Nitrogen

Other names:	Diatomic nitrogen
	Dinitrogen
	Molecular nitrogen
	N2
	NITROGEN GAS
	Nitrogen-14
	UN 1066
	UN 1977
Inchi:	InChI=1S/N2/c1-2
InchiKey:	IJGRMHOSHXDMSA-UHFFFAOYSA-N
Formula:	N2
SMILES:	N#N
Mol. weight [g/mol]:	28.01
CAS:	7727-37-9

Physical Properties

Property code	Value	Unit	Source
af	0.0390		KDB
affp	493.80	kJ/mol	NIST Webbook
basg	464.50	kJ/mol	NIST Webbook
dm	0.00	debye	KDB
gyrad	0.5470		KDB
ie	15.58	eV	NIST Webbook
ie	15.58	eV	NIST Webbook
ie	15.60	eV	NIST Webbook
ie	15.58 ± 0.00	eV	NIST Webbook
ie	15.58	eV	NIST Webbook
ie	15.58 ± 0.01	eV	NIST Webbook
ie	15.58 ± 0.01	eV	NIST Webbook
ie	15.70 ± 0.10	eV	NIST Webbook
ie	15.60 ± 0.10	eV	NIST Webbook
ie	15.58	eV	NIST Webbook
ie	10.10 ± 0.60	eV	NIST Webbook
ie	15.58	eV	NIST Webbook
ie	15.58	eV	NIST Webbook
ie	15.58 ± 0.02	eV	NIST Webbook
ie	15.50	eV	NIST Webbook

ie	15.58	eV	NIST Webbook
ie	15.61	eV	NIST Webbook
ie	15.58 ± 0.01	eV	NIST Webbook
ie	15.56	eV	NIST Webbook
ie	15.60	eV	NIST Webbook
log10ws	0.24		Crippen Method
logp	0.030		Crippen Method
mcvol	22.220	ml/mol	McGowan Method
pc	306.82 ± 0.30	kPa	NIST Webbook
pc	3390.00	kPa	KDB
pc	3397.80 ± 0.70	kPa	NIST Webbook
pc	3400.00 ± 5.00	kPa	NIST Webbook
pc	306.98 ± 0.30	kPa	NIST Webbook
pt	12.46	kPa	KDB
pt	12.60 ± 0.07	kPa	NIST Webbook
pt	12.53 ± 0.02	kPa	NIST Webbook
pt	12.53 ± 0.01	kPa	NIST Webbook
pt	12.52 ± 0.05	kPa	NIST Webbook
rhoc	313.75 ± 0.56	kg/m3	NIST Webbook
rhoc	313.19 ± 0.56	kg/m3	NIST Webbook
sgb	191.61 ± 0.00	J/mol×K	NIST Webbook
tb	77.40 ± 0.30	K	NIST Webbook
tb	77.36	K	KDB
tb	77.34	K	NIST Webbook
tc	126.21	K	KDB
tc	126.20 ± 0.05	K	NIST Webbook
tc	128.45 ± 0.50	K	NIST Webbook
tc	126.19 ± 0.01	K	NIST Webbook
tc	126.20 ± 0.20	K	NIST Webbook
tf	63.15	K	KDB
tf	63.30 ± 0.30	K	NIST Webbook
tt	63.14	K	NIST Webbook
tt	63.14 ± 0.06	K	NIST Webbook
tt	63.13 ± 0.06	K	NIST Webbook
tt	63.14 ± 0.01	K	NIST Webbook
tt	63.15	K	KDB
vc	0.090	m3/kmol	KDB
zc	0.2907450		KDB
zra	0.29		KDB

