

Table 1-10. THERMAL CONDUCTIVITY OF GASES AT VARIOUS TEMPERATURES*

The values in this table are given as $\frac{\text{cal}}{\text{sec cm } ^\circ\text{C}} \times 10^6$. To convert these values to $\frac{\text{Btu}}{\text{hr ft } ^\circ\text{F}}$, multiply by 0.000242.

Gas	$^\circ\text{F}$ $^\circ\text{C}$	-400 -240	-300 -184.4	-200 -128.9	-100 -73.3	-40 -40	-20 -28.9	0 -17.8	20 -6.7	40 4.4	60 15.6	80 26.7	100 37.8	120 48.9	200 93.3
Acetylene					28.10	34.71	37.19	39.67	42.15	45.04	47.94	50.83	53.72	56.62	69.43
Air						50.09	52.15	54.22	56.24	58.31	60.34	62.20	64.22	66.04	
Ammonia						43.39	45.87	48.35	50.83	53.31	55.79	58.68	61.58	64.47	
Argon						34.30	35.95	37.19	38.85	40.09	41.33	42.57	44.22	45.46	
Bromine								9.09					11.57		
<i>n</i> -Butane									30.99	33.06	35.54	38.02	40.91	43.39	54.14
<i>i</i> -Butane									32.65	33.89	36.37	38.85	41.74	44.22	55.79
Carbon dioxide						27.90	29.75	31.70	33.68	35.62	37.61	39.67	41.74	43.81	
Carbon disulfide								14.05	15.29	16.53	17.77	19.01	19.84		
Carbon monoxide						47.94	50.00	51.95	53.85	55.87	57.86	59.92	61.99	63.89	
Chlorine						15.29	16.53	17.36	18.18	19.01	20.25	21.08	21.90	23.14	
Deuterium						274.82	285.15	295.07	305.81	309.95	322.34	334.74	343.01	355.40	
Ethane					23.97	32.65	35.54	38.43	41.33	44.63	47.94	51.24	54.55	58.27	74.39
Ethanol									29.34	30.99	32.65	34.71	36.78		
Ethylamine									31.41	33.47	35.54	37.61	39.67	42.15	
Ethylene					26.86	33.06	35.54	38.02	40.50	43.39	46.29	49.18	52.07	54.96	68.19
Fluorine			18.18	30.58	43.39	50.83	52.90	55.38	57.86	59.92	61.99	64.06	66.12	68.19	76.04
Helium		84.31	163.24	221.51	274.8	304.99	314.49	324.00	333.50	343.42	352.10	360.36	368.63	376.07	
Hydrogen		59.92	142.57	227.29	308.7	357.47	371.93	388.46	405.00	417.39	433.92	446.32	458.72	471.11	
Hydrogen bromide						15.29	16.11	16.49	17.77	18.60	19.84	20.66	21.49		
Hydrogen chloride						25.62	26.86	28.51	29.75	30.99	32.23	33.89	35.12		
Hydrogen cyanide								23.97	25.62	26.86	28.10	29.75	30.99	32.65	
Hydrogen sulfide								28.10	29.75	31.41	33.47		36.78		
Krypton								19.84					23.56		
Methane			22.32	36.86	52.07	61.37	64.55	67.86	71.08	74.39	78.11	81.83	85.54	89.26	106.62
Neon						97.94	100.84	104.14	107.03	109.93	112.82	115.71	118.19	121.09	
Nitric oxide				30.91	42.40	49.01	51.24	53.39	55.54	57.65	59.76	61.99	64.06	66.12	74.39
Nitrogen			20.25	33.06	44.22	50.42	52.48	54.55	56.20	58.27	60.34	62.40	64.06	65.71	
Nitrous oxide						28.93	30.91	32.90	35.04	37.15	39.30	41.45	43.81	46.08	
Oxygen			18.84	31.66	43.72	50.54	52.81	54.96	57.24	59.43	61.58	63.64	65.91	68.19	76.87
<i>n</i> -Propane						27.69	29.75	32.23	34.71	37.19	39.67	42.47	45.46	48.35	60.75
R-11(CCl ₃ F)							12.81	13.64	14.88	15.70	16.53	17.77	18.60		
R-12(CCl ₂ F ₂)							17.36	18.60	19.42	20.66	21.49	22.73	23.56		
R-21(CHCl ₂ F)								21.90	22.32	22.73	23.14	23.56	23.97		
R-22(CHClF ₂)								24.80	25.62	26.45	27.28	28.10	28.93		
Water								34.71	36.78	38.85	40.50	42.57	44.63	46.70	54.96

*From: "CRC Handbook of Chemistry and Physics", 50th ed., R.C. Weast, Ed., The Chemical Rubber Co., 1969.