Table 10 .... Viscosity

Dynamic or Absolute Viscosity, μ (mu)

gm per cm sec or dyne-sec per cm² poise	gm per cm sec or dyne-sec per cm² centipoises	lb per ft sec or poundal sec per ft²	slug per ft sec lb$_f$ sec per ft²	kg per m hr
1	100	0.0672	0.00209	360
14.88	1488	1	0.03105	5356
478.5	47,850	32.174	1	172,300
0.002778	0.2778	1.867×10^{-4}	5.804×10^{-6}	1

Kinematic viscosity $\nu = \mu/\rho$ where μ is the dynamic or absolute viscosity and ρ is the density of the fluid. Kinematic viscosity is termed a centistoke in the metric system.

Relative viscosity is the ratio of dynamic viscosity of the fluid to that of water at a definite reference temperature, usually 20 C or 68 F, where the viscosity of water is practically 1/100 poise or 1 centipoise.

Specific viscosity: Saybolt is a very common method of measuring and stating viscosity and the results stated in Saybolt seconds. Since the rate of flow through the nozzle of the Saybolt viscometer depends on the dynamic viscosity and the head pressure, and since the pressure head is a function of the density of the fluid, Saybolt viscosity is a function of the kinematic viscosity.

$$\nu = 0.0022 \times t - \frac{1.8}{t} \text{ poise/gram}, \quad \nu = \left(0.0022 \times t \times \rho - \frac{1.8}{t}\rho\right) \text{ poise}, \quad \nu = 0.00000237t - \frac{0.00194}{t} \text{ sq ft per sec}$$

Some commercial measurements of viscosity are made with the Engler viscometer and the results are stated in Engler seconds.

$$\nu = 0.00147t - \frac{3.74}{t} \text{ poise/gram} \quad \nu = 0.00147t\rho - 3.74\,\frac{\rho}{t} \text{ poise}$$

where ρ, ν and ρ are as above, and t is the time in Saybolt seconds or Engler seconds for the respective methods.

Enthalpy	Entropy
1 kg cal per kg = 1.8 Btu per lb 1 Btu per lb = 0.555 kg cal per kg	1 kg cal per (kg) (C deg) = 1 Btu per (lb) (F deg)

Table 11 .... Thermal Conductivities

Btu per (hr) (sq ft) (F deg per ft)	Btu per (hr) (sq ft) (F deg per in.)	Chu per (hr) (sq ft) (F deg per in.)*	g cal per (sec) (sq cm) (C deg per cm)	kilo ergs per (sec) (sq cm) (C deg)	watts per (sq cm) (C deg per cm)	kg cal per (hr) (sq m) (C deg per m)
1	12	12	4.13×10^{-3}	173	0.0173	1.49
0.0833	1	1	3.44×10^{-4}	14.4	1.44×10^{-3}	0.124
0.0833	1	1	3.44×10^{-4}	14.4	1.44×10^{-3}	0.124
242	2905	2905	1	41,900	4.19	361
5.78×10^{-3}	0.0694	0.0694	2.39×10^{-6}	1	1×10^{-4}	8.61×10^{-3}
57.8	694	694	0.239	10,000	1	86.1
0.671	8.05	8.05	2.77×10^{-3}	116	0.0116	1

* The pound-centigrade unit PCu, or centigrade heat unit Chu, is the heat required to raise 1 lb of water 1 C deg and equals 1.8 Btu.

Table 12 .... Coefficients of Heat Transfer

Btu per (hr) (sq ft) (F deg)	kg cal per (hr) (sq m) (C deg)	Chu per (hr) (sq ft) (C deg)*	g cal per (sec) (sq cm) (C deg)	watts per (sq m) (C deg)	watts per (sq cm) (F deg)	hp per (sq ft) (F deg)
1	4.88	1	1.355×10^{-4}	5.68×10^{-4}	2.04×10^{-3}	3.94×10^{-4}
0.205	1	0.205	2.78×10^{-5}	1.16×10^{-4}	4.18×10^{-4}	8.07×10^{-5}
1	4.88	1	1.355×10^{-4}	5.68×10^{-4}	2.04×10^{-3}	3.94×10^{-4}
7380	36,000	7380	1	4.19	15.1	2.91
1761	8592	1761	0.239	1	3.697	0.694
490	2392	490	0.0664	0.278	1	0.193
2538	12,390	2538	0.344	1.44	5.18	1

* The pound-centigrade unit PCu, or centigrade heat unit Chu, is the heat required to raise 1 lb of water 1 C deg and equals 1.8 Btu.