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
dvisc	0.0000321	Pa×s	681.99	Towards Reference Viscosities of Carbon Monoxide and Nitrogen at Low Density Using Measurements between 290K and 680K as well as Theoretically Calculated Viscosities
dvisc	0.0000302	Pa×s	623.22	Towards Reference Viscosities of Carbon Monoxide and Nitrogen at Low Density Using Measurements between 290K and 680K as well as Theoretically Calculated Viscosities
dvisc	0.0000292	Pa×s	594.04	Towards Reference Viscosities of Carbon Monoxide and Nitrogen at Low Density Using Measurements between 290K and 680K as well as Theoretically Calculated Viscosities
dvisc	0.0000282	Pa×s	565.16	Towards Reference Viscosities of Carbon Monoxide and Nitrogen at Low Density Using Measurements between 290K and 680K as well as Theoretically Calculated Viscosities

dvisc	0.0000175	Pa×s	291.55	Towards Reference Viscosities of Carbon Monoxide and Nitrogen at Low Density Using Measurements between 290K and 680K as well as Theoretically Calculated Viscosities
dvisc	0.0000177	Pa×s	296.88	Towards Reference Viscosities of Carbon Monoxide and Nitrogen at Low Density Using Measurements between 290K and 680K as well as Theoretically Calculated Viscosities
dvisc	0.0000189	Pa×s	324.00	Towards Reference Viscosities of Carbon Monoxide and Nitrogen at Low Density Using Measurements between 290K and 680K as well as Theoretically Calculated Viscosities
dvisc	0.0000201	Pa×s	350.42	Towards Reference Viscosities of Carbon Monoxide and Nitrogen at Low Density Using Measurements between 290K and 680K as well as Theoretically Calculated Viscosities
dvisc	0.0000212	Pa×s	378.04	Towards Reference Viscosities of Carbon Monoxide and Nitrogen at Low Density Using Measurements between 290K and 680K as well as Theoretically Calculated Viscosities

dvisc	0.0000224	Pa×s	405.75	Towards Reference Viscosities of Carbon Monoxide and Nitrogen at Low Density Using Measurements between 290K and 680K as well as Theoretically Calculated Viscosities	
dvisc	0.0000235	Pa×s	433.79	Towards Reference Viscosities of Carbon Monoxide and Nitrogen at Low Density Using Measurements between 290K and 680K as well as Theoretically Calculated Viscosities	
dvisc	0.0000176	Pa×s	294.73	Towards Reference Viscosities of Carbon Monoxide and Nitrogen at Low Density Using Measurements between 290K and 680K as well as Theoretically Calculated Viscosities	
dvisc	0.0000245	Pa×s	461.81	Towards Reference Viscosities of Carbon Monoxide and Nitrogen at Low Density Using Measurements between 290K and 680K as well as Theoretically Calculated Viscosities	

dvisc	0.0000256	Pa×s	490.21	Towards Reference Viscosities of Carbon Monoxide and Nitrogen at Low Density Using Measurements between 290K and 680K as well as Theoretically Calculated Viscosities	
dvisc	0.0000266	Pa×s	518.59	Towards Reference Viscosities of Carbon Monoxide and Nitrogen at Low Density Using Measurements between 290K and 680K as well as Theoretically Calculated Viscosities	
dvisc	0.0000275	Pa×s	542.47	Towards Reference Viscosities of Carbon Monoxide and Nitrogen at Low Density Using Measurements between 290K and 680K as well as Theoretically Calculated Viscosities	
dvisc	0.0000311	Pa×s	652.36	Towards Reference Viscosities of Carbon Monoxide and Nitrogen at Low Density Using Measurements between 290K and 680K as well as Theoretically Calculated Viscosities	
hvapt	7.34	kJ/mol	25.25	Measurements of enthalpy of sublimation of Ne, N2, O2, Ar, CO2, Kr, Xe, and H2O using a double paddle oscillator	
hvapt	6.10	kJ/mol	94.50	NIST Webbook	
hvapt	5.60	kJ/mol	77.00	NIST Webbook	

pvap	1936.00	kPa	114.99	Vapor-Liquid Equilibrium for the Mixture Nitrogen (N2) + Methane (CH4) in the Temperature Range of (110 to 125) K
pvap	2153.30	kPa	117.00	Vapor-Liquid Equilibrium for the Mixture Nitrogen (N2) + Methane (CH4) in the Temperature Range of (110 to 125) K
pvap	2385.70	kPa	118.99	Vapor-Liquid Equilibrium for the Mixture Nitrogen (N2) + Methane (CH4) in the Temperature Range of (110 to 125) K
pvap	2633.90	kPa	120.96	Vapor-Liquid Equilibrium for the Mixture Nitrogen (N2) + Methