	30.195	30.204	30.213	30.223	30.232	30.241	**2990**
3000	30.241	30.251	30.260	30.269	30.279	30.288	30.297	30.307	30.316	30.325	30.335	**3000**

TABLE 4 *(continued)*

EMF in Millivolts												Reference Junctions at 32°F
DEG F	0	1	2	3	4	5	6	7	8	9	10	DEG F
Thermoelectric Voltage in Millivolts												
3000	30.241	30.251	30.260	30.269	30.279	30.288	30.297	30.307	30.316	30.325	30.335	**3000**
3010	30.335	30.344	30.353	30.363	30.372	30.381	30.391	30.400	30.409	30.419	30.428	**3010**
3020	30.428	30.437	30.447	30.456	30.465	30.474	30.484	30.493	30.502	30.512	30.521	**3020**
3030	30.521	30.530	30.540	30.549	30.558	30.567	30.577	30.586	30.595	30.604	30.614	**3030**
3040	30.614	30.623	30.632	30.642	30.651	30.660	30.669	30.679	30.688	30.697	30.706	**3040**
3050	30.706	30.716	30.725	30.734	30.743	30.753	30.762	30.771	30.780	30.790	30.799	**3050**
3060	30.799	30.808	30.817	30.827	30.836	30.845	30.854	30.863	30.873	30.882	30.891	**3060**
3070	30.891	30.900	30.909	30.919	30.928	30.937	30.946	30.956	30.965	30.974	30.983	**3070**
3080	30.983	30.992	31.002	31.011	31.020	31.029	31.038	31.047	31.057	31.066	31.075	**3080**
3090	31.075	31.084	31.093	31.103	31.112	31.121	31.130	31.139	31.148	31.157	31.167	**3090**
3100	31.167	31.176	31.185	31.194	31.203	31.212	31.222	31.231	31.240	31.249	31.258	**3100**
3110	31.258	31.267	31.276	31.286	31.295	31.304	31.313	31.322	31.331	31.340	31.349	**3110**
3120	31.349	31.359	31.368	31.377	31.386	31.395	31.404	31.413	31.422	31.431	31.440	**3120**
3130	31.440	31.450	31.459	31.468	31.477	31.486	31.495	31.504	31.513	31.522	31.531	**3130**
3140	31.531	31.540	31.550	31.559	31.568	31.577	31.586	31.595	31.604	31.613	31.622	**3140**
3150	31.622	31.631	31.640	31.649	31.658	31.667	31.676	31.685	31.694	31.703	31.713	**3150**
3160	31.713	31.722	31.731	31.740	31.749	31.758	31.767	31.776	31.785	31.794	31.803	**3160**
3170	31.803	31.812	31.821	31.830	31.839	31.848	31.857	31.866	31.875	31.884	31.893	**3170**
3180	31.893	31.902	31.911	31.920	31.929	31.938	31.947	31.956	31.965	31.974	31.983	**3180**
3190	31.983	31.992	32.001	32.010	32.019	32.028	32.037	32.045	32.054	32.063	32.072	**3190**
3200	32.072	32.081	32.090	32.099	32.108	32.117	32.126	32.135	32.144	32.153	32.162	**3200**
3210	32.162	32.171	32.180	32.189	32.198	32.206	32.215	32.224	32.233	32.242	32.251	**3210**
3220	32.251	32.260	32.269	32.278	32.287	32.296	32.304	32.313	32.322	32.331	32.340	**3220**
3230	32.340	32.349	32.358	32.367	32.376	32.384	32.393	32.402	32.411	32.420	32.429	**3230**
3240	32.429	32.438	32.447	32.455	32.464	32.473	32.482	32.491	32.500	32.509	32.517	**3240**
3250	32.517	32.526	32.535	32.544	32.553	32.562	32.570	32.579	32.588	32.597	32.606	**3250**
3260	32.606	32.615	32.623	32.632	32.641	32.650	32.659	32.667	32.676	32.685	32.694	**3260**
3270	32.694	32.703	32.712	32.720	32.729	32.738	32.747	32.755	32.764	32.773	32.782	**3270**
3280	32.782	32.791	32.799	32.808	32.817	32.826	32.834	32.843	32.852	32.861	32.870	**3280**
3290	32.870	32.878	32.887	32.896	32.905	32.913	32.922	32.931	32.940	32.948	32.957	**3290**
3300	32.957	32.966	32.974	32.983	32.992	33.001	33.009	33.018	33.027	33.036	33.044	**3300**
3310	33.044	33.053	33.062	33.070	33.079	33.088	33.096	33.105	33.114	33.123	33.131	**3310**
3320	33.131	33.140	33.149	33.157	33.166	33.175	33.183	33.192	33.201	33.209	33.218	**3320**
3330	33.218	33.227	33.235	33.244	33.253	33.261	33.270	33.279	33.287	33.296	33.305	**3330**
3340	33.305	33.313	33.322	33.330	33.339	33.348	33.356	33.365	33.374	33.382	33.391	**3340**
3350	33.391	33.399	33.408	33.417	33.425	33.434	33.443	33.451	33.460	33.468	33.477	**3350**
3360	33.477	33.486	33.494	33.503	33.511	33.520	33.528	33.537	33.546	33.554	33.563	**3360**
3370	33.563	33.571	33.580	33.588	33.597	33.606	33.614	33.623	33.631	33.640	33.648	**3370**
3380	33.648	33.657	33.665	33.674	33.683	33.691	33.700	33.708	33.717	33.725	33.734	**3380**
3390	33.734	33.742	33.751	33.759	33.768	33.776	33.785	33.793	33.802	33.810	33.819	**3390**
3400	33.819	33.827	33.836	33.844	33.853	33.861	33.870	33.878	33.887	33.895	33.904	**3400**
3410	33.904	33.912	33.921	33.929	33.937	33.946	33.954	33.963	33.971	33.980	33.988	**3410**
3420	33.988	33.997	34.005	34.014	34.022	34.030	34.039	34.047	34.056	34.064	34.073	**3420**
3430	34.073	34.081	34.089	34.098	34.106	34.115	34.123	34.131	34.140	34.148	34.157	**3430**
3440	34.157	34.165	34.173	34.182	34.190	34.199	34.207	34.215	34.224	34.232	34.240	**3440**
3450	34.240	34.249	34.257	34.266	34.274	34.282	34.291	34.299	34.307	34.316	34.324	**3450**
3460	34.324	34.332	34.341	34.349	34.357	34.366	34.374	34.382	34.391	34.399	34.407	**3460**
3470	34.407	34.416	34.424	34.432	34.441	34.449	34.457	34.465	34.474	34.482	34.490	**3470**
3480	34.490	34.499	34.507	34.515	34.523	34.532	34.540	34.548	34.557	34.565	34.573	**3480**
3490	34.573	34.581	34.590	34.598	34.606	34.614	34.623	34.631	34.639	34.647	34.655	**3490**
3500	34.655	34.664	34.672	34.680	34.688	34.697	34.705	34.713	34.721	34.729	34.738	**3500**

TABLE 4 *(continued)*

EMF in Millivolts												Reference Junctions at 32°F
DEG F	0	1	2	3	4	5	6	7	8	9	10	DEG F
Thermoelectric Voltage in Millivolts												
3500	34.655	34.664	34.672	34.680	34.688	34.697	34.705	34.713	34.721	34.729	34.738	**3500**
3510	34.738	34.746	34.754	34.762	34.770	34.779	34.787	34.795	34.803	34.811	34.820	**3510**
3520	34.820	34.828	34.836	34.844	34.852	34.860	34.869	34.877	34.885	34.893	34.901	**3520**
3530	34.901	34.909	34.918	34.926	34.934	34.942	34.950	34.958	34.966	34.974	34.983	**3530**
3540	34.983	34.991	34.999	35.007	35.015	35.023	35.031	35.039	35.047	35.056	35.064	**3540**
3550	35.064	35.072	35.080	35.088	35.096	35.104	35.112	35.120	35.128	35.136	35.144	**3550**
3560	35.144	35.152	35.161	35.169	35.177	35.185	35.193	35.201	35.209	35.217	35.225	**3560**
3570	35.225	35.233	35.241	35.249	35.257	35.265	35.273	35.281	35.289	35.297	35.305	**3570**
3580	35.305	35.313	35.321	35.329	35.337	35.345	35.353	35.361	35.369	35.377	35.385	**3580**
3590	35.385	35.393	35.401	35.409	35.417	35.425	35.433	35.441	35.449	35.457	35.464	**3590**
3600	35.464	35.472	35.480	35.488	35.496	35.504	35.512	35.520	35.528	35.536	35.544	**3600**
3610	35.544	35.552	35.560	35.567	35.575	35.583	35.591	35.599	35.607	35.615	35.623	**3610**
3620	35.623	35.631	35.638	35.646	35.654	35.662	35.670	35.678	35.686	35.693	35.701	**3620**
3630	35.701	35.709	35.717	35.725	35.733	35.740	35.748	35.756	35.764	35.772	35.780	**3630**
3640	35.780	35.787	35.795	35.803	35.811	35.819	35.826	35.834	35.842	35.850	35.858	**3640**
3650	35.858	35.865	35.873	35.881	35.889	35.896	35.904	35.912	35.920	35.927	35.935	**3650**
3660	35.935	35.943	35.951	35.958	35.966	35.974	35.982	35.989	35.997	36.005	36.013	**3660**
3670	36.013	36.020	36.028	36.036	36.043	36.051	36.059	36.067	36.074	36.082	36.090	**3670**
3680	36.090	36.097	36.105	36.113	36.120	36.128	36.136	36.143	36.151	36.159	36.166	**3680**
3690	36.166	36.174	36.182	36.189	36.197	36.204	36.212	36.220	36.227	36.235	36.243	**3690**
3700	36.243	36.250	36.258	36.265	36.273	36.281	36.288	36.296	36.303	36.311	36.319	**3700**
3710	36.319	36.326	36.334	36.341	36.349	36.356	36.364	36.371	36.379	36.387	36.394	**3710**
3720	36.394	36.402	36.409	36.417	36.424	36.432	36.439	36.447	36.454	36.462	36.469	**3720**
3730	36.469	36.477	36.484	36.492	36.499	36.507	36.514	36.522	36.529	36.537	36.544	**3730**
3740	36.544	36.552	36.559	36.567	36.574	36.582	36.589	36.597	36.604	36.611	36.619	**3740**
3750	36.619	36.626	36.634	36.641	36.649	36.656	36.663	36.671	36.678	36.686	36.693	**3750**
3760	36.693	36.700	36.708	36.715	36.723	36.730	36.737	36.745	36.752	36.759	36.767	**3760**
3770	36.767	36.774	36.782	36.789	36.796	36.804	36.811	36.818	36.826	36.833	36.840	**3770**
3780	36.840	36.848	36.855	36.862	36.870	36.877	36.884	36.891	36.899	36.906	36.913	**3780**
3790	36.913	36.921	36.928	36.935	36.942	36.950	36.957	36.964	36.971	36.979	36.986	**3790**
3800	36.986	36.993	37.000	37.008	37.015	37.022	37.029	37.037	37.044	37.051	37.058	**3800**
3810	37.058	37.065	37.073	37.080	37.087	37.094	37.101	37.109	37.116	37.123	37.130	**3810**
3820	37.130	37.137	37.144	37.152	37.159	37.166	37.173	37.180	37.187	37.194	37.202	**3820**
3830	37.202	37.209	37.216	37.223	37.230	37.237	37.244	37.251	37.258	37.266	37.273	**3830**
3840	37.273	37.280	37.287	37.294	37.301	37.308	37.315	37.322	37.329	37.336	37.343	**3840**
3850	37.343	37.350	37.357	37.364	37.371	37.379	37.386	37.393	37.400	37.407	37.414	**3850**
3860	37.414	37.421	37.428	37.435	37.442	37.449	37.456	37.463	37.469	37.476	37.483	**3860**
3870	37.483	37.490	37.497	37.504	37.511	37.518	37.525	37.532	37.539	37.546	37.553	**3870**
3880	37.553	37.560	37.567	37.574	37.580	37.587	37.594	37.601	37.608	37.615	37.622	**3880**
3890	37.622	37.629	37.636	37.642	37.649	37.656	37.663	37.670	37.677	37.684	37.690	**3890**
3900	37.690	37.697	37.704	37.711	37.718	37.724	37.731	37.738	37.745	37.752	37.758	**3900**
3910	37.758	37.765	37.772	37.779	37.786	37.792	37.799	37.806	37.813	37.819	37.826	**3910**
3920	37.826	37.833	37.840	37.846	37.853	37.860	37.866	37.873	37.880	37.887	37.893	**3920**
3930	37.893	37.900	37.907	37.913	37.920	37.927	37.933	37.940	37.947	37.953	37.960	**3930**
3940	37.960	37.967	37.973	37.980	37.987	37.993	38.000	38.006	38.013	38.020	38.026	**3940**
3950	38.026	38.033	38.040	38.046	38.053	38.059	38.066	38.072	38.079	38.086	38.092	**3950**
3960	38.092	38.099	38.105	38.112	38.118	38.125	38.131	38.138	38.144	38.151	38.157	**3960**
3970	38.157	38.164	38.170	38.177	38.183	38.190	38.196	38.203	38.209	38.216	38.222	**3970**
3980	38.222	38.229	38.235	38.242	38.248	38.255	38.261	38.267	38.274	38.280	38.287	**3980**
3990	38.287	38.293	38.299	38.306	38.312	38.319	38.325	38.331	38.338	38.344	38.351	**3990**
4000	38.351	38.357	38.363	38.370	38.376	38.382	38.389	38.395	38.401	38.408	38.414	**4000**

TABLE 4 *(continued)*

EMF in Millivolts												Reference Junctions at 32°F
DEG F	0	1	2	3	4	5	6	7	8	9	10	DEG F
Thermoelectric Voltage in Millivolts												
4000	38.351	38.357	38.363	38.370	38.376	38.382	38.389	38.395	38.401	38.408	38.414	**4000**
4010	38.414	38.420	38.427	38.433	38.439	38.445	38.452	38.458	38.464	38.471	38.477	**4010**
4020	38.477	38.483	38.489	38.496	38.502	38.508	38.514	38.520	38.527	38.533	38.539	**4020**
4030	38.539	38.545	38.552	38.558	38.564	38.570	38.576	38.582	38.589	38.595	38.601	**4030**
4040	38.601	38.607	38.613	38.619	38.626	38.632	38.638	38.644	38.650	38.656	38.662	**4040**
4050	38.662	38.668	38.674	38.681	38.687	38.693	38.699	38.705	38.711	38.717	38.723	**4050**
4060	38.723	38.729	38.735	38.741	38.747	38.753	38.759	38.765	38.771	38.777	38.783	**4060**
4070	38.783	38.789	38.795	38.801	38.807	38.813	38.819	38.825	38.831	38.837	38.843	**4070**
4080	38.843	38.849	38.855	38.861	38.867	38.873	38.878	38.884	38.890	38.896	38.902	**4080**
4090	38.902	38.908	38.914	38.920	38.926	38.931	38.937	38.943	38.949	38.955	38.961	**4090**
4100	38.961	38.966	38.972	38.978	38.984	38.990	38.995	39.001	39.007	39.013	39.019	**4100**
4110	39.019	39.024	39.030	39.036	39.042	39.047	39.053	39.059	39.065	39.070	39.076	**4110**
4120	39.076	39.082	39.087	39.093	39.099	39.105	39.110	39.116	39.122	39.127	39.133	**4120**
4130	39.133	39.138	39.144	39.150	39.155	39.161	39.167	39.172	39.178	39.183	39.189	**4130**
4140	39.189	39.195	39.200	39.206	39.211	39.217	39.223	39.228	39.234	39.239	39.245	**4140**
4150	39.245	39.250	39.256	39.261	39.267	39.272	39.278	39.283	39.289	39.294	39.300	**4150**
4160	39.300	39.305	39.311	39.316	39.322	39.327	39.332	39.338	39.343	39.349	39.354	**4160**
4170	39.354	39.360	39.365	39.370	39.376	39.381	39.387	39.392	39.397	39.403	39.408	**4170**
4180	39.408	39.413	39.419	39.424	39.429	39.435	39.440	39.445	39.451	39.456	39.461	**4180**
4190	39.461	39.466	39.472	39.477	39.482	39.487	39.493	39.498	39.503	39.508	39.514	**4190**
4200	39.514											**4200**

TABLE 5 Tungsten-5 % Rhenium versus Tungsten-26 % Rhenium Thermocouples—Thermoelectric Voltage as a Function of Temperature (°C)

EMF in Millivolts												Reference Junctions at 0°C
DEG C	0	1	2	3	4	5	6	7	8	9	10	DEG C
Thermoelectric Voltage in Millivolts												
0	0.000	0.013	0.027	0.040	0.054	0.067	0.081	0.094	0.108	0.122	0.135	**0**
10	0.135	0.149	0.163	0.176	0.190	0.204	0.218	0.231	0.245	0.259	0.273	**10**
20	0.273	0.287	0.301	0.315	0.329	0.342	0.356	0.370	0.385	0.399	0.413	**20**
30	0.413	0.427	0.441	0.455	0.469	0.483	0.498	0.512	0.526	0.540	0.555	**30**
40	0.555	0.569	0.583	0.598	0.612	0.627	0.641	0.656	0.670	0.685	0.699	**40**
50	0.699	0.714	0.728	0.743	0.757	0.772	0.787	0.801	0.816	0.831	0.846	**50**
60	0.846	0.860	0.875	0.890	0.905	0.920	0.934	0.949	0.964	0.979	0.994	**60**
70	0.994	1.009	1.024	1.039	1.054	1.069	1.084	1.099	1.114	1.129	1.145	**70**
80	1.145	1.160	1.175	1.190	1.205	1.221	1.236	1.251	1.266	1.282	1.297	**80**
90	1.297	1.312	1.328	1.343	1.359	1.374	1.389	1.405	1.420	1.436	1.451	**90**
100	1.451	1.467	1.483	1.498	1.514	1.529	1.545	1.561	1.576	1.592	1.608	**100**
110	1.608	1.624	1.639	1.655	1.671	1.687	1.702	1.718	1.734	1.750	1.766	**110**
120	1.766	1.782	1.798	1.814	1.830	1.846	1.862	1.878	1.894	1.910	1.926	**120**
130	1.926	1.942	1.958	1.974	1.990	2.006	2.023	2.039	2.055	2.071	2.087	**130**
140	2.087	2.104	2.120	2.136	2.152	2.169	2.185	2.201	2.218	2.234	2.251	**140**
150	2.251	2.267	2.283	2.300	2.316	2.333	2.349	2.366	2.382	2.399	2.415	**150**
160	2.415	2.432	2.449	2.465	2.482	2.498	2.515	2.532	2.548	2.565	2.582	**160**
170	2.582	2.599	2.615	2.632	2.649	2.666	2.682	2.699	2.716	2.733	2.750	**170**
180	2.750	2.767	2.784	2.800	2.817	2.834	2.851	2.868	2.885	2.902	2.919	**180**
190	2.919	2.936	2.953	2.970	2.987	3.004	3.021	3.039	3.056	3.073	3.090	**190**
200	3.090	3.107	3.124	3.141	3.159	3.176	3.193	3.210	3.228	3.245	3.262	**200**
210	3.262	3.279	3.297	3.314	3.331	3.349	3.366	3.383	3.401	3.418	3.436	**210**
220	3.436	3.453	3.470	3.488	3.505	3.523	3.540	3.558	3.575	3.593	3.610	**220**
230	3.610	3.628	3.645	3.663	3.680	3.698	3.716	3.733	3.751	3.768	3.786	**230**
240	3.786	3.804	3.821	3.839	3.857	3.875	3.892	3.910	3.928	3.945	3.963	**240**
250	3.963	3.981	3.999	4.017	4.034	4.052	4.070	4.088	4.106	4.124	4.141	**250**
260	4.141	4.159	4.177	4.195	4.213	4.231	4.249	4.267	4.285	4.303	4.321	**260**
270	4.321	4.339	4.357	4.375	4.393	4.411	4.429	4.447	4.465	4.483	4.501	**270**
280	4.501	4.519	4.537	4.555	4.573	4.592	4.610	4.628	4.646	4.664	4.682	**280**
290	4.682	4.701	4.719	4.737	4.755	4.773	4.792	4.810	4.828	4.846	4.865	**290**
300	4.865	4.883	4.901	4.920	4.938	4.956	4.974	4.993	5.011	5.030	5.048	**300**
310	5.048	5.066	5.085	5.103	5.121	5.140	5.158	5.177	5.195	5.214	5.232	**310**
320	5.232	5.250	5.269	5.287	5.306	5.324	5.343	5.361	5.380	5.398	5.417	**320**
330	5.417	5.435	5.454	5.473	5.491	5.510	5.528	5.547	5.565	5.584	5.603	**330**
340	5.603	5.621	5.640	5.658	5.677	5.696	5.714	5.733	5.752	5.770	5.789	**340**
350	5.789	5.808	5.827	5.845	5.864	5.883	5.901	5.920	5.939	5.958	5.976	**350**
360	5.976	5.995	6.014	6.033	6.051	6.070	6.089	6.108	6.127	6.145	6.164	**360**
370	6.164	6.183	6.202	6.221	6.240	6.259	6.277	6.296	6.315	6.334	6.353	**370**
380	6.353	6.372	6.391	6.410	6.429	6.447	6.466	6.485	6.504	6.523	6.542	**380**
390	6.542	6.561	6.580	6.599	6.618	6.637	6.656	6.675	6.694	6.713	6.732	**390**
400	6.732	6.751	6.770	6.789	6.808	6.827	6.846	6.865	6.884	6.903	6.922	**400**
410	6.922	6.941	6.961	6.980	6.999	7.018	7.037	7.056	7.075	7.094	7.113	**410**
420	7.113	7.132	7.152	7.171	7.190	7.209	7.228	7.247	7.267	7.286	7.305	**420**
430	7.305	7.324	7.343	7.362	7.382	7.401	7.420	7.439	7.458	7.478	7.497	**430**
440	7.497	7.516	7.535	7.554	7.574	7.593	7.612	7.631	7.651	7.670	7.689	**440**
450	7.689	7.708	7.728	7.747	7.766	7.786	7.805	7.824	7.843	7.863	7.882	**450**
460	7.882	7.901	7.921	7.940	7.959	7.979	7.998	8.017	8.037	8.056	8.075	**460**
470	8.075	8.095	8.114	8.133	8.153	8.172	8.191	8.211	8.230	8.249	8.269	**470**
480	8.269	8.288	8.308	8.327	8.346	8.366	8.385	8.404	8.424	8.443	8.463	**480**
490	8.463	8.482	8.502	8.521	8.540	8.560	8.579	8.599	8.618	8.637	8.657	**490**
500	8.657	8.676	8.696	8.715	8.735	8.754	8.774	8.793	8.812	8.832	8.851	**500**

TABLE 5 *(continued)*

EMF in Millivolts												Reference Junctions at 0°C
DEG C	0	1	2	3	4	5	6	7	8	9	10	DEG C
Thermoelectric Voltage in Millivolts												
500	8.657	8.676	8.696	8.715	8.735	8.754	8.774	8.793	8.812	8.832	8.851	**500**
510	8.851	8.871	8.890	8.910	8.929	8.949	8.968	8.988	9.007	9.027	9.046	**510**
520	9.046	9.066	9.085	9.105	9.124	9.144	9.163	9.183	9.202	9.222	9.241	**520**
530	9.241	9.261	9.280	9.300	9.319	9.339	9.358	9.378	9.397	9.417	9.436	**530**
540	9.436	9.456	9.475	9.495	9.514	9.534	9.553	9.573	9.592	9.612	9.631	**540**
550	9.631	9.651	9.670	9.690	9.710	9.729	9.749	9.768	9.788	9.807	9.827	**550**
560	9.827	9.846	9.866	9.885	9.905	9.925	9.944	9.964	9.983	10.003	10.022	**560**
570	10.022	10.042	10.061	10.081	10.100	10.120	10.140	10.159	10.179	10.198	10.218	**570**
580	10.218	10.237	10.257	10.276	10.296	10.316	10.335	10.355	10.374	10.394	10.413	**580**
590	10.413	10.433	10.452	10.472	10.491	10.511	10.531	10.550	10.570	10.589	10.609	**590**
600	10.609	10.628	10.648	10.667	10.687	10.706	10.726	10.746	10.765	10.785	10.804	**600**
610	10.804	10.824	10.843	10.863	10.882	10.902	10.921	10.941	10.960	10.980	10.999	**610**
620	10.999	11.019	11.038	11.058	11.077	11.097	11.117	11.136	11.156	11.175	11.195	**620**
630	11.195	11.214	11.234	11.253	11.273	11.292	11.312	11.331	11.351	11.370	11.390	**630**
640	11.390	11.409	11.429	11.448	11.468	11.487	11.507	11.526	11.546	11.565	11.585	**640**
650	11.585	11.604	11.624	11.643	11.663	11.682	11.702	11.721	11.741	11.760	11.780	**650**
660	11.780	11.799	11.818	11.838	11.857	11.877	11.896	11.916	11.935	11.955	11.974	**660**
670	11.974	11.994	12.013	12.033	12.052	12.072	12.091	12.111	12.130	12.150	12.169	**670**
680	12.169	12.189	12.208	12.228	12.247	12.267	12.286	12.306	12.325	12.344	12.364	**680**
690	12.364	12.383	12.403	12.422	12.442	12.461	12.481	12.500	12.520	12.539	12.559	**690**
700	12.559	12.578	12.597	12.617	12.636	12.656	12.675	12.695	12.714	12.734	12.753	**700**
710	12.753	12.772	12.792	12.811	12.831	12.850	12.870	12.889	12.908	12.928	12.947	**710**
720	12.947	12.967	12.986	13.006	13.025	13.044	13.064	13.083	13.103	13.122	13.141	**720**
730	13.141	13.161	13.180	13.200	13.219	13.238	13.258	13.277	13.297	13.316	13.335	**730**
740	13.335	13.355	13.374	13.393	13.413	13.432	13.452	13.471	13.490	13.510	13.529	**740**
750	13.529	13.548	13.568	13.587	13.606	13.626	13.645	13.665	13.684	13.703	13.723	**750**
760	13.723	13.742	13.761	13.781	13.800	13.819	13.839	13.858	13.877	13.896	13.916	**760**
770	13.916	13.935	13.954	13.974	13.993	14.012	14.032	14.051	14.070	14.089	14.109	**770**
780	14.109	14.128	14.147	14.167	14.186	14.205	14.224	14.244	14.263	14.282	14.301	**780**
790	14.301	14.321	14.340	14.359	14.378	14.398	14.417	14.436	14.455	14.475	14.494	**790**
800	14.494	14.513	14.532	14.551	14.571	14.590	14.609	14.628	14.647	14.667	14.686	**800**
810	14.686	14.705	14.724	14.743	14.763	14.782	14.801	14.820	14.839	14.858	14.878	**810**
820	14.878	14.897	14.916	14.935	14.954	14.973	14.993	15.012	15.031	15.050	15.069	**820**
830	15.069	15.088	15.107	15.126	15.146	15.165	15.184	15.203	15.222	15.241	15.260	**830**
840	15.260	15.279	15.298	15.317	15.336	15.356	15.375	15.394	15.413	15.432	15.451	**840**
850	15.451	15.470	15.489	15.508	15.527	15.546	15.565	15.584	15.603	15.622	15.641	**850**
860	15.641	15.660	15.679	15.698	15.717	15.736	15.755	15.774	15.793	15.812	15.831	**860**
870	15.831	15.850	15.869	15.888	15.907	15.926	15.945	15.964	15.983	16.002	16.021	**870**
880	16.021	16.040	16.058	16.077	16.096	16.115	16.134	16.153	16.172	16.191	16.210	**880**
890	16.210	16.229	16.248	16.266	16.285	16.304	16.323	16.342	16.361	16.380	16.398	**890**
900	16.398	16.417	16.436	16.455	16.474	16.493	16.511	16.530	16.549	16.568	16.587	**900**
910	16.587	16.606	16.624	16.643	16.662	16.681	16.699	16.718	16.737	16.756	16.775	**910**
920	16.775	16.793	16.812	16.831	16.850	16.868	16.887	16.906	16.924	16.943	16.962	**920**
930	16.962	16.981	16.999	17.018	17.037	17.055	17.074	17.093	17.111	17.130	17.149	**930**
940	17.149	17.167	17.186	17.205	17.223	17.242	17.261	17.279	17.298	17.317	17.335	**940**
950	17.335	17.354	17.373	17.391	17.410	17.428	17.447	17.465	17.484	17.503	17.521	**950**
960	17.521	17.540	17.558	17.577	17.595	17.614	17.633	17.651	17.670	17.688	17.707	**960**
970	17.707	17.725	17.744	17.762	17.781	17.799	17.818	17.836	17.855	17.873	17.892	**970**
980	17.892	17.910	17.929	17.947	17.966	17.984	18.002	18.021	18.039	18.058	18.076	**980**
990	18.076	18.095	18.113	18.131	18.150	18.168	18.187	18.205	18.223	18.242	18.260	**990**
1000	18.260	18.279	18.297	18.315	18.334	18.352	18.370	18.389	18.407	18.425	18.444	**1000**

TABLE 5 *(continued)*

EMF in Millivolts												Reference Junctions at 0°C
DEG C	0	1	2	3	4	5	6	7	8	9	10	DEG C
Thermoelectric Voltage in Millivolts												
1000	18.260	18.279	18.297	18.315	18.334	18.352	18.370	18.389	18.407	18.425	18.444	**1000**
1010	18.444	18.462	18.480	18.499	18.517	18.535	18.553	18.572	18.590	18.608	18.627	**1010**
1020	18.627	18.645	18.663	18.681	18.700	18.718	18.736	18.754	18.773	18.791	18.809	**1020**
1030	18.809	18.827	18.845	18.864	18.882	18.900	18.918	18.936	18.955	18.973	18.991	**1030**
1040	18.991	19.009	19.027	19.045	19.064	19.082	19.100	19.118	19.136	19.154	19.172	**1040**
1050	19.172	19.190	19.208	19.227	19.245	19.263	19.281	19.299	19.317	19.335	19.353	**1050**
1060	19.353	19.371	19.389	19.407	19.425	19.443	19.461	19.479	19.497	19.515	19.533	**1060**
1070	19.533	19.551	19.569	19.587	19.605	19.623	19.641	19.659	19.677	19.695	19.713	**1070**
1080	19.713	19.731	19.749	19.767	19.785	19.803	19.821	19.839	19.856	19.874	19.892	**1080**
1090	19.892	19.910	19.928	19.946	19.964	19.982	19.999	20.017	20.035	20.053	20.071	**1090**
1100	20.071	20.089	20.106	20.124	20.142	20.160	20.178	20.195	20.213	20.231	20.249	**1100**
1110	20.249	20.267	20.284	20.302	20.320	20.338	20.355	20.373	20.391	20.409	20.426	**1110**
1120	20.426	20.444	20.462	20.479	20.497	20.515	20.532	20.550	20.568	20.585	20.603	**1120**
1130	20.603	20.621	20.638	20.656	20.674	20.691	20.709	20.727	20.744	20.762	20.779	**1130**
1140	20.779	20.797	20.815	20.832	20.850	20.867	20.885	20.902	20.920	20.938	20.955	**1140**
1150	20.955	20.973	20.990	21.008	21.025	21.043	21.060	21.078	21.095	21.113	21.130	**1150**
1160	21.130	21.148	21.165	21.183	21.200	21.218	21.235	21.253	21.270	21.287	21.305	**1160**
1170	21.305	21.322	21.340	21.357	21.375	21.392	21.409	21.427	21.444	21.461	21.479	**1170**
1180	21.479	21.496	21.514	21.531	21.548	21.566	21.583	21.600	21.618	21.635	21.652	**1180**
1190	21.652	21.670	21.687	21.704	21.721	21.739	21.756	21.773	21.790	21.808	21.825	**1190**
1200	21.825	21.842	21.859	21.877	21.894	21.911	21.928	21.946	21.963	21.980	21.997	**1200**
1210	21.997	22.014	22.032	22.049	22.066	22.083	22.100	22.117	22.135	22.152	22.169	**1210**
1220	22.169	22.186	22.203	22.220	22.237	22.254	22.271	22.289	22.306	22.323	22.340	**1220**
1230	22.340	22.357	22.374	22.391	22.408	22.425	22.442	22.459	22.476	22.493	22.510	**1230**
1240	22.510	22.527	22.544	22.561	22.578	22.595	22.612	22.629	22.646	22.663	22.680	**1240**
1250	22.680	22.697	22.714	22.731	22.748	22.765	22.782	22.799	22.815	22.832	22.849	**1250**
1260	22.849	22.866	22.883	22.900	22.917	22.934	22.950	22.967	22.984	23.001	23.018	**1260**
1270	23.018	23.035	23.052	23.068	23.085	23.102	23.119	23.136	23.152	23.169	23.186	**1270**
1280	23.186	23.203	23.219	23.236	23.253	23.270	23.286	23.303	23.320	23.337	23.353	**1280**
1290	23.353	23.370	23.387	23.403	23.420	23.437	23.453	23.470	23.487	23.503	23.520	**1290**
1300	23.520	23.537	23.553	23.570	23.587	23.603	23.620	23.636	23.653	23.670	23.686	**1300**
1310	23.686	23.703	23.719	23.736	23.753	23.769	23.786	23.802	23.819	23.835	23.852	**1310**
1320	23.852	23.868	23.885	23.901	23.918	23.934	23.951	23.967	23.984	24.000	24.017	**1320**
1330	24.017	24.033	24.050	24.066	24.083	24.099	24.116	24.132	24.148	24.165	24.181	**1330**
1340	24.181	24.198	24.214	24.230	24.247	24.263	24.280	24.296	24.312	24.329	24.345	**1340**
1350	24.345	24.361	24.378	24.394	24.410	24.427	24.443	24.459	24.476	24.492	24.508	**1350**
1360	24.508	24.524	24.541	24.557	24.573	24.590	24.606	24.622	24.638	24.655	24.671	**1360**
1370	24.671	24.687	24.703	24.719	24.736	24.752	24.768	24.784	24.800	24.817	24.833	**1370**
1380	24.833	24.849	24.865	24.881	24.897	24.913	24.930	24.946	24.962	24.978	24.994	**1380**
1390	24.994	25.010	25.026	25.042	25.058	25.075	25.091	25.107	25.123	25.139	25.155	**1390**
1400	25.155	25.171	25.187	25.203	25.219	25.235	25.251	25.267	25.283	25.299	25.315	**1400**
1410	25.315	25.331	25.347	25.363	25.379	25.395	25.411	25.427	25.443	25.459	25.475	**1410**
1420	25.475	25.490	25.506	25.522	25.538	25.554	25.570	25.586	25.602	25.618	25.633	**1420**
1430	25.633	25.649	25.665	25.681	25.697	25.713	25.729	25.744	25.760	25.776	25.792	**1430**
1440	25.792	25.808	25.823	25.839	25.855	25.871	25.886	25.902	25.918	25.934	25.949	**1440**
1450	25.949	25.965	25.981	25.997	26.012	26.028	26.044	26.060	26.075	26.091	26.107	**1450**
1460	26.107	26.122	26.138	26.154	26.169	26.185	26.201	26.216	26.232	26.248	26.263	**1460**
1470	26.263	26.279	26.294	26.310	26.326	26.341	26.357	26.372	26.388	26.403	26.419	**1470**
1480	26.419	26.435	26.450	26.466	26.481	26.497	26.512	26.528	26.543	26.559	26.574	**1480**
1490	26.574	26.590	26.605	26.621	26.636	26.652	26.667	26.683	26.698	26.714	26.729	**1490**
1500	26.729	26.744	26.760	26.775	26.791	26.806	26.822	26.837	26.852	26.868	26.883	**1500**

TABLE 5 *(continued)*

EMF in Millivolts												Reference Junctions at 0°C
DEG C	0	1	2	3	4	5	6	7	8	9	10	DEG C
Thermoelectric Voltage in Millivolts												
1500	26.729	26.744	26.760	26.775	26.791	26.806	26.822	26.837	26.852	26.868	26.883	**1500**
1510	26.883	26.899	26.914	26.929	26.945	26.960	26.975	26.991	27.006	27.021	27.037	**1510**
1520	27.037	27.052	27.067	27.083	27.098	27.113	27.128	27.144	27.159	27.174	27.190	**1520**
1530	27.190	27.205	27.220	27.235	27.250	27.266	27.281	27.296	27.311	27.327	27.342	**1530**
1540	27.342	27.357	27.372	27.387	27.403	27.418	27.433	27.448	27.463	27.478	27.493	**1540**
1550	27.493	27.509	27.524	27.539	27.554	27.569	27.584	27.599	27.614	27.629	27.645	**1550**
1560	27.645	27.660	27.675	27.690	27.705	27.720	27.735	27.750	27.765	27.780	27.795	**1560**
1570	27.795	27.810	27.825	27.840	27.855	27.870	27.885	27.900	27.915	27.930	27.945	**1570**
1580	27.945	27.960	27.975	27.990	28.005	28.020	28.034	28.049	28.064	28.079	28.094	**1580**
1590	28.094	28.109	28.124	28.139	28.154	28.169	28.183	28.198	28.213	28.228	28.243	**1590**
1600	28.243	28.258	28.272	28.287	28.302	28.317	28.332	28.346	28.361	28.376	28.391	**1600**
1610	28.391	28.406	28.420	28.435	28.450	28.465	28.479	28.494	28.509	28.524	28.538	**1610**
1620	28.538	28.553	28.568	28.582	28.597	28.612	28.626	28.641	28.656	28.670	28.685	**1620**
1630	28.685	28.700	28.714	28.729	28.744	28.758	28.773	28.787	28.802	28.817	28.831	**1630**
1640	28.831	28.846	28.860	28.875	28.890	28.904	28.919	28.933	28.948	28.962	28.977	**1640**
1650	28.977	28.991	29.006	29.020	29.035	29.049	29.064	29.078	29.093	29.107	29.122	**1650**
1660	29.122	29.136	29.151	29.165	29.180	29.194	29.209	29.223	29.237	29.252	29.266	**1660**
1670	29.266	29.281	29.295	29.309	29.324	29.338	29.353	29.367	29.381	29.396	29.410	**1670**
1680	29.410	29.424	29.439	29.453	29.467	29.482	29.496	29.510	29.525	29.539	29.553	**1680**
1690	29.553	29.567	29.582	29.596	29.610	29.625	29.639	29.653	29.667	29.681	29.696	**1690**
1700	29.696	29.710	29.724	29.738	29.753	29.767	29.781	29.795	29.809	29.823	29.838	**1700**
1710	29.838	29.852	29.866	29.880	29.894	29.908	29.922	29.937	29.951	29.965	29.979	**1710**
1720	29.979	29.993	30.007	30.021	30.035	30.049	30.063	30.077	30.091	30.106	30.120	**1720**
1730	30.120	30.134	30.148	30.162	30.176	30.190	30.204	30.218	30.232	30.246	30.260	**1730**
1740	30.260	30.274	30.288	30.302	30.315	30.329	30.343	30.357	30.371	30.385	30.399	**1740**
1750	30.399	30.413	30.427	30.441	30.455	30.469	30.482	30.496	30.510	30.524	30.538	**1750**
1760	30.538	30.552	30.565	30.579	30.593	30.607	30.621	30.635	30.648	30.662	30.676	**1760**
1770	30.676	30.690	30.704	30.717	30.731	30.745	30.759	30.772	30.786	30.800	30.813	**1770**
1780	30.813	30.827	30.841	30.855	30.868	30.882	30.896	30.909	30.923	30.937	30.950	**1780**
1790	30.950	30.964	30.978	30.991	31.005	31.019	31.032	31.046	31.059	31.073	31.087	**1790**
1800	31.087	31.100	31.114	31.127	31.141	31.154	31.168	31.182	31.195	31.209	31.222	**1800**
1810	31.222	31.236	31.249	31.263	31.276	31.290	31.303	31.317	31.330	31.344	31.357	**1810**
1820	31.357	31.371	31.384	31.397	31.411	31.424	31.438	31.451	31.465	31.478	31.491	**1820**
1830	31.491	31.505	31.518	31.532	31.545	31.558	31.572	31.585	31.598	31.612	31.625	**1830**
1840	31.625	31.638	31.652	31.665	31.678	31.692	31.705	31.718	31.731	31.745	31.758	**1840**
1850	31.758	31.771	31.784	31.798	31.811	31.824	31.837	31.851	31.864	31.877	31.890	**1850**
1860	31.890	31.903	31.917	31.930	31.943	31.956	31.969	31.982	31.996	32.009	32.022	**1860**
1870	32.022	32.035	32.048	32.061	32.074	32.087	32.101	32.114	32.127	32.140	32.153	**1870**
1880	32.153	32.166	32.179	32.192	32.205	32.218	32.231	32.244	32.257	32.270	32.283	**1880**
1890	32.283	32.296	32.309	32.322	32.335	32.348	32.361	32.374	32.387	32.400	32.413	**1890**
1900	32.413	32.426	32.439	32.451	32.464	32.477	32.490	32.503	32.516	32.529	32.542	**1900**
1910	32.542	32.554	32.567	32.580	32.593	32.606	32.619	32.631	32.644	32.657	32.670	**1910**
1920	32.670	32.683	32.695	32.708	32.721	32.734	32.746	32.759	32.772	32.784	32.797	**1920**
1930	32.797	32.810	32.823	32.835	32.848	32.861	32.873	32.886	32.899	32.911	32.924	**1930**
1940	32.924	32.937	32.949	32.962	32.974	32.987	33.000	33.012	33.025	33.037	33.050	**1940**
1950	33.050	33.063	33.075	33.088	33.100	33.113	33.125	33.138	33.150	33.163	33.175	**1950**
1960	33.175	33.188	33.200	33.213	33.225	33.238	33.250	33.263	33.275	33.287	33.300	**1960**
1970	33.300	33.312	33.325	33.337	33.350	33.362	33.374	33.387	33.399	33.411	33.424	**1970**
1980	33.424	33.436	33.448	33.461	33.473	33.485	33.498	33.510	33.522	33.535	33.547	**1980**
1990	33.547	33.559	33.571	33.584	33.596	33.608	33.620	33.632	33.645	33.657	33.669	**1990**
2000	33.669	33.681	33.693	33.706	33.718	33.730	33.742	33.754	33.766	33.779	33.791	**2000**

