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DEPARTMENT OF COMMERCE  
BUREAU OF STANDARDS  
WASHINGTON  
March 17, 1925

Letter  
Circular  
LC 160  
Revised July 14, 1925

ABRIDGED VOLUME CORRECTION TABLE FOR PETROLEUM OILS

(For complete table, see Table 2, Circular 154)

Approved by

The American Petroleum Institute  
The American Society for Testing Materials  
The Bureau of Mines  
The Bureau of Standards.

The table contained herein has been prepared to meet a demand from the oil industry for a short and convenient table for reducing oil volumes to the basis of 60° F when extreme accuracy is not required. It is not intended to replace the more complete and accurate volume correction table contained in Circular No.154, but rather to supplement it and especially to replace the various abridged tables and approximate correction factors heretofore employed in the oil industry. In case high accuracy is essential the complete table contained in Circular No.154 should be used, especially if large volumes or wide temperature ranges are involved. To avoid possible confusion all contracts should state which table is to be used.

The abridged table is based on the same data as Table 2, Circular No.154. The groups, coefficients of expansion, degrees A. P. I., and gravity ranges of the abridged table follow:

Group Number	Coefficient of Expansion at 60° F	Corresponding Degrees A.P.I.	Range of group (degrees A.P.I.at 60°F)
I	0.0004	22	up to 34.9
II	.0005	44	35 to 50.9
III	.0006	58	51 to 63.9
IV	.0007	72	64 to 78.9
V	.0008	86	79 to 88.9
VI	.00085	91	89 and higher

This table shows the volume occupied at 60° F by a quantity of oil occupying unit volume at the indicated temperatures. For example, if at 60° F the A.P.I. gravity of the oil is 28, (Group I), one gallon of this oil measured at 120° F will have a volume of 0.9763 gallons at 60° F. The values given in the table are in the form of "multipliers"; that is, the volume of oil at the indicated temperature and degrees A.P.I. for each group, multiplied by the corresponding factor in the table, equals the volume at 60° F. For example, if the A.P.I. gravity of an oil at 60° F equals 28 (Group I) and the volume at 120° F equals 6000 gallons, then the volume at 60° F equals 6000 x 0.9763, or 5857.8 gallons.

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Date	Particulars	Amount
1900	To Balance	100.00
1900	By Cash	50.00
1900	By Cash	50.00
1900	By Cash	50.00
1900	By Cash	50.00

Observed tempera- ture in ° F.	Group					
	I Up to 34.0 Volume at 60° F.	II 35.0 to 50.0 Occupied by Unit	III 51.0 to 63.0 Volume	IV 64.0 to 70.0 at 60° F.	V 73.0 to 83.0 Volume	VI 89.0 and higher at Indicated Temperature.
0	1.0242	1.0237	1.0361	1.0419	1.0476	1.0501
1	1.0233	1.0232	1.0355	1.0412	1.0463	1.0493
2	1.0234	1.0237	1.0349	1.0405	1.0460	1.0434
3	1.0230	1.0233	1.0343	1.0393	1.0453	1.0476
4	1.0226	1.0270	1.0337	1.0391	1.0445	1.0467
5	1.0222	1.0273	1.0331	1.0384	1.0437	1.0459
6	1.0213	1.0263	1.0325	1.0377	1.0429	1.0451
7	1.0214	1.0263	1.0319	1.0370	1.0421	1.0443
8	1.0210	1.0253	1.0313	1.0364	1.0414	1.0434
9	1.0206	1.0253	1.0307	1.0357	1.0406	1.0426
10	1.0202	1.0243	1.0301	1.0350	1.0393	1.0413
11	1.0193	1.0243	1.0295	1.0343	1.0390	1.0410
12	1.0194	1.0233	1.0289	1.0336	1.0332	1.0402
13	1.0139	1.0233	1.0283	1.0329	1.0375	1.0333
14	1.0135	1.0223	1.0277	1.0322	1.0367	1.0335
15	1.0131	1.0223	1.0271	1.0315	1.0359	1.0377
16	1.0177	1.0213	1.0265	1.0303	1.0351	1.0369
17	1.0173	1.0213	1.0259	1.0301	1.0343	1.0360
18	1.0169	1.0203	1.0253	1.0294	1.0335	1.0352
19	1.0165	1.0203	1.0247	1.0287	1.0327	1.0343
20	1.0161	1.0193	1.0241	1.0280	1.0319	1.0335
21	1.0157	1.0193	1.0235	1.0273	1.0311	1.0327
22	1.0153	1.0183	1.0229	1.0266	1.0303	1.0319
23	1.0143	1.0184	1.0223	1.0260	1.0296	1.0310
24	1.0144	1.0179	1.0217	1.0253	1.0283	1.0302
25	1.0140	1.0174	1.0211	1.0246	1.0280	1.0294
26	1.0136	1.0169	1.0205	1.0239	1.0272	1.0286
27	1.0132	1.0164	1.0199	1.0232	1.0264	1.0277
28	1.0123	1.0159	1.0193	1.0225	1.0256	1.0269
29	1.0124	1.0154	1.0187	1.0213	1.0243	1.0260
30	1.0120	1.0149	1.0181	1.0211	1.0240	1.0252
31	1.0116	1.0144	1.0175	1.0204	1.0232	1.0244
32	1.0112	1.0139	1.0169	1.0197	1.0224	1.0236
33	1.0103	1.0134	1.0163	1.0190	1.0216	1.0227
34	1.0104	1.0129	1.0157	1.0183	1.0203	1.0219
35	1.0100	1.0124	1.0151	1.0176	1.0200	1.0211
36	1.0096	1.0119	1.0145	1.0169	1.0192	1.0203
37	1.0092	1.0114	1.0139	1.0162	1.0184	1.0194
38	1.0083	1.0109	1.0133	1.0155	1.0176	1.0186
39	1.0084	1.0104	1.0127	1.0143	1.0163	1.0177
40	1.0080	1.0099	1.0121	1.0141	1.0160	1.0169
41	1.0076	1.0094	1.0115	1.0134	1.0152	1.0160
42	1.0072	1.0089	1.0109	1.0127	1.0144	1.0152
43	1.0063	1.0084	1.0103	1.0120	1.0136	1.0143
44	1.0064	1.0079	1.0097	1.0113	1.0123	1.0135
45	1.0060	1.0074	1.0091	1.0106	1.0120	1.0126
46	1.0056	1.0069	1.0085	1.0099	1.0112	1.0113
47	1.0052	1.0064	1.0079	1.0092	1.0104	1.0110
48	1.0048	1.0059	1.0072	1.0084	1.0096	1.0101
49	1.0044	1.0054	1.0066	1.0077	1.0083	1.0093
50	1.0040	1.0049	1.0060	1.0070	1.0080	1.0084
51	1.0036	1.0044	1.0054	1.0063	1.0072	1.0076
52	1.0032	1.0039	1.0043	1.0056	1.0064	1.0067
53	1.0023	1.0035	1.0042	1.0049	1.0056	1.0059
54	1.0024	1.0030	1.0036	1.0042	1.0043	1.0050
55	1.0020	1.0025	1.0030	1.0035	1.0040	1.0042
56	1.0016	1.0020	1.0024	1.0028	1.0032	1.0034
57	1.0012	1.0015	1.0013	1.0021	1.0024	1.0025
58	1.0008	1.0010	1.0012	1.0014	1.0013	1.0017
59	1.0004	1.0005	1.0006	1.0007	1.0008	1.0008
60	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
61	.9996	.9995	.9994	.9993	.9992	.9992
62	.9992	.9990	.9988	.9986	.9984	.9983
63	.9988	.9985	.9982	.9979	.9976	.9975
64	.9984	.9980	.9976	.9972	.9968	.9963

Year	Month	Day	Event	Location	Notes
1910	Jan	1	...	...	...
1910	Jan	2	...	...	...
1910	Jan	3	...	...	...
1910	Jan	4	...	...	...
1910	Jan	5	...	...	...
1910	Jan	6	...	...	...
1910	Jan	7	...	...	...
1910	Jan	8	...	...	...
1910	Jan	9	...	...	...
1910	Jan	10	...	...	...
1910	Jan	11	...	...	...
1910	Jan	12	...	...	...
1910	Jan	13	...	...	...
1910	Jan	14	...	...	...
1910	Jan	15	...	...	...
1910	Jan	16	...	...	...
1910	Jan	17	...	...	...
1910	Jan	18	...	...	...
1910	Jan	19	...	...	...
1910	Jan	20	...	...	...
1910	Jan	21	...	...	...
1910	Jan	22	...	...	...
1910	Jan	23	...	...	...
1910	Jan	24	...	...	...
1910	Jan	25	...	...	...
1910	Jan	26	...	...	...
1910	Jan	27	...	...	...
1910	Jan	28	...	...	...
1910	Jan	29	...	...	...
1910	Jan	30	...	...	...
1910	Jan	31	...	...	...
1910	Feb	1	...	...	...
1910	Feb	2	...	...	...
1910	Feb	3	...	...	...
1910	Feb	4	...	...	...
1910	Feb	5	...	...	...
1910	Feb	6	...	...	...
1910	Feb	7	...	...	...
1910	Feb	8	...	...	...
1910	Feb	9	...	...	...
1910	Feb	10	...	...	...
1910	Feb	11	...	...	...
1910	Feb	12	...	...	...
1910	Feb	13	...	...	...
1910	Feb	14	...	...	...
1910	Feb	15	...	...	...
1910	Feb	16	...	...	...
1910	Feb	17	...	...	...
1910	Feb	18	...	...	...
1910	Feb	19	...	...	...
1910	Feb	20	...	...	...
1910	Feb	21	...	...	...
1910	Feb	22	...	...	...
1910	Feb	23	...	...	...
1910	Feb	24	...	...	...
1910	Feb	25	...	...	...
1910	Feb	26	...	...	...
1910	Feb	27	...	...	...
1910	Feb	28	...	...	...
1910	Feb	29	...	...	...
1910	Mar	1	...	...	...
1910	Mar	2	...	...	...
1910	Mar	3	...	...	...
1910	Mar	4	...	...	...
1910	Mar	5	...	...	...
1910	Mar	6	...	...	...
1910	Mar	7	...	...	...
1910	Mar	8	...	...	...
1910	Mar	9	...	...	...
1910	Mar	10	...	...	...
1910	Mar	11	...	...	...
1910	Mar	12	...	...	...
1910	Mar	13	...	...	...
1910	Mar	14	...	...	...
1910	Mar	15	...	...	...
1910	Mar	16	...	...	...
1910	Mar	17	...	...	...
1910	Mar	18	...	...	...
1910	Mar	19	...	...	...
1910	Mar	20	...	...	...
1910	Mar	21	...	...	...
1910	Mar	22	...	...	...
1910	Mar	23	...	...	...
1910	Mar	24	...	...	...
1910	Mar	25	...	...	...
1910	Mar	26	...	...	...
1910	Mar	27	...	...	...
1910	Mar	28	...	...	...
1910	Mar	29	...	...	...
1910	Mar	30	...	...	...
1910	Mar	31	...	...	...
1910	Apr	1	...	...	...
1910	Apr	2	...	...	...
1910	Apr	3	...	...	...
1910	Apr	4	...	...	...
1910	Apr	5	...	...	...
1910	Apr	6	...	...	...
1910	Apr	7	...	...	...
1910	Apr	8	...	...	...
1910	Apr	9	...	...	...
1910	Apr	10	...	...	...
1910	Apr	11	...	...	...
1910	Apr	12	...	...	...
1910	Apr	13	...	...	...
1910	Apr	14	...	...	...
1910	Apr	15	...	...	...
1910	Apr	16	...	...	...
1910	Apr	17	...	...	...
1910	Apr	18	...	...	...
1910	Apr	19	...	...	...
1910	Apr	20	...	...	...
1910	Apr	21	...	...	...
1910	Apr	22	...	...	...
1910	Apr	23	...	...	...
1910	Apr	24	...	...	...
1910	Apr	25	...	...	...
1910	Apr	26	...	...	...
1910	Apr	27	...	...	...
1910	Apr	28	...	...	...
1910	Apr	29	...	...	...
1910	Apr	30	...	...	...
1910	Apr	30	...	...	...

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Observed temperature in ° F. I Degrees A. P. I. at 60°F. II 35.0 III 51.0 IV 64.0 V 79.0 VI 89.0 and higher Observed temperature in ° F. I Degrees A.P.I. at 60°F. II 35.0 III 50.9

Volume at 60° F. Occupied by Unit Volume at Indicated Temperature.

Observed temperature in ° F.	I	II	III	IV	V	VI	Observed temperature in ° F.	I	II
	34.9	50.9	63.9	78.9	88.9	89.0 and higher		34.9	50.9
65	0.9980	0.9975	0.9970	0.9965	0.9960	0.9958	130	0.9724	0.9652
66	.9976	.9970	.9964	.9958	.9952	.9949	131	.9720	.9647
67	.9972	.9965	.9957	.9951	.9944	.9941	132	.9716	.9642
68	.9968	.9961	.9951	.9943	.9935	.9932	133	.9713	.9637
69	.9964	.9956	.9945	.9936	.9927	.9924	134	.9709	.9632
70	.9960	.9951	.9939	.9929	.9919	.9915	135	.9705	.9627
71	.9956	.9946	.9933	.9922	.9911	.9907	136	.9701	.9622
72	.9952	.9941	.9927	.9915	.9903	.9898	137	.9697	.9617
73	.9948	.9935	.9921	.9908	.9895	.9890	138	.9694	.9613
74	.9944	.9930	.9915	.9901	.9887	.9881	139	.9690	.9608
75	.9940	.9925	.9909	.9894	.9879	.9873	140	.9686	.9603
76	.9936	.9920	.9903	.9887	.9871	.9864	141	.9682	.9598
77	.9932	.9915	.9897	.9880	.9863	.9856	142	.9678	.9593
78	.9929	.9911	.9891	.9872	.9854	.9847	143	.9675	.9588
79	.9925	.9906	.9885	.9865	.9846	.9839	144	.9671	.9583
80	.9921	.9901	.9879	.9858	.9838	.9830	145	.9667	.9578
81	.9917	.9896	.9873	.9851	.9830	.9821	146	.9663	.9573
82	.9913	.9891	.9867	.9844	.9822	.9813	147	.9659	.9568
83	.9909	.9886	.9860	.9837	.9814	.9804	148	.9655	.9563
84	.9905	.9881	.9854	.9830	.9806	.9796	149	.9651	.9558
85	.9901	.9876	.9848	.9823	.9798	.9787	150	.9647	.9553
86	.9897	.9871	.9842	.9816	.9790	.9779	151	.9643	
87	.9893	.9866	.9836	.9809	.9782	.9770	152	.9639	
88	.9889	.9861	.9830	.9802	.9773	.9762	153	.9636	
89	.9885	.9856	.9824	.9795	.9765	.9753	154	.9632	
90	.9881	.9851	.9818	.9788	.9757	.9745	155	.9628	
91	.9877	.9846	.9812				156	.9624	
92	.9873	.9841	.9806				157	.9620	
93	.9869	.9836	.9800				158	.9616	
94	.9865	.9831	.9794				159	.9612	
95	.9861	.9826	.9788				160	.9608	
96	.9857	.9821	.9782				161	.9604	
97	.9853	.9816	.9776				162	.9601	
98	.9849	.9812	.9769				163	.9597	
99	.9845	.9807	.9763				164	.9594	
100	.9841	.9802	.9757				165	.9590	
101	.9837	.9797	.9751				166	.9586	
102	.9833	.9792	.9745				167	.9582	
103	.9830	.9786	.9738				168	.9578	
104	.9826	.9781	.9732				169	.9574	
105	.9822	.9776	.9726				170	.9570	
106	.9818	.9771	.9720				171	.9566	
107	.9814	.9766	.9714				172	.9562	
108	.9811	.9762	.9708				173	.9559	
109	.9807	.9757	.9702				174	.9555	
110	.9803	.9752	.9696				175	.9551	
111	.9799	.9747	.9690				176	.9547	
112	.9795	.9742	.9684				177	.9543	
113	.9791	.9737	.9678				178	.9540	
114	.9787	.9732	.9672				179	.9536	
115	.9783	.9727	.9666				180	.9532	
116	.9778	.9722	.9660				181	.9528	
117	.9775	.9717	.9654				182	.9524	
118	.9771	.9712	.9647				183	.9521	
119	.9767	.9707	.9641				184	.9517	
120	.9763	.9702	.9635				185	.9513	
121	.9759	.9697	.9629				186	.9509	
122	.9755	.9692	.9623				187	.9505	
123	.9752	.9687	.9617				188	.9502	
124	.9748	.9682	.9611				189	.9498	
125	.9744	.9677	.9605				190	.9494	
126	.9740	.9672					191	.9490	
127	.9736	.9667					192	.9487	
128	.9732	.9662					193	.9483	
129	.9728	.9657					194	.9480	
							195	.9476	



Observed temperature in ° F.	Volume at 60° F. occupied by unit volume at indicat- ed temperature.	Observed temperature in ° F.	Volume at 60° F. occupied by unit volume at indicat- ed temperature.
195	0.9476	225	0.9363
196	.9472	226	.9359
197	.9468	227	.9356
198	.9465	228	.9352
199	.9461	229	.9349
200	.9457	230	.9345
201	.9453	231	.9341
202	.9449	232	.9337
203	.9446	233	.9334
204	.9442	234	.9330
205	.9438	235	.9326
206	.9434	236	.9322
207	.9430	237	.9318
208	.9427	238	.9315
209	.9423	239	.9311
210	.9419	240	.9307
211	.9415	241	.9303
212	.9412	242	.9300
213	.9408	243	.9296
214	.9405	244	.9293
215	.9401	245	.9289
216	.9397	246	.9285
217	.9393	247	.9281
218	.9390	248	.9278
219	.9386	249	.9274
220	.9382	250	.9270
221	.9378		
222	.9374		
223	.9371		
224	.9367		

Note: The above extension to the foregoing abridged table is based on the same data as Table 2, Circular No.154. For temperature above 203° F. the tabulated values of the volume at 60° F. are extrapolated from the experimental results obtained over the temperature range 32° to 203° F.