Table 13 .... Temperature Conversion

The numbers in bold-face type in the center column refer to the temperature, either in Centigrade or Fahrenheit, which is to be converted to the other scale. If converting Fahrenheit to Centigrade, the equivalent temperature will be found in the left column. If converting Centigrade to Fahrenheit, the equivalent temperature will be found in the column on the right.

Temperature			Temperature			Temperature			Temperature		
Cent.	C or F	Fahr	Cent.	C or F	Fahr	Cent.	C or F	Fahr	Cent.	C or F	Fahr
−40.0	−40	−40.0	−6.7	+20	+68.0	+26.7	+80	+176.0	+60.0	+140	+284.0
−39.4	−39	−38.2	−6.1	+21	+69.8	+27.2	+81	+177.8	+60.6	+141	+285.8
−38.9	−38	−36.4	−5.5	+22	+71.6	+27.8	+82	+179.6	+61.1	+142	+287.6
−38.3	−37	−34.6	−5.0	+23	+73.4	+28.3	+83	+181.4	+61.7	+143	+289.4
−37.8	−36	−32.8	−4.4	+24	+75.2	+28.9	+84	+183.2	+62.2	+144	+291.2
−37.2	−35	−31.0	−3.9	+25	+77.0	+29.4	+85	+185.0	+62.8	+145	+293.0
−36.7	−34	−29.2	−3.3	+26	+78.8	+30.0	+86	+186.8	+63.3	+146	+294.8
−36.1	−33	−27.4	−2.8	+27	+80.6	+30.6	+87	+188.6	+63.9	+147	+296.6
−35.6	−32	−25.6	−2.2	+28	+82.4	+31.1	+88	+190.4	+64.4	+148	+298.4
−35.0	−31	−23.8	−1.7	+29	+84.2	+31.7	+89	+192.2	+65.0	+149	+300.2
−34.4	−30	−22.0	−1.1	+30	+86.0	+32.2	+90	+194.0	+65.6	+150	+302.0
−33.9	−29	−20.2	−0.6	+31	+87.8	+32.8	+91	+195.8	+66.1	+151	+303.8
−33.3	−28	−18.4	.0	+32	+89.6	+33.3	+92	+197.6	+66.7	+152	+305.6
−32.8	−27	−16.6	+0.6	+33	+91.4	+33.9	+93	+199.4	+67.2	+153	+307.4
−32.2	−26	−14.8	+1.1	+34	+93.2	+34.4	+94	+201.2	+67.8	+154	+309.2
−31.7	−25	−13.0	+1.7	+35	+95.0	+35.0	+95	+203.0	+68.3	+155	+311.0
−31.1	−24	−11.2	+2.2	+36	+96.8	+35.6	+96	+204.8	+68.9	+156	+312.8
−30.6	−23	−9.4	+2.8	+37	+98.6	+36.1	+97	+206.6	+69.4	+157	+314.6
−30.0	−22	−7.6	+3.3	+38	+100.4	+36.7	+98	+208.4	+70.0	+158	+316.4
−29.4	−21	−5.8	+3.9	+39	+102.2	+37.2	+99	+210.2	+70.6	+159	+318.2
−28.9	−20	−4.0	+4.4	+40	+104.0	+37.8	+100	+212.0	+71.1	+160	+320.0
−28.3	−19	−2.2	+5.0	+41	+105.8	+38.3	+101	+213.8	+71.7	+161	+321.8
−27.8	−18	−0.4	+5.5	+42	+107.6	+38.9	+102	+215.6	+72.2	+162	+323.6
−27.2	−17	+1.4	+6.1	+43	+109.4	+39.4	+103	+217.4	+72.8	+163	+325.4
−26.7	−16	+3.2	+6.7	+44	+111.2	+40.0	+104	+219.2	+73.3	+164	+327.2
−26.1	−15	+5.0	+7.2	+45	+113.0	+40.6	+105	+221.0	+73.9	+165	+329.0