TABLE 5 *(continued)*

EMF in Millivolts												Reference Junctions at 0°C
DEG C	0	1	2	3	4	5	6	7	8	9	10	DEG C
Thermoelectric Voltage in Millivolts												
2000	33.669	33.681	33.693	33.706	33.718	33.730	33.742	33.754	33.766	33.779	33.791	**2000**
2010	33.791	33.803	33.815	33.827	33.839	33.851	33.863	33.875	33.887	33.899	33.911	**2010**
2020	33.911	33.923	33.936	33.948	33.960	33.972	33.984	33.996	34.008	34.019	34.031	**2020**
2030	34.031	34.043	34.055	34.067	34.079	34.091	34.103	34.115	34.127	34.139	34.151	**2030**
2040	34.151	34.163	34.174	34.186	34.198	34.210	34.222	34.234	34.245	34.257	34.269	**2040**
2050	34.269	34.281	34.293	34.304	34.316	34.328	34.340	34.351	34.363	34.375	34.387	**2050**
2060	34.387	34.398	34.410	34.422	34.433	34.445	34.457	34.468	34.480	34.492	34.503	**2060**
2070	34.503	34.515	34.527	34.538	34.550	34.561	34.573	34.585	34.596	34.608	34.619	**2070**
2080	34.619	34.631	34.642	34.654	34.665	34.677	34.688	34.700	34.711	34.723	34.734	**2080**
2090	34.734	34.746	34.757	34.769	34.780	34.792	34.803	34.814	34.826	34.837	34.849	**2090**
2100	34.849	34.860	34.871	34.883	34.894	34.905	34.917	34.928	34.939	34.951	34.962	**2100**
2110	34.962	34.973	34.984	34.996	35.007	35.018	35.029	35.041	35.052	35.063	35.074	**2110**
2120	35.074	35.085	35.097	35.108	35.119	35.130	35.141	35.152	35.164	35.175	35.186	**2120**
2130	35.186	35.197	35.208	35.219	35.230	35.241	35.252	35.263	35.274	35.285	35.296	**2130**
2140	35.296	35.307	35.318	35.329	35.340	35.351	35.362	35.373	35.384	35.395	35.406	**2140**
2150	35.406	35.417	35.428	35.439	35.450	35.461	35.472	35.482	35.493	35.504	35.515	**2150**
2160	35.515	35.526	35.537	35.547	35.558	35.569	35.580	35.591	35.601	35.612	35.623	**2160**
2170	35.623	35.634	35.644	35.655	35.666	35.676	35.687	35.698	35.708	35.719	35.730	**2170**
2180	35.730	35.740	35.751	35.762	35.772	35.783	35.793	35.804	35.814	35.825	35.836	**2180**
2190	35.836	35.846	35.857	35.867	35.878	35.888	35.899	35.909	35.920	35.930	35.940	**2190**
2200	35.940	35.951	35.961	35.972	35.982	35.993	36.003	36.013	36.024	36.034	36.044	**2200**
2210	36.044	36.055	36.065	36.075	36.086	36.096	36.106	36.116	36.127	36.137	36.147	**2210**
2220	36.147	36.157	36.168	36.178	36.188	36.198	36.208	36.219	36.229	36.239	36.249	**2220**
2230	36.249	36.259	36.269	36.279	36.289	36.300	36.310	36.320	36.330	36.340	36.350	**2230**
2240	36.350	36.360	36.370	36.380	36.390	36.400	36.410	36.420	36.430	36.440	36.449	**2240**
2250	36.449	36.459	36.469	36.479	36.489	36.499	36.509	36.519	36.528	36.538	36.548	**2250**
2260	36.548	36.558	36.568	36.577	36.587	36.597	36.607	36.616	36.626	36.636	36.645	**2260**
2270	36.645	36.655	36.665	36.675	36.684	36.694	36.703	36.713	36.723	36.732	36.742	**2270**
2280	36.742	36.751	36.761	36.771	36.780	36.790	36.799	36.809	36.818	36.828	36.837	**2280**
2290	36.837	36.846	36.856	36.865	36.875	36.884	36.894	36.903	36.912	36.922	36.931	**2290**
2300	36.931	36.940	36.950	36.959	36.968	36.978	36.987	36.996	37.005	37.015	37.024	**2300**
2310	37.024	37.033	37.042	37.051	37.061	37.070						**2310**

TABLE 6 Tungsten-5 % Rhenium versus Tungsten-26 % Rhenium Thermocouples—Thermoelectric Voltage as a Function of Temperature (°F)

EMF in Millivolts												Reference Junctions at 32°F
DEG F	0	1	2	3	4	5	6	7	8	9	10	DEG F
Thermoelectric Voltage in Millivolts												
30			0.000	0.007	0.015	0.022	0.030	0.037	0.045	0.052	0.060	**30**
40	0.060	0.067	0.075	0.082	0.090	0.097	0.105	0.113	0.120	0.128	0.135	**40**
50	0.135	0.143	0.150	0.158	0.166	0.173	0.181	0.188	0.196	0.204	0.211	**50**
60	0.211	0.219	0.227	0.234	0.242	0.250	0.257	0.265	0.273	0.281	0.288	**60**
70	0.288	0.296	0.304	0.311	0.319	0.327	0.335	0.342	0.350	0.358	0.366	**70**
80	0.366	0.374	0.381	0.389	0.397	0.405	0.413	0.421	0.428	0.436	0.444	**80**
90	0.444	0.452	0.460	0.468	0.476	0.483	0.491	0.499	0.507	0.515	0.523	**90**
100	0.523	0.531	0.539	0.547	0.555	0.563	0.571	0.579	0.587	0.595	0.603	**100**
110	0.603	0.611	0.619	0.627	0.635	0.643	0.651	0.659	0.667	0.675	0.683	**110**
120	0.683	0.691	0.699	0.707	0.715	0.723	0.731	0.740	0.748	0.756	0.764	**120**
130	0.764	0.772	0.780	0.788	0.796	0.805	0.813	0.821	0.829	0.837	0.846	**130**
140	0.846	0.854	0.862	0.870	0.878	0.887	0.895	0.903	0.911	0.920	0.928	**140**
150	0.928	0.936	0.944	0.953	0.961	0.969	0.977	0.986	0.994	1.002	1.011	**150**
160	1.011	1.019	1.027	1.036	1.044	1.052	1.061	1.069	1.077	1.086	1.094	**160**
170	1.094	1.103	1.111	1.119	1.128	1.136	1.145	1.153	1.161	1.170	1.178	**170**
180	1.178	1.187	1.195	1.204	1.212	1.221	1.229	1.238	1.246	1.254	1.263	**180**
190	1.263	1.272	1.280	1.289	1.297	1.306	1.314	1.323	1.331	1.340	1.348	**190**
200	1.348	1.357	1.365	1.374	1.383	1.391	1.400	1.408	1.417	1.426	1.434	**200**
210	1.434	1.443	1.451	1.460	1.469	1.477	1.486	1.495	1.503	1.512	1.521	**210**
220	1.521	1.529	1.538	1.547	1.555	1.564	1.573	1.582	1.590	1.599	1.608	**220**
230	1.608	1.617	1.625	1.634	1.643	1.652	1.660	1.669	1.678	1.687	1.695	**230**
240	1.695	1.704	1.713	1.722	1.731	1.739	1.748	1.757	1.766	1.775	1.784	**240**
250	1.784	1.792	1.801	1.810	1.819	1.828	1.837	1.846	1.855	1.863	1.872	**250**
260	1.872	1.881	1.890	1.899	1.908	1.917	1.926	1.935	1.944	1.953	1.962	**260**
270	1.962	1.970	1.979	1.988	1.997	2.006	2.015	2.024	2.033	2.042	2.051	**270**
280	2.051	2.060	2.069	2.078	2.087	2.096	2.105	2.114	2.124	2.133	2.142	**280**
290	2.142	2.151	2.160	2.169	2.178	2.187	2.196	2.205	2.214	2.223	2.232	**290**
300	2.232	2.242	2.251	2.260	2.269	2.278	2.287	2.296	2.305	2.315	2.324	**300**
310	2.324	2.333	2.342	2.351	2.360	2.370	2.379	2.388	2.397	2.406	2.415	**310**
320	2.415	2.425	2.434	2.443	2.452	2.462	2.471	2.480	2.489	2.498	2.508	**320**
330	2.508	2.517	2.526	2.536	2.545	2.554	2.563	2.573	2.582	2.591	2.600	**330**
340	2.600	2.610	2.619	2.628	2.638	2.647	2.656	2.666	2.675	2.684	2.694	**340**
350	2.694	2.703	2.712	2.722	2.731	2.740	2.750	2.759	2.769	2.778	2.787	**350**
360	2.787	2.797	2.806	2.815	2.825	2.834	2.844	2.853	2.863	2.872	2.881	**360**
370	2.881	2.891	2.900	2.910	2.919	2.929	2.938	2.948	2.957	2.966	2.976	**370**
380	2.976	2.985	2.995	3.004	3.014	3.023	3.033	3.042	3.052	3.061	3.071	**380**
390	3.071	3.080	3.090	3.099	3.109	3.119	3.128	3.138	3.147	3.157	3.166	**390**
400	3.166	3.176	3.185	3.195	3.205	3.214	3.224	3.233	3.243	3.252	3.262	**400**
410	3.262	3.272	3.281	3.291	3.301	3.310	3.320	3.329	3.339	3.349	3.358	**410**
420	3.358	3.368	3.378	3.387	3.397	3.407	3.416	3.426	3.436	3.445	3.455	**420**
430	3.455	3.465	3.474	3.484	3.494	3.503	3.513	3.523	3.532	3.542	3.552	**430**
440	3.552	3.562	3.571	3.581	3.591	3.600	3.610	3.620	3.630	3.639	3.649	**440**
450	3.649	3.659	3.669	3.678	3.688	3.698	3.708	3.718	3.727	3.737	3.747	**450**
460	3.747	3.757	3.767	3.776	3.786	3.796	3.806	3.816	3.825	3.835	3.845	**460**
470	3.845	3.855	3.865	3.875	3.884	3.894	3.904	3.914	3.924	3.934	3.943	**470**
480	3.943	3.953	3.963	3.973	3.983	3.993	4.003	4.013	4.022	4.032	4.042	**480**
490	4.042	4.052	4.062	4.072	4.082	4.092	4.102	4.112	4.122	4.131	4.141	**490**
500	4.141	4.151	4.161	4.171	4.181	4.191	4.201	4.211	4.221	4.231	4.241	**500**

TABLE 6 *(continued)*

EMF in Millivolts												Reference Junctions at 32°F
DEG F	0	1	2	3	4	5	6	7	8	9	10	DEG F
Thermoelectric Voltage in Millivolts												
500	4.141	4.151	4.161	4.171	4.181	4.191	4.201	4.211	4.221	4.231	4.241	**500**
510	4.241	4.251	4.261	4.271	4.281	4.291	4.301	4.311	4.321	4.331	4.341	**510**
520	4.341	4.351	4.361	4.371	4.381	4.391	4.401	4.411	4.421	4.431	4.441	**520**
530	4.441	4.451	4.461	4.471	4.481	4.491	4.501	4.511	4.521	4.531	4.541	**530**
540	4.541	4.551	4.561	4.571	4.582	4.592	4.602	4.612	4.622	4.632	4.642	**540**
550	4.642	4.652	4.662	4.672	4.682	4.692	4.703	4.713	4.723	4.733	4.743	**550**
560	4.743	4.753	4.763	4.773	4.784	4.794	4.804	4.814	4.824	4.834	4.844	**560**
570	4.844	4.855	4.865	4.875	4.885	4.895	4.905	4.915	4.926	4.936	4.946	**570**
580	4.946	4.956	4.966	4.977	4.987	4.997	5.007	5.017	5.027	5.038	5.048	**580**
590	5.048	5.058	5.068	5.078	5.089	5.099	5.109	5.119	5.130	5.140	5.150	**590**
600	5.150	5.160	5.170	5.181	5.191	5.201	5.211	5.222	5.232	5.242	5.252	**600**
610	5.252	5.263	5.273	5.283	5.294	5.304	5.314	5.324	5.335	5.345	5.355	**610**
620	5.355	5.365	5.376	5.386	5.396	5.407	5.417	5.427	5.437	5.448	5.458	**620**
630	5.458	5.468	5.479	5.489	5.499	5.510	5.520	5.530	5.541	5.551	5.561	**630**
640	5.561	5.572	5.582	5.592	5.603	5.613	5.623	5.634	5.644	5.654	5.665	**640**
650	5.665	5.675	5.685	5.696	5.706	5.717	5.727	5.737	5.748	5.758	5.768	**650**
660	5.768	5.779	5.789	5.800	5.810	5.820	5.831	5.841	5.851	5.862	5.872	**660**
670	5.872	5.883	5.893	5.903	5.914	5.924	5.935	5.945	5.956	5.966	5.976	**670**
680	5.976	5.987	5.997	6.008	6.018	6.028	6.039	6.049	6.060	6.070	6.081	**680**
690	6.081	6.091	6.102	6.112	6.122	6.133	6.143	6.154	6.164	6.175	6.185	**690**
700	6.185	6.196	6.206	6.217	6.227	6.238	6.248	6.259	6.269	6.279	6.290	**700**
710	6.290	6.300	6.311	6.321	6.332	6.342	6.353	6.363	6.374	6.384	6.395	**710**
720	6.395	6.405	6.416	6.426	6.437	6.447	6.458	6.468	6.479	6.490	6.500	**720**
730	6.500	6.511	6.521	6.532	6.542	6.553	6.563	6.574	6.584	6.595	6.605	**730**
740	6.605	6.616	6.626	6.637	6.648	6.658	6.669	6.679	6.690	6.700	6.711	**740**
750	6.711	6.721	6.732	6.743	6.753	6.764	6.774	6.785	6.795	6.806	6.817	**750**
760	6.817	6.827	6.838	6.848	6.859	6.869	6.880	6.891	6.901	6.912	6.922	**760**
770	6.922	6.933	6.944	6.954	6.965	6.975	6.986	6.997	7.007	7.018	7.028	**770**
780	7.028	7.039	7.050	7.060	7.071	7.082	7.092	7.103	7.113	7.124	7.135	**780**
790	7.135	7.145	7.156	7.167	7.177	7.188	7.198	7.209	7.220	7.230	7.241	**790**
800	7.241	7.252	7.262	7.273	7.284	7.294	7.305	7.315	7.326	7.337	7.347	**800**
810	7.347	7.358	7.369	7.379	7.390	7.401	7.411	7.422	7.433	7.443	7.454	**810**
820	7.454	7.465	7.475	7.486	7.497	7.507	7.518	7.529	7.540	7.550	7.561	**820**
830	7.561	7.572	7.582	7.593	7.604	7.614	7.625	7.636	7.646	7.657	7.668	**830**
840	7.668	7.678	7.689	7.700	7.711	7.721	7.732	7.743	7.753	7.764	7.775	**840**
850	7.775	7.786	7.796	7.807	7.818	7.828	7.839	7.850	7.861	7.871	7.882	**850**
860	7.882	7.893	7.903	7.914	7.925	7.936	7.946	7.957	7.968	7.979	7.989	**860**
870	7.989	8.000	8.011	8.022	8.032	8.043	8.054	8.064	8.075	8.086	8.097	**870**
880	8.097	8.107	8.118	8.129	8.140	8.150	8.161	8.172	8.183	8.193	8.204	**880**
890	8.204	8.215	8.226	8.236	8.247	8.258	8.269	8.280	8.290	8.301	8.312	**890**
900	8.312	8.323	8.333	8.344	8.355	8.366	8.376	8.387	8.398	8.409	8.420	**900**
910	8.420	8.430	8.441	8.452	8.463	8.473	8.484	8.495	8.506	8.517	8.527	**910**
920	8.527	8.538	8.549	8.560	8.571	8.581	8.592	8.603	8.614	8.625	8.635	**920**
930	8.635	8.646	8.657	8.668	8.678	8.689	8.700	8.711	8.722	8.732	8.743	**930**
940	8.743	8.754	8.765	8.776	8.787	8.797	8.808	8.819	8.830	8.841	8.851	**940**
950	8.851	8.862	8.873	8.884	8.895	8.905	8.916	8.927	8.938	8.949	8.960	**950**
960	8.960	8.970	8.981	8.992	9.003	9.014	9.024	9.035	9.046	9.057	9.068	**960**
970	9.068	9.079	9.089	9.100	9.111	9.122	9.133	9.144	9.154	9.165	9.176	**970**
980	9.176	9.187	9.198	9.209	9.219	9.230	9.241	9.252	9.263	9.274	9.284	**980**
990	9.284	9.295	9.306	9.317	9.328	9.339	9.349	9.360	9.371	9.382	9.393	**990**
1000	9.393	9.404	9.414	9.425	9.436	9.447	9.458	9.469	9.480	9.490	9.501	**1000**

TABLE 6 *(continued)*

EMF in Millivolts												Reference Junctions at 32°F
DEG F	0	1	2	3	4	5	6	7	8	9	10	DEG F
Thermoelectric Voltage in Millivolts												
1000	9.393	9.404	9.414	9.425	9.436	9.447	9.458	9.469	9.480	9.490	9.501	**1000**
1010	9.501	9.512	9.523	9.534	9.545	9.555	9.566	9.577	9.588	9.599	9.610	**1010**
1020	9.610	9.621	9.631	9.642	9.653	9.664	9.675	9.686	9.697	9.707	9.718	**1020**
1030	9.718	9.729	9.740	9.751	9.762	9.773	9.783	9.794	9.805	9.816	9.827	**1030**
1040	9.827	9.838	9.849	9.859	9.870	9.881	9.892	9.903	9.914	9.925	9.935	**1040**
1050	9.935	9.946	9.957	9.968	9.979	9.990	10.001	10.011	10.022	10.033	10.044	**1050**
1060	10.044	10.055	10.066	10.077	10.087	10.098	10.109	10.120	10.131	10.142	10.153	**1060**
1070	10.153	10.163	10.174	10.185	10.196	10.207	10.218	10.229	10.239	10.250	10.261	**1070**
1080	10.261	10.272	10.283	10.294	10.305	10.316	10.326	10.337	10.348	10.359	10.370	**1080**
1090	10.370	10.381	10.392	10.402	10.413	10.424	10.435	10.446	10.457	10.468	10.478	**1090**
1100	10.478	10.489	10.500	10.511	10.522	10.533	10.544	10.554	10.565	10.576	10.587	**1100**
1110	10.587	10.598	10.609	10.620	10.630	10.641	10.652	10.663	10.674	10.685	10.696	**1110**
1120	10.696	10.706	10.717	10.728	10.739	10.750	10.761	10.772	10.782	10.793	10.804	**1120**
1130	10.804	10.815	10.826	10.837	10.848	10.858	10.869	10.880	10.891	10.902	10.913	**1130**
1140	10.913	10.923	10.934	10.945	10.956	10.967	10.978	10.989	10.999	11.010	11.021	**1140**
1150	11.021	11.032	11.043	11.054	11.064	11.075	11.086	11.097	11.108	11.119	11.130	**1150**
1160	11.130	11.140	11.151	11.162	11.173	11.184	11.195	11.205	11.216	11.227	11.238	**1160**
1170	11.238	11.249	11.260	11.270	11.281	11.292	11.303	11.314	11.325	11.335	11.346	**1170**
1180	11.346	11.357	11.368	11.379	11.390	11.400	11.411	11.422	11.433	11.444	11.455	**1180**
1190	11.455	11.465	11.476	11.487	11.498	11.509	11.520	11.530	11.541	11.552	11.563	**1190**
1200	11.563	11.574	11.585	11.595	11.606	11.617	11.628	11.639	11.650	11.660	11.671	**1200**
1210	11.671	11.682	11.693	11.704	11.715	11.725	11.736	11.747	11.758	11.769	11.780	**1210**
1220	11.780	11.790	11.801	11.812	11.823	11.834	11.844	11.855	11.866	11.877	11.888	**1220**
1230	11.888	11.899	11.909	11.920	11.931	11.942	11.953	11.964	11.974	11.985	11.996	**1230**
1240	11.996	12.007	12.018	12.029	12.039	12.050	12.061	12.072	12.083	12.093	12.104	**1240**
1250	12.104	12.115	12.126	12.137	12.148	12.158	12.169	12.180	12.191	12.202	12.213	**1250**
1260	12.213	12.223	12.234	12.245	12.256	12.267	12.277	12.288	12.299	12.310	12.321	**1260**
1270	12.321	12.332	12.342	12.353	12.364	12.375	12.386	12.396	12.407	12.418	12.429	**1270**
1280	12.429	12.440	12.450	12.461	12.472	12.483	12.494	12.505	12.515	12.526	12.537	**1280**
1290	12.537	12.548	12.559	12.569	12.580	12.591	12.602	12.613	12.623	12.634	12.645	**1290**
1300	12.645	12.656	12.667	12.677	12.688	12.699	12.710	12.721	12.731	12.742	12.753	**1300**
1310	12.753	12.764	12.775	12.785	12.796	12.807	12.818	12.829	12.839	12.850	12.861	**1310**
1320	12.861	12.872	12.883	12.893	12.904	12.915	12.926	12.937	12.947	12.958	12.969	**1320**
1330	12.969	12.980	12.990	13.001	13.012	13.023	13.034	13.044	13.055	13.066	13.077	**1330**
1340	13.077	13.088	13.098	13.109	13.120	13.131	13.141	13.152	13.163	13.174	13.185	**1340**
1350	13.185	13.195	13.206	13.217	13.228	13.238	13.249	13.260	13.271	13.282	13.292	**1350**
1360	13.292	13.303	13.314	13.325	13.335	13.346	13.357	13.368	13.378	13.389	13.400	**1360**
1370	13.400	13.411	13.421	13.432	13.443	13.454	13.465	13.475	13.486	13.497	13.508	**1370**
1380	13.508	13.518	13.529	13.540	13.551	13.561	13.572	13.583	13.594	13.604	13.615	**1380**
1390	13.615	13.626	13.637	13.647	13.658	13.669	13.680	13.690	13.701	13.712	13.723	**1390**
1400	13.723	13.733	13.744	13.755	13.766	13.776	13.787	13.798	13.808	13.819	13.830	**1400**
1410	13.830	13.841	13.851	13.862	13.873	13.884	13.894	13.905	13.916	13.926	13.937	**1410**
1420	13.937	13.948	13.959	13.969	13.980	13.991	14.002	14.012	14.023	14.034	14.044	**1420**
1430	14.044	14.055	14.066	14.077	14.087	14.098	14.109	14.119	14.130	14.141	14.152	**1430**
1440	14.152	14.162	14.173	14.184	14.194	14.205	14.216	14.227	14.237	14.248	14.259	**1440**
1450	14.259	14.269	14.280	14.291	14.301	14.312	14.323	14.333	14.344	14.355	14.366	**1450**
1460	14.366	14.376	14.387	14.398	14.408	14.419	14.430	14.440	14.451	14.462	14.472	**1460**
1470	14.472	14.483	14.494	14.504	14.515	14.526	14.537	14.547	14.558	14.569	14.579	**1470**
1480	14.579	14.590	14.601	14.611	14.622	14.633	14.643	14.654	14.665	14.675	14.686	**1480**
1490	14.686	14.697	14.707	14.718	14.729	14.739	14.750	14.760	14.771	14.782	14.792	**1490**
1500	14.792	14.803	14.814	14.824	14.835	14.846	14.856	14.867	14.878	14.888	14.899	**1500**

TABLE 6 *(continued)*

EMF in Millivolts												Reference Junctions at 32°F
DEG F	0	1	2	3	4	5	6	7	8	9	10	DEG F
Thermoelectric Voltage in Millivolts												
1500	14.792	14.803	14.814	14.824	14.835	14.846	14.856	14.867	14.878	14.888	14.899	**1500**
1510	14.899	14.910	14.920	14.931	14.941	14.952	14.963	14.973	14.984	14.995	15.005	**1510**
1520	15.005	15.016	15.027	15.037	15.048	15.058	15.069	15.080	15.090	15.101	15.112	**1520**
1530	15.112	15.122	15.133	15.143	15.154	15.165	15.175	15.186	15.196	15.207	15.218	**1530**
1540	15.218	15.228	15.239	15.250	15.260	15.271	15.281	15.292	15.303	15.313	15.324	**1540**
1550	15.324	15.334	15.345	15.356	15.366	15.377	15.387	15.398	15.408	15.419	15.430	**1550**
1560	15.430	15.440	15.451	15.461	15.472	15.483	15.493	15.504	15.514	15.525	15.535	**1560**
1570	15.535	15.546	15.557	15.567	15.578	15.588	15.599	15.609	15.620	15.631	15.641	**1570**
1580	15.641	15.652	15.662	15.673	15.683	15.694	15.704	15.715	15.726	15.736	15.747	**1580**
1590	15.747	15.757	15.768	15.778	15.789	15.799	15.810	15.821	15.831	15.842	15.852	**1590**
1600	15.852	15.863	15.873	15.884	15.894	15.905	15.915	15.926	15.936	15.947	15.957	**1600**
1610	15.957	15.968	15.979	15.989	16.000	16.010	16.021	16.031	16.042	16.052	16.063	**1610**
1620	16.063	16.073	16.084	16.094	16.105	16.115	16.126	16.136	16.147	16.157	16.168	**1620**
1630	16.168	16.178	16.189	16.199	16.210	16.220	16.231	16.241	16.252	16.262	16.273	**1630**
1640	16.273	16.283	16.294	16.304	16.315	16.325	16.336	16.346	16.357	16.367	16.377	**1640**
1650	16.377	16.388	16.398	16.409	16.419	16.430	16.440	16.451	16.461	16.472	16.482	**1650**
1660	16.482	16.493	16.503	16.514	16.524	16.534	16.545	16.555	16.566	16.576	16.587	**1660**
1670	16.587	16.597	16.608	16.618	16.628	16.639	16.649	16.660	16.670	16.681	16.691	**1670**
1680	16.691	16.702	16.712	16.722	16.733	16.743	16.754	16.764	16.775	16.785	16.795	**1680**
1690	16.795	16.806	16.816	16.827	16.837	16.847	16.858	16.868	16.879	16.889	16.899	**1690**
1700	16.899	16.910	16.920	16.931	16.941	16.952	16.962	16.972	16.983	16.993	17.003	**1700**
1710	17.003	17.014	17.024	17.035	17.045	17.055	17.066	17.076	17.087	17.097	17.107	**1710**
1720	17.107	17.118	17.128	17.138	17.149	17.159	17.170	17.180	17.190	17.201	17.211	**1720**
1730	17.211	17.221	17.232	17.242	17.252	17.263	17.273	17.284	17.294	17.304	17.315	**1730**
1740	17.315	17.325	17.335	17.346	17.356	17.366	17.377	17.387	17.397	17.408	17.418	**1740**
1750	17.418	17.428	17.439	17.449	17.459	17.470	17.480	17.490	17.501	17.511	17.521	**1750**
1760	17.521	17.532	17.542	17.552	17.563	17.573	17.583	17.593	17.604	17.614	17.624	**1760**
1770	17.624	17.635	17.645	17.655	17.666	17.676	17.686	17.696	17.707	17.717	17.727	**1770**
1780	17.727	17.738	17.748	17.758	17.768	17.779	17.789	17.799	17.810	17.820	17.830	**1780**
1790	17.830	17.840	17.851	17.861	17.871	17.881	17.892	17.902	17.912	17.922	17.933	**1790**
1800	17.933	17.943	17.953	17.964	17.974	17.984	17.994	18.005	18.015	18.025	18.035	**1800**
1810	18.035	18.045	18.056	18.066	18.076	18.086	18.097	18.107	18.117	18.127	18.138	**1810**
1820	18.138	18.148	18.158	18.168	18.178	18.189	18.199	18.209	18.219	18.230	18.240	**1820**
1830	18.240	18.250	18.260	18.270	18.281	18.291	18.301	18.311	18.321	18.332	18.342	**1830**
1840	18.342	18.352	18.362	18.372	18.383	18.393	18.403	18.413	18.423	18.433	18.444	**1840**
1850	18.444	18.454	18.464	18.474	18.484	18.495	18.505	18.515	18.525	18.535	18.545	**1850**
1860	18.545	18.556	18.566	18.576	18.586	18.596	18.606	18.616	18.627	18.637	18.647	**1860**
1870	18.647	18.657	18.667	18.677	18.687	18.698	18.708	18.718	18.728	18.738	18.748	**1870**
1880	18.748	18.758	18.769	18.779	18.789	18.799	18.809	18.819	18.829	18.839	18.849	**1880**
1890	18.849	18.860	18.870	18.880	18.890	18.900	18.910	18.920	18.930	18.940	18.951	**1890**
1900	18.951	18.961	18.971	18.981	18.991	19.001	19.011	19.021	19.031	19.041	19.051	**1900**
1910	19.051	19.062	19.072	19.082	19.092	19.102	19.112	19.122	19.132	19.142	19.152	**1910**
1920	19.152	19.162	19.172	19.182	19.192	19.202	19.212	19.223	19.233	19.243	19.253	**1920**
1930	19.253	19.263	19.273	19.283	19.293	19.303	19.313	19.323	19.333	19.343	19.353	**1930**
1940	19.353	19.363	19.373	19.383	19.393	19.403	19.413	19.423	19.433	19.443	19.453	**1940**
1950	19.453	19.463	19.473	19.483	19.493	19.503	19.513	19.523	19.533	19.543	19.553	**1950**
1960	19.553	19.563	19.573	19.583	19.593	19.603	19.613	19.623	19.633	19.643	19.653	**1960**
1970	19.653	19.663	19.673	19.683	19.693	19.703	19.713	19.723	19.733	19.743	19.753	**1970**
1980	19.753	19.763	19.773	19.783	19.793	19.803	19.813	19.823	19.833	19.842	19.852	**1980**
1990	19.852	19.862	19.872	19.882	19.892	19.902	19.912	19.922	19.932	19.942	19.952	**1990**
2000	19.952	19.962	19.972	19.982	19.991	20.001	20.011	20.021	20.031	20.041	20.051	**2000**

TABLE 6 *(continued)*

EMF in Millivolts												Reference Junctions at 32°F
DEG F	0	1	2	3	4	5	6	7	8	9	10	DEG F
Thermoelectric Voltage in Millivolts												
2000	19.952	19.962	19.972	19.982	19.991	20.001	20.011	20.021	20.031	20.041	20.051	**2000**
2010	20.051	20.061	20.071	20.081	20.091	20.100	20.110	20.120	20.130	20.140	20.150	**2010**
2020	20.150	20.160	20.170	20.180	20.190	20.199	20.209	20.219	20.229	20.239	20.249	**2020**
2030	20.249	20.259	20.269	20.278	20.288	20.298	20.308	20.318	20.328	20.338	20.347	**2030**
2040	20.347	20.357	20.367	20.377	20.387	20.397	20.407	20.416	20.426	20.436	20.446	**2040**
2050	20.446	20.456	20.466	20.475	20.485	20.495	20.505	20.515	20.525	20.534	20.544	**2050**
2060	20.544	20.554	20.564	20.574	20.584	20.593	20.603	20.613	20.623	20.633	20.642	**2060**
2070	20.642	20.652	20.662	20.672	20.682	20.691	20.701	20.711	20.721	20.731	20.740	**2070**
2080	20.740	20.750	20.760	20.770	20.779	20.789	20.799	20.809	20.819	20.828	20.838	**2080**
2090	20.838	20.848	20.858	20.867	20.877	20.887	20.897	20.906	20.916	20.926	20.936	**2090**
2100	20.936	20.945	20.955	20.965	20.975	20.984	20.994	21.004	21.014	21.023	21.033	**2100**
2110	21.033	21.043	21.053	21.062	21.072	21.082	21.091	21.101	21.111	21.121	21.130	**2110**
2120	21.130	21.140	21.150	21.159	21.169	21.179	21.189	21.198	21.208	21.218	21.227	**2120**
2130	21.227	21.237	21.247	21.256	21.266	21.276	21.285	21.295	21.305	21.315	21.324	**2130**
2140	21.324	21.334	21.344	21.353	21.363	21.373	21.382	21.392	21.402	21.411	21.421	**2140**
2150	21.421	21.431	21.440	21.450	21.460	21.469	21.479	21.488	21.498	21.508	21.517	**2150**
2160	21.517	21.527	21.537	21.546	21.556	21.566	21.575	21.585	21.594	21.604	21.614	**2160**
2170	21.614	21.623	21.633	21.643	21.652	21.662	21.671	21.681	21.691	21.700	21.710	**2170**
2180	21.710	21.719	21.729	21.739	21.748	21.758	21.767	21.777	21.787	21.796	21.806	**2180**
2190	21.806	21.815	21.825	21.835	21.844	21.854	21.863	21.873	21.882	21.892	21.902	**2190**
2200	21.902	21.911	21.921	21.930	21.940	21.949	21.959	21.969	21.978	21.988	21.997	**2200**
2210	21.997	22.007	22.016	22.026	22.035	22.045	22.054	22.064	22.074	22.083	22.093	**2210**
2220	22.093	22.102	22.112	22.121	22.131	22.140	22.150	22.159	22.169	22.178	22.188	**2220**
2230	22.188	22.197	22.207	22.216	22.226	22.235	22.245	22.254	22.264	22.273	22.283	**2230**
2240	22.283	22.292	22.302	22.311	22.321	22.330	22.340	22.349	22.359	22.368	22.378	**2240**
2250	22.378	22.387	22.397	22.406	22.416	22.425	22.435	22.444	22.453	22.463	22.472	**2250**
2260	22.472	22.482	22.491	22.501	22.510	22.520	22.529	22.539	22.548	22.557	22.567	**2260**
2270	22.567	22.576	22.586	22.595	22.605	22.614	22.624	22.633	22.642	22.652	22.661	**2270**
2280	22.661	22.671	22.680	22.689	22.699	22.708	22.718	22.727	22.737	22.746	22.755	**2280**
2290	22.755	22.765	22.774	22.784	22.793	22.802	22.812	22.821	22.830	22.840	22.849	**2290**
2300	22.849	22.859	22.868	22.877	22.887	22.896	22.906	22.915	22.924	22.934	22.943	**2300**
2310	22.943	22.952	22.962	22.971	22.980	22.990	22.999	23.009	23.018	23.027	23.037	**2310**
2320	23.037	23.046	23.055	23.065	23.074	23.083	23.093	23.102	23.111	23.121	23.130	**2320**
2330	23.130	23.139	23.149	23.158	23.167	23.177	23.186	23.195	23.205	23.214	23.223	**2330**
2340	23.223	23.232	23.242	23.251	23.260	23.270	23.279	23.288	23.298	23.307	23.316	**2340**
2350	23.316	23.325	23.335	23.344	23.353	23.363	23.372	23.381	23.390	23.400	23.409	**2350**
2360	23.409	23.418	23.427	23.437	23.446	23.455	23.465	23.474	23.483	23.492	23.502	**2360**
2370	23.502	23.511	23.520	23.529	23.539	23.548	23.557	23.566	23.576	23.585	23.594	**2370**
2380	23.594	23.603	23.612	23.622	23.631	23.640	23.649	23.659	23.668	23.677	23.686	**2380**
2390	23.686	23.695	23.705	23.714	23.723	23.732	23.742	23.751	23.760	23.769	23.778	**2390**
2400	23.778	23.788	23.797	23.806	23.815	23.824	23.834	23.843	23.852	23.861	23.870	**2400**
2410	23.870	23.879	23.889	23.898	23.907	23.916	23.925	23.934	23.944	23.953	23.962	**2410**
2420	23.962	23.971	23.980	23.989	23.999	24.008	24.017	24.026	24.035	24.044	24.053	**2420**
2430	24.053	24.063	24.072	24.081	24.090	24.099	24.108	24.117	24.127	24.136	24.145	**2430**
2440	24.145	24.154	24.163	24.172	24.181	24.190	24.199	24.209	24.218	24.227	24.236	**2440**
2450	24.236	24.245	24.254	24.263	24.272	24.281	24.290	24.300	24.309	24.318	24.327	**2450**
2460	24.327	24.336	24.345	24.354	24.363	24.372	24.381	24.390	24.399	24.409	24.418	**2460**
2470	24.418	24.427	24.436	24.445	24.454	24.463	24.472	24.481	24.490	24.499	24.508	**2470**
2480	24.508	24.517	24.526	24.535	24.544	24.553	24.562	24.571	24.581	24.590	24.599	**2480**
2490	24.599	24.608	24.617	24.626	24.635	24.644	24.653	24.662	24.671	24.680	24.689	**2490**
2500	24.689	24.698	24.707	24.716	24.725	24.734	24.743	24.752	24.761	24.770	24.779	**2500**

TABLE 6 *(continued)*

EMF in Millivolts												Reference Junctions at 32°F
DEG F	0	1	2	3	4	5	6	7	8	9	10	DEG F
Thermoelectric Voltage in Millivolts												
2500	24.689	24.698	24.707	24.716	24.725	24.734	24.743	24.752	24.761	24.770	24.779	**2500**
2510	24.779	24.788	24.797	24.806	24.815	24.824	24.833	24.842	24.851	24.860	24.869	**2510**
2520	24.869	24.878	24.887	24.896	24.905	24.913	24.922	24.931	24.940	24.949	24.958	**2520**
2530	24.958	24.967	24.976	24.985	24.994	25.003	25.012	25.021	25.030	25.039	25.048	**2530**
2540	25.048	25.057	25.066	25.075	25.083	25.092	25.101	25.110	25.119	25.128	25.137	**2540**
2550	25.137	25.146	25.155	25.164	25.173	25.182	25.190	25.199	25.208	25.217	25.226	**2550**
2560	25.226	25.235	25.244	25.253	25.262	25.271	25.279	25.288	25.297	25.306	25.315	**2560**
2570	25.315	25.324	25.333	25.342	25.350	25.359	25.368	25.377	25.386	25.395	25.404	**2570**
2580	25.404	25.413	25.421	25.430	25.439	25.448	25.457	25.466	25.475	25.483	25.492	**2580**
2590	25.492	25.501	25.510	25.519	25.528	25.536	25.545	25.554	25.563	25.572	25.581	**2590**
2600	25.581	25.589	25.598	25.607	25.616	25.625	25.633	25.642	25.651	25.660	25.669	**2600**
2610	25.669	25.677	25.686	25.695	25.704	25.713	25.721	25.730	25.739	25.748	25.757	**2610**
2620	25.757	25.765	25.774	25.783	25.792	25.801	25.809	25.818	25.827	25.836	25.844	**2620**
2630	25.844	25.853	25.862	25.871	25.879	25.888	25.897	25.906	25.915	25.923	25.932	**2630**
2640	25.932	25.941	25.949	25.958	25.967	25.976	25.984	25.993	26.002	26.011	26.019	**2640**
2650	26.019	26.028	26.037	26.046	26.054	26.063	26.072	26.080	26.089	26.098	26.107	**2650**
2660	26.107	26.115	26.124	26.133	26.141	26.150	26.159	26.168	26.176	26.185	26.194	**2660**
2670	26.194	26.202	26.211	26.220	26.228	26.237	26.246	26.254	26.263	26.272	26.280	**2670**
2680	26.280	26.289	26.298	26.306	26.315	26.324	26.332	26.341	26.350	26.358	26.367	**2680**
2690	26.367	26.376	26.384	26.393	26.402	26.410	26.419	26.428	26.436	26.445	26.454	**2690**
2700	26.454	26.462	26.471	26.480	26.488	26.497	26.505	26.514	26.523	26.531	26.540	**2700**
2710	26.540	26.548	26.557	26.566	26.574	26.583	26.592	26.600	26.609	26.617	26.626	**2710**
2720	26.626	26.635	26.643	26.652	26.660	26.669	26.678	26.686	26.695	26.703	26.712	**2720**
2730	26.712	26.720	26.729	26.738	26.746	26.755	26.763	26.772	26.780	26.789	26.798	**2730**
2740	26.798	26.806	26.815	26.823	26.832	26.840	26.849	26.857	26.866	26.875	26.883	**2740**
2750	26.883	26.892	26.900	26.909	26.917	26.926	26.934	26.943	26.951	26.960	26.968	**2750**
2760	26.968	26.977	26.986	26.994	27.003	27.011	27.020	27.028	27.037	27.045	27.054	**2760**
2770	27.054	27.062	27.071	27.079	27.088	27.096	27.105	27.113	27.122	27.130	27.139	**2770**
2780	27.139	27.147	27.156	27.164	27.173	27.181	27.190	27.198	27.206	27.215	27.223	**2780**
2790	27.223	27.232	27.240	27.249	27.257	27.266	27.274	27.283	27.291	27.300	27.308	**2790**
2800	27.308	27.316	27.325	27.333	27.342	27.350	27.359	27.367	27.376	27.384	27.392	**2800**
2810	27.392	27.401	27.409	27.418	27.426	27.435	27.443	27.451	27.460	27.468	27.477	**2810**
2820	27.477	27.485	27.493	27.502	27.510	27.519	27.527	27.535	27.544	27.552	27.561	**2820**
2830	27.561	27.569	27.577	27.586	27.594	27.603	27.611	27.619	27.628	27.636	27.645	**2830**
2840	27.645	27.653	27.661	27.670	27.678	27.686	27.695	27.703	27.711	27.720	27.728	**2840**
2850	27.728	27.737	27.745	27.753	27.762	27.770	27.778	27.787	27.795	27.803	27.812	**2850**
2860	27.812	27.820	27.828	27.837	27.845	27.853	27.862	27.870	27.878	27.887	27.895	**2860**
2870	27.895	27.903	27.912	27.920	27.928	27.937	27.945	27.953	27.961	27.970	27.978	**2870**
2880	27.978	27.986	27.995	28.003	28.011	28.020	28.028	28.036	28.044	28.053	28.061	**2880**
2890	28.061	28.069	28.078	28.086	28.094	28.102	28.111	28.119	28.127	28.135	28.144	**2890**
2900	28.144	28.152	28.160	28.169	28.177	28.185	28.193	28.202	28.210	28.218	28.226	**2900**
2910	28.226	28.235	28.243	28.251	28.259	28.267	28.276	28.284	28.292	28.300	28.309	**2910**
2920	28.309	28.317	28.325	28.333	28.342	28.350	28.358	28.366	28.374	28.383	28.391	**2920**
2930	28.391	28.399	28.407	28.415	28.424	28.432	28.440	28.448	28.456	28.465	28.473	**2930**
2940	28.473	28.481	28.489	28.497	28.506	28.514	28.522	28.530	28.538	28.546	28.555	**2940**
2950	28.555	28.563	28.571	28.579	28.587	28.595	28.604	28.612	28.620	28.628	28.636	**2950**
2960	28.636	28.644	28.652	28.661	28.669	28.677	28.685	28.693	28.701	28.709	28.718	**2960**
2970	28.718	28.726	28.734	28.742	28.750	28.758	28.766	28.774	28.783	28.791	28.799	**2970**
2980	28.799	28.807	28.815	28.823	28.831	28.839	28.847	28.856	28.864	28.872	28.880	**2980**
2990	28.880	28.888	28.896	28.904	28.912	28.920	28.928	28.936	28.945	28.953	28.961	**2990**
3000	28.961	28.969	28.977	28.985	28.993	29.001	29.009	29.017	29.025	29.033	29.041	**3000**

TABLE 6 *(continued)*

EMF in Millivolts												Reference Junctions at 32°F
DEG F	0	1	2	3	4	5	6	7	8	9	10	DEG F
Thermoelectric Voltage in Millivolts												
3000	28.961	28.969	28.977	28.985	28.993	29.001	29.009	29.017	29.025	29.033	29.041	**3000**
3010	29.041	29.049	29.058	29.066	29.074	29.082	29.090	29.098	29.106	29.114	29.122	**3010**
3020	29.122	29.130	29.138	29.146	29.154	29.162	29.170	29.178	29.186	29.194	29.202	**3020**
3030	29.202	29.210	29.218	29.226	29.234	29.242	29.250	29.258	29.266	29.274	29.282	**3030**
3040	29.282	29.290	29.298	29.306	29.314	29.322	29.330	29.338	29.346	29.354	29.362	**3040**
3050	29.362	29.370	29.378	29.386	29.394	29.402	29.410	29.418	29.426	29.434	29.442	**3050**
3060	29.442	29.450	29.458	29.466	29.474	29.482	29.490	29.498	29.506	29.513	29.521	**3060**
3070	29.521	29.529	29.537	29.545	29.553	29.561	29.569	29.577	29.585	29.593	29.601	**3070**
3080	29.601	29.609	29.617	29.625	29.632	29.640	29.648	29.656	29.664	29.672	29.680	**3080**
3090	29.680	29.688	29.696	29.704	29.711	29.719	29.727	29.735	29.743	29.751	29.759	**3090**
3100	29.759	29.767	29.775	29.782	29.790	29.798	29.806	29.814	29.822	29.830	29.838	**3100**
3110	29.838	29.845	29.853	29.861	29.869	29.877	29.885	29.893	29.900	29.908	29.916	**3110**
3120	29.916	29.924	29.932	29.940	29.948	29.955	29.963	29.971	29.979	29.987	29.995	**3120**
3130	29.995	30.002	30.010	30.018	30.026	30.034	30.042	30.049	30.057	30.065	30.073	**3130**
3140	30.073	30.081	30.088	30.096	30.104	30.112	30.120	30.127	30.135	30.143	30.151	**3140**
3150	30.151	30.159	30.166	30.174	30.182	30.190	30.197	30.205	30.213	30.221	30.229	**3150**
3160	30.229	30.236	30.244	30.252	30.260	30.267	30.275	30.283	30.291	30.298	30.306	**3160**
3170	30.306	30.314	30.322	30.329	30.337	30.345	30.353	30.360	30.368	30.376	30.384	**3170**
3180	30.384	30.391	30.399	30.407	30.414	30.422	30.430	30.438	30.445	30.453	30.461	**3180**
3190	30.461	30.469	30.476	30.484	30.492	30.499	30.507	30.515	30.522	30.530	30.538	**3190**
3200	30.538	30.546	30.553	30.561	30.569	30.576	30.584	30.592	30.599	30.607	30.615	**3200**
3210	30.615	30.622	30.630	30.638	30.645	30.653	30.661	30.668	30.676	30.684	30.691	**3210**
3220	30.691	30.699	30.707	30.714	30.722	30.730	30.737	30.745	30.752	30.760	30.768	**3220**
3230	30.768	30.775	30.783	30.791	30.798	30.806	30.813	30.821	30.829	30.836	30.844	**3230**
3240	30.844	30.852	30.859	30.867	30.874	30.882	30.890	30.897	30.905	30.912	30.920	**3240**
3250	30.920	30.928	30.935	30.943	30.950	30.958	30.966	30.973	30.981	30.988	30.996	**3250**
3260	30.996	31.003	31.011	31.019	31.026	31.034	31.041	31.049	31.056	31.064	31.071	**3260**
3270	31.071	31.079	31.087	31.094	31.102	31.109	31.117	31.124	31.132	31.139	31.147	**3270**
3280	31.147	31.154	31.162	31.170	31.177	31.185	31.192	31.200	31.207	31.215	31.222	**3280**
3290	31.222	31.230	31.237	31.245	31.252	31.260	31.267	31.275	31.282	31.290	31.297	**3290**
3300	31.297	31.305	31.312	31.320	31.327	31.335	31.342	31.350	31.357	31.365	31.372	**3300**
3310	31.372	31.380	31.387	31.394	31.402	31.409	31.417	31.424	31.432	31.439	31.447	**3310**
3320	31.447	31.454	31.462	31.469	31.477	31.484	31.491	31.499	31.506	31.514	31.521	**3320**
3330	31.521	31.529	31.536	31.543	31.551	31.558	31.566	31.573	31.581	31.588	31.595	**3330**
3340	31.595	31.603	31.610	31.618	31.625	31.632	31.640	31.647	31.655	31.662	31.669	**3340**
3350	31.669	31.677	31.684	31.692	31.699	31.706	31.714	31.721	31.728	31.736	31.743	**3350**
3360	31.743	31.751	31.758	31.765	31.773	31.780	31.787	31.795	31.802	31.810	31.817	**3360**
3370	31.817	31.824	31.832	31.839	31.846	31.854	31.861	31.868	31.876	31.883	31.890	**3370**
3380	31.890	31.898	31.905	31.912	31.920	31.927	31.934	31.942	31.949	31.956	31.963	**3380**
3390	31.963	31.971	31.978	31.985	31.993	32.000	32.007	32.015	32.022	32.029	32.036	**3390**
3400	32.036	32.044	32.051	32.058	32.066	32.073	32.080	32.087	32.095	32.102	32.109	**3400**
3410	32.109	32.117	32.124	32.131	32.138	32.146	32.153	32.160	32.167	32.175	32.182	**3410**
3420	32.182	32.189	32.196	32.204	32.211	32.218	32.225	32.233	32.240	32.247	32.254	**3420**
3430	32.254	32.261	32.269	32.276	32.283	32.290	32.298	32.305	32.312	32.319	32.326	**3430**
3440	32.326	32.334	32.341	32.348	32.355	32.362	32.370	32.377	32.384	32.391	32.398	**3440**
3450	32.398	32.405	32.413	32.420	32.427	32.434	32.441	32.449	32.456	32.463	32.470	**3450**
3460	32.470	32.477	32.484	32.492	32.499	32.506	32.513	32.520	32.527	32.534	32.542	**3460**
3470	32.542	32.549	32.556	32.563	32.570	32.577	32.584	32.591	32.599	32.606	32.613	**3470**
3480	32.613	32.620	32.627	32.634	32.641	32.648	32.656	32.663	32.670	32.677	32.684	**3480**
3490	32.684	32.691	32.698	32.705	32.712	32.719	32.726	32.734	32.741	32.748	32.755	**3490**
3500	32.755	32.762	32.769	32.776	32.783	32.790	32.797	32.804	32.811	32.818	32.825	**3500**

TABLE 6 *(continued)*

EMF in Millivolts												Reference Junctions at 32°F
DEG F	0	1	2	3	4	5	6	7	8	9	10	DEG F
Thermoelectric Voltage in Millivolts												
3500	32.755	32.762	32.769	32.776	32.783	32.790	32.797	32.804	32.811	32.818	32.825	**3500**
3510	32.825	32.832	32.840	32.847	32.854	32.861	32.868	32.875	32.882	32.889	32.896	**3510**
3520	32.896	32.903	32.910	32.917	32.924	32.931	32.938	32.945	32.952	32.959	32.966	**3520**
3530	32.966	32.973	32.980	32.987	32.994	33.001	33.008	33.015	33.022	33.029	33.036	**3530**
3540	33.036	33.043	33.050	33.057	33.064	33.071	33.078	33.085	33.092	33.099	33.106	**3540**
3550	33.106	33.113	33.120	33.127	33.134	33.141	33.148	33.154	33.161	33.168	33.175	**3550**
3560	33.175	33.182	33.189	33.196	33.203	33.210	33.217	33.224	33.231	33.238	33.245	**3560**
3570	33.245	33.252	33.258	33.265	33.272	33.279	33.286	33.293	33.300	33.307	33.314	**3570**
3580	33.314	33.321	33.327	33.334	33.341	33.348	33.355	33.362	33.369	33.376	33.383	**3580**
3590	33.383	33.389	33.396	33.403	33.410	33.417	33.424	33.431	33.437	33.444	33.451	**3590**
3600	33.451	33.458	33.465	33.472	33.479	33.485	33.492	33.499	33.506	33.513	33.520	**3600**
3610	33.520	33.526	33.533	33.540	33.547	33.554	33.560	33.567	33.574	33.581	33.588	**3610**
3620	33.588	33.594	33.601	33.608	33.615	33.622	33.628	33.635	33.642	33.649	33.656	**3620**
3630	33.656	33.662	33.669	33.676	33.683	33.689	33.696	33.703	33.710	33.716	33.723	**3630**
3640	33.723	33.730	33.737	33.743	33.750	33.757	33.764	33.770	33.777	33.784	33.791	**3640**
3650	33.791	33.797	33.804	33.811	33.818	33.824	33.831	33.838	33.844	33.851	33.858	**3650**
3660	33.858	33.865	33.871	33.878	33.885	33.891	33.898	33.905	33.911	33.918	33.925	**3660**
3670	33.925	33.931	33.938	33.945	33.952	33.958	33.965	33.972	33.978	33.985	33.992	**3670**
3680	33.992	33.998	34.005	34.011	34.018	34.025	34.031	34.038	34.045	34.051	34.058	**3680**
3690	34.058	34.065	34.071	34.078	34.085	34.091	34.098	34.104	34.111	34.118	34.124	**3690**
3700	34.124	34.131	34.137	34.144	34.151	34.157	34.164	34.170	34.177	34.184	34.190	**3700**
3710	34.190	34.197	34.203	34.210	34.217	34.223	34.230	34.236	34.243	34.249	34.256	**3710**
3720	34.256	34.262	34.269	34.276	34.282	34.289	34.295	34.302	34.308	34.315	34.321	**3720**
3730	34.321	34.328	34.334	34.341	34.347	34.354	34.361	34.367	34.374	34.380	34.387	**3730**
3740	34.387	34.393	34.400	34.406	34.413	34.419	34.426	34.432	34.439	34.445	34.452	**3740**
3750	34.452	34.458	34.465	34.471	34.477	34.484	34.490	34.497	34.503	34.510	34.516	**3750**
3760	34.516	34.523	34.529	34.536	34.542	34.549	34.555	34.561	34.568	34.574	34.581	**3760**
3770	34.581	34.587	34.594	34.600	34.606	34.613	34.619	34.626	34.632	34.638	34.645	**3770**
3780	34.645	34.651	34.658	34.664	34.670	34.677	34.683	34.690	34.696	34.702	34.709	**3780**
3790	34.709	34.715	34.722	34.728	34.734	34.741	34.747	34.753	34.760	34.766	34.772	**3790**
3800	34.772	34.779	34.785	34.792	34.798	34.804	34.811	34.817	34.823	34.830	34.836	**3800**
3810	34.836	34.842	34.849	34.855	34.861	34.867	34.874	34.880	34.886	34.893	34.899	**3810**
3820	34.899	34.905	34.912	34.918	34.924	34.930	34.937	34.943	34.949	34.956	34.962	**3820**
3830	34.962	34.968	34.974	34.981	34.987	34.993	34.999	35.006	35.012	35.018	35.024	**3830**
3840	35.024	35.031	35.037	35.043	35.049	35.056	35.062	35.068	35.074	35.081	35.087	**3840**
3850	35.087	35.093	35.099	35.105	35.112	35.118	35.124	35.130	35.136	35.143	35.149	**3850**
3860	35.149	35.155	35.161	35.167	35.173	35.180	35.186	35.192	35.198	35.204	35.211	**3860**
3870	35.211	35.217	35.223	35.229	35.235	35.241	35.247	35.254	35.260	35.266	35.272	**3870**
3880	35.272	35.278	35.284	35.290	35.296	35.303	35.309	35.315	35.321	35.327	35.333	**3880**
3890	35.333	35.339	35.345	35.351	35.358	35.364	35.370	35.376	35.382	35.388	35.394	**3890**
3900	35.394	35.400	35.406	35.412	35.418	35.424	35.430	35.437	35.443	35.449	35.455	**3900**
3910	35.455	35.461	35.467	35.473	35.479	35.485	35.491	35.497	35.503	35.509	35.515	**3910**
3920	35.515	35.521	35.527	35.533	35.539	35.545	35.551	35.557	35.563	35.569	35.575	**3920**
3930	35.575	35.581	35.587	35.593	35.599	35.605	35.611	35.617	35.623	35.629	35.635	**3930**
3940	35.635	35.641	35.647	35.653	35.659	35.664	35.670	35.676	35.682	35.688	35.694	**3940**
3950	35.694	35.700	35.706	35.712	35.718	35.724	35.730	35.736	35.741	35.747	35.753	**3950**
3960	35.753	35.759	35.765	35.771	35.777	35.783	35.789	35.795	35.800	35.806	35.812	**3960**
3970	35.812	35.818	35.824	35.830	35.836	35.841	35.847	35.853	35.859	35.865	35.871	**3970**
3980	35.871	35.876	35.882	35.888	35.894	35.900	35.906	35.911	35.917	35.923	35.929	**3980**
3990	35.929	35.935	35.940	35.946	35.952	35.958	35.964	35.969	35.975	35.981	35.987	**3990**
4000	35.987	35.993	35.998	36.004	36.010	36.016	36.021	36.027	36.033	36.039	36.044	**4000**

TABLE 6 *(continued)*

EMF in Millivolts												Reference Junctions at 32°F
DEG F	0	1	2	3	4	5	6	7	8	9	10	DEG F
Thermoelectric Voltage in Millivolts												
4000	35.987	35.993	35.998	36.004	36.010	36.016	36.021	36.027	36.033	36.039	36.044	**4000**
4010	36.044	36.050	36.056	36.062	36.067	36.073	36.079	36.084	36.090	36.096	36.102	**4010**
4020	36.102	36.107	36.113	36.119	36.124	36.130	36.136	36.142	36.147	36.153	36.159	**4020**
4030	36.159	36.164	36.170	36.176	36.181	36.187	36.193	36.198	36.204	36.210	36.215	**4030**
4040	36.215	36.221	36.226	36.232	36.238	36.243	36.249	36.255	36.260	36.266	36.271	**4040**
4050	36.271	36.277	36.283	36.288	36.294	36.300	36.305	36.311	36.316	36.322	36.327	**4050**
4060	36.327	36.333	36.339	36.344	36.350	36.355	36.361	36.366	36.372	36.378	36.383	**4060**
4070	36.383	36.389	36.394	36.400	36.405	36.411	36.416	36.422	36.427	36.433	36.438	**4070**
4080	36.438	36.444	36.449	36.455	36.460	36.466	36.471	36.477	36.482	36.488	36.493	**4080**
4090	36.493	36.499	36.504	36.510	36.515	36.521	36.526	36.532	36.537	36.543	36.548	**4090**
4100	36.548	36.553	36.559	36.564	36.570	36.575	36.581	36.586	36.591	36.597	36.602	**4100**
4110	36.602	36.608	36.613	36.619	36.624	36.629	36.635	36.640	36.645	36.651	36.656	**4110**
4120	36.656	36.662	36.667	36.672	36.678	36.683	36.688	36.694	36.699	36.704	36.710	**4120**
4130	36.710	36.715	36.721	36.726	36.731	36.737	36.742	36.747	36.752	36.758	36.763	**4130**
4140	36.763	36.768	36.774	36.779	36.784	36.790	36.795	36.800	36.805	36.811	36.816	**4140**
4150	36.816	36.821	36.826	36.832	36.837	36.842	36.848	36.853	36.858	36.863	36.868	**4150**
4160	36.868	36.874	36.879	36.884	36.889	36.895	36.900	36.905	36.910	36.915	36.921	**4160**
4170	36.921	36.926	36.931	36.936	36.941	36.947	36.952	36.957	36.962	36.967	36.972	**4170**
4180	36.972	36.978	36.983	36.988	36.993	36.998	37.003	37.008	37.014	37.019	37.024	**4180**
4190	37.024	37.029	37.034	37.039	37.044	37.049	37.055	37.060	37.065	37.070	37.075	**4190**
4200	37.075											**4200**

TABLE 7 Equations Used to Derive Tables 3 Through Table 6

NOTE 1—The equations are of the form $E = c_0 + c_1 t + c_2 t^2 + \ldots c_n t^n$, where E is in millivolts.

Coefficients used to derive the W3Re/W25Re Tables			
Table 3 t = 0°C to 2315°C		Table 4 t = 32°F to 4200°F	
0°C to 783°C	783°C to 2315°C	32°F to 1441.4°F	1441.4°F to 4200°F
$c_0 = 0.0000000$	2.2097354	$c_0 = -1.6410905 \times 10^{-1}$	2.2493152
$c_1 = 9.5921929 \times 10^{-3}$	$-1.4500612 \times 10^{-3}$	$c_1 = 4.9254784 \times 10^{-3}$	$-1.6758192 \times 10^{-3}$
$c_2 = 2.0068371 \times 10^{-5}$	4.2898234×10^{-5}	$c_2 = 6.4133613 \times 10^{-6}$	1.3959259×10^{-5}
$c_3 = -1.3786121 \times 10^{-8}$	$-4.2816409 \times 10^{-8}$	$c_3 = -2.1997460 \times 10^{-9}$	$-7.6403573 \times 10^{-9}$
$c_4 = -1.1620542 \times 10^{-11}$	$2.4132609 \times 10^{-11}$	$c_4 = -1.4640936 \times 10^{-12}$	$2.3689257 \times 10^{-12}$
$c_5 = 3.9875300 \times 10^{-14}$	$-8.1885541 \times 10^{-15}$	$c_5 = 2.3557120 \times 10^{-15}$	$-4.4236666 \times 10^{-16}$
$c_6 = -4.2429757 \times 10^{-17}$	$1.5873209 \times 10^{-18}$	$c_6 = -1.3090313 \times 10^{-18}$	$4.7193107 \times 10^{-20}$
$c_7 = 1.6821225 \times 10^{-20}$	$-1.4320975 \times 10^{-22}$	$c_7 = 2.7475784 \times 10^{-22}$	$-2.3391876 \times 10^{-24}$
Coefficients used to derive the W5Re/W26Re Tables			
Table 5 t = 0°C to 2315°C		Table 6 t = 32°F to 4200°F	
0°C to 630.615°C	630.615°C to 2315°C	32°F to 1167.107°F	1167.107°F to 4200°F
$c_0 = 0.0000000$	4.0528823×10^{-1}	$c_0 = -2.3451627 \times 10^{-1}$	2.0571584×10^{-1}
$c_1 = 1.3406032 \times 10^{-2}$	1.1509355×10^{-2}	$c_1 = 7.2081037 \times 10^{-3}$	6.0767487×10^{-3}
$c_2 = 1.1924992 \times 10^{-5}$	1.5696453×10^{-5}	$c_2 = 3.8087171 \times 10^{-6}$	5.0732476×10^{-6}
$c_3 = -7.9806354 \times 10^{-9}$	$-1.3704412 \times 10^{-8}$	$c_3 = -1.2992086 \times 10^{-9}$	$-2.4141244 \times 10^{-9}$
$c_4 = -5.0787515 \times 10^{-12}$	$5.2290873 \times 10^{-12}$	$c_4 = -5.9884619 \times 10^{-13}$	$5.0593976 \times 10^{-13}$
$c_5 = 1.3164197 \times 10^{-14}$	$-9.2082758 \times 10^{-16}$	$c_5 = 7.4138472 \times 10^{-16}$	$-4.8987585 \times 10^{-17}$
$c_6 = -7.9197332 \times 10^{-18}$	$4.5245112 \times 10^{-20}$	$c_6 = -2.3284961 \times 10^{-19}$	$1.3302603 \times 10^{-21}$

TABLE 8 Polynomial Coefficients for the Computation of Temperatures in °C as a Function of the Thermocouple EMF

NOTE 1—The coefficients given are for an expression of the form: $t = a_0 + a_1 E + a_2 E^2 + a_3 E^3 ... + a_n E^n$, where E is the thermocouple EMF in mV, t is the temperature in °C, and a_0, a_1, a_3, etc. are the coefficients. These expressions give approximate values of the temperature that agree with the values given in Table 3 and Table 5 within ± 0.5°C over the range 0°C to 2315°C.

Thermocouple Type	Coefficient
W-3 % Re/W-25 % Re	$a_0 = 0.00000000$
	$a_1 = 1.01387193 \times 10^{2}$
	$a_2 = -1.51768468 \times 10^{1}$
	$a_3 = 3.13787524$
	$a_4 = -4.46716692 \times 10^{-1}$
	$a_5 = 4.27451436 \times 10^{-2}$
	$a_6 = -2.74975900 \times 10^{-3}$
	$a_7 = 1.18845993 \times 10^{-4}$
	$a_8 = -3.39703227 \times 10^{-6}$
	$a_9 = 6.15028058 \times 10^{-8}$
	$a_{10} = -6.38332695 \times 10^{-10}$
	$a_{11} = 2.89238418 \times 10^{-12}$
W-5 % Re/W-26 % Re	$a_0 = 0.00000000$
	$a_1 = 7.41247326 \times 10^{1}$
	$a_2 = -4.28082813$
	$a_3 = 5.21138920 \times 10^{-1}$
	$a_4 = -4.57487201 \times 10^{-2}$
	$a_5 = 2.80578284 \times 10^{-3}$
	$a_6 = -1.13145137 \times 10^{-4}$
	$a_7 = 2.85489684 \times 10^{-6}$
	$a_8 = -4.07643828 \times 10^{-8}$
	$a_9 = 2.51358071 \times 10^{-10}$

TABLE 9 Polynomial Coefficients for the Computation of Temperatures in °F as a Function of the Thermocouple EMF

NOTE 1—The coefficients given are for an expression of the form: $t = a_0 + a_1 E + a_2 E^2 + a_3 E^3 ... + a_n E^n$, where E is the thermocouple EMF in mV, t is the temperature in °F, and a_0, a_1, a_3, etc. are the coefficients. These expressions give approximate values of the temperature that agree with the values given in Table 4 and Table 6 within ± 0.9°F over the range 32°F to 4200°F.

Thermocouple Type	Coefficient
W-3 % Re/W-25 % Re	$a_0 = 3.20000000 \times 10^{1}$
	$a_1 = 1.82496948 \times 10^{2}$
	$a_2 = -2.73183242 \times 10^{1}$
	$a_3 = 5.64817542$
	$a_4 = -8.04090046 \times 10^{-1}$
	$a_5 = 7.69412584 \times 10^{-2}$
	$a_6 = -4.94956620 \times 10^{-3}$
	$a_7 = 2.13922788 \times 10^{-4}$
	$a_8 = -6.11465808 \times 10^{-6}$
	$a_9 = 1.10705050 \times 10^{-7}$
	$a_{10} = -1.14899885 \times 10^{-9}$
	$a_{11} = 5.20629153 \times 10^{-12}$
W-5 % Re/W-26 % Re	$a_0 = 3.20000000 \times 10^{1}$
	$a_1 = 1.33424519 \times 10^{2}$
	$a_2 = -7.70549064$
	$a_3 = 9.38050055 \times 10^{-1}$
	$a_4 = -8.23476962 \times 10^{-2}$
	$a_5 = 5.05040912 \times 10^{-3}$
	$a_6 = -2.03661246 \times 10^{-4}$
	$a_7 = 5.13881431 \times 10^{-6}$
	$a_8 = -7.33758890 \times 10^{-8}$
	$a_9 = 4.52444528 \times 10^{-10}$