

March 17, 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 (Comm. D-2)
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.

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	28	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 × 0.9763, or 5857.8 gallons.

1941
1942
1943

1944

1945

1946
(1947)

1948

1949

1950

1951

1952

1953

1954

1955

1956

1957

1958

1959

1960

Observed tempera- ture in ° F.	Group					
	I	II	III	IV	V	VI
	Degrees A. P. I. at 60° F.					
	Up to 34.0	35.0 to 50.0	51.0 to 63.0	64.0 to 70.0	79.0 to 83.0	89.0 and higher
	Volume at 60° F. Occupied by Unit Volume at Indicated Temperature.					
0	1.0242	1.0207	1.0361	1.0410	1.0476	1.0501
1	1.0230	1.0202	1.0355	1.0412	1.0463	1.0493
2	1.0234	1.0207	1.0349	1.0405	1.0460	1.0484
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	1.0218	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	1.0382	1.0402
13	1.0189	1.0233	1.0283	1.0329	1.0375	1.0393
14	1.0185	1.0223	1.0277	1.0322	1.0367	1.0385
15	1.0181	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	1.0148	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	1.0128	1.0159	1.0193	1.0225	1.0256	1.0269
29	1.0124	1.0154	1.0187	1.0218	1.0248	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	1.0108	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	1.0088	1.0109	1.0133	1.0155	1.0176	1.0186
39	1.0084	1.0104	1.0127	1.0148	1.0168	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	1.0068	1.0084	1.0103	1.0120	1.0136	1.0143
44	1.0064	1.0079	1.0097	1.0113	1.0128	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	1.0118
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	1.0048	1.0056	1.0064	1.0067
53	1.0028	1.0035	1.0042	1.0049	1.0056	1.0059
54	1.0024	1.0030	1.0036	1.0042	1.0048	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	1.0018	1.0021	1.0024	1.0025
58	1.0008	1.0010	1.0012	1.0014	1.0016	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	.9966

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44	44	44	44	44	44	44
45	45	45	45	45	45	45
46	46	46	46	46	46	46
47	47	47	47	47	47	47
48	48	48	48	48	48	48
49	49	49	49	49	49	49
50	50	50	50	50	50	50
51	51	51	51	51	51	51
52	52	52	52	52	52	52
53	53	53	53	53	53	53
54	54	54	54	54	54	54
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60	60	60	60	60	60	60
61	61	61	61	61	61	61
62	62	62	62	62	62	62
63	63	63	63	63	63	63
64	64	64	64	64	64	64
65	65	65	65	65	65	65
66	66	66	66	66	66	66
67	67	67	67	67	67	67
68	68	68	68	68	68	68
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70	70	70	70	70	70	70
71	71	71	71	71	71	71
72	72	72	72	72	72	72
73	73	73	73	73	73	73
74	74	74	74	74	74	74
75	75	75	75	75	75	75
76	76	76	76	76	76	76
77	77	77	77	77	77	77
78	78	78	78	78	78	78
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80	80	80	80	80	80	80
81	81	81	81	81	81	81
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84	84	84	84	84	84	84
85	85	85	85	85	85	85
86	86	86	86	86	86	86
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88	88	88	88	88	88	88
89	89	89	89	89	89	89
90	90	90	90	90	90	90
91	91	91	91	91	91	91
92	92	92	92	92	92	92
93	93	93	93	93	93	93
94	94	94	94	94	94	94
95	95	95	95	95	95	95
96	96	96	96	96	96	96
97	97	97	97	97	97	97
98	98	98	98	98	98	98
99	99	99	99	99	99	99
100	100	100	100	100	100	100

Observed tempera- ture in ° F.	Group						Observed tempera- ture in ° F.	LC 160		
	I	II	III	IV	V	VI		I	II	
	Degrees Up to 34.9	A. 35.0 to 50.9	P. I. 51.0 to 63.9	at 64.0 to 78.9	60°F. 79.0 to 88.9	and 89.0 higher		Degrees Up to 34.9	A.P.I. 35.0 to 50.9	at 60°F.
	Volume at 60° F. Occupied by Unit Volume at Indicated Temperature.									
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	.9703				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		

061

VI	VII	VIII	IX	X	XI	XII
1951	1952	1953	1954	1955	1956	1957
1958	1959	1960	1961	1962	1963	1964
1965	1966	1967	1968	1969	1970	1971
1972	1973	1974	1975	1976	1977	1978
1979	1980	1981	1982	1983	1984	1985
1986	1987	1988	1989	1990	1991	1992
1993	1994	1995	1996	1997	1998	1999
2000	2001	2002	2003	2004	2005	2006
2007	2008	2009	2010	2011	2012	2013
2014	2015	2016	2017	2018	2019	2020
2021	2022	2023	2024	2025	2026	2027
2028	2029	2030	2031	2032	2033	2034
2035	2036	2037	2038	2039	2040	2041
2042	2043	2044	2045	2046	2047	2048
2049	2050	2051	2052	2053	2054	2055
2056	2057	2058	2059	2060	2061	2062
2063	2064	2065	2066	2067	2068	2069
2070	2071	2072	2073	2074	2075	2076
2077	2078	2079	2080	2081	2082	2083
2084	2085	2086	2087	2088	2089	2090
2091	2092	2093	2094	2095	2096	2097
2098	2099	2100	2101	2102	2103	2104
2105	2106	2107	2108	2109	2110	2111
2112	2113	2114	2115	2116	2117	2118
2119	2120	2121	2122	2123	2124	2125
2126	2127	2128	2129	2130	2131	2132
2133	2134	2135	2136	2137	2138	2139
2140	2141	2142	2143	2144	2145	2146
2147	2148	2149	2150	2151	2152	2153
2154	2155	2156	2157	2158	2159	2160
2161	2162	2163	2164	2165	2166	2167
2168	2169	2170	2171	2172	2173	2174
2175	2176	2177	2178	2179	2180	2181
2182	2183	2184	2185	2186	2187	2188
2189	2190	2191	2192	2193	2194	2195
2196	2197	2198	2199	2200	2201	2202
2203	2204	2205	2206	2207	2208	2209
2210	2211	2212	2213	2214	2215	2216
2217	2218	2219	2220	2221	2222	2223
2224	2225	2226	2227	2228	2229	2230
2231	2232	2233	2234	2235	2236	2237
2238	2239	2240	2241	2242	2243	2244
2245	2246	2247	2248	2249	2250	2251
2252	2253	2254	2255	2256	2257	2258
2259	2260	2261	2262	2263	2264	2265
2266	2267	2268	2269	2270	2271	2272
2273	2274	2275	2276	2277	2278	2279
2280	2281	2282	2283	2284	2285	2286
2287	2288	2289	2290	2291	2292	2293
2294	2295	2296	2297	2298	2299	2300