−25.6	−14	+6.8	+7.8	+46	+114.8	+41.1	+106	+222.8	+74.4	+166	+330.8
−25.0	−13	+8.6	+8.3	+47	+116.6	+41.7	+107	+224.6	+75.0	+167	+332.6
−24.4	−12	+10.4	+8.9	+48	+118.4	+42.2	+108	+226.4	+75.6	+168	+334.4
−23.9	−11	+12.2	+9.4	+49	+120.2	+42.8	+109	+228.2	+76.1	+169	+336.2
−23.3	−10	+14.0	+10.0	+50	+122.0	+43.3	+110	+230.0	+76.7	+170	+338.0
−22.8	−9	+15.8	+10.6	+51	+123.8	+43.9	+111	+231.8	+77.2	+171	+339.8
−22.2	−8	+17.6	+11.1	+52	+125.6	+44.4	+112	+233.6	+77.8	+172	+341.6
−21.7	−7	+19.4	+11.7	+53	+127.4	+45.0	+113	+235.4	+78.3	+173	+343.4
−21.1	−6	+21.2	+12.2	+54	+129.2	+45.6	+114	+237.2	+78.9	+174	+345.2
−20.6	−5	+23.0	+12.8	+55	+131.0	+46.1	+115	+239.0	+79.4	+175	+347.0
−20.0	−4	+24.8	+13.3	+56	+132.8	+46.7	+116	+240.8	+80.0	+176	+348.8
−19.4	−3	+26.6	+13.9	+57	+134.6	+47.2	+117	+242.6	+80.6	+177	+350.6
−18.9	−2	+28.4	+14.4	+58	+136.4	+47.8	+118	+244.4	+81.1	+178	+352.4
−18.3	−1	+30.2	+15.0	+59	+138.2	+48.3	+119	+246.2	+81.7	+179	+354.2
−17.8	0	+32.0	+15.6	+60	+140.0	+48.9	+120	+248.0	+82.2	+180	+356.0
−17.2	+1	+33.8	+16.1	+61	+141.8	+49.4	+121	+249.8	+82.8	+181	+357.8
−16.7	+2	+35.6	+16.7	+62	+143.6	+50.0	+122	+251.6	+83.3	+182	+359.6
−16.1	+3	+37.4	+17.2	+63	+145.4	+50.6	+123	+253.4	+83.9	+183	+361.4
−15.6	+4	+39.2	+17.8	+64	+147.2	+51.1	+124	+255.2	+84.4	+184	+363.2
−15.0	+5	+41.0	+18.3	+65	+149.0	+51.7	+125	+257.0	+85.0	+185	+365.0
−14.4	+6	+42.8	+18.9	+66	+150.8	+52.2	+126	+258.8	+85.6	+186	+366.8
−13.9	+7	+44.6	+19.4	+67	+152.6	+52.8	+127	+260.6	+86.1	+187	+368.6
−13.3	+8	+46.4	+20.0	+68	+154.4	+53.3	+128	+262.4	+86.7	+188	+370.4
−12.8	+9	+48.2	+20.6	+69	+156.2	+53.9	+129	+264.2	+87.2	+189	+372.2
−12.2	+10	+50.0	+21.1	+70	+158.0	+54.4	+130	+266.0	+87.8	+190	+374.0
−11.7	+11	+51.8	+21.7	+71	+159.8	+55.0	+131	+267.8	+88.3	+191	+375.8
−11.1	+12	+53.6	+22.2	+72	+161.6	+55.6	+132	+269.6	+88.9	+192	+377.6
−10.6	+13	+55.4	+22.8	+73	+163.4	+56.1	+133	+271.4	+89.4	+193	+379.4
−10.0	+14	+57.2	+23.3	+74	+165.2	+56.7	+134	+273.2	+90.0	+194	+381.2
−9.4	+15	+59.0	+23.9	+75	+167.0	+57.2	+135	+275.0	+90.6	+195	+383.0
−8.9	+16	+60.8	+24.4	+76	+168.8	+57.8	+136	+276.8	+91.1	+196	+384.8
−8.3	+17	+62.6	+25.0	+77	+170.6	+58.3	+137	+278.6	+91.7	+197	+386.6
−7.8	+18	+64.4	+25.6	+78	+172.4	+58.9	+138	+280.4	+92.2	+198	+388.4
−7.2	+19	+66.2	+26.1	+79	+174.2	+59.4	+139	+282.2	+92.8	+199	+390.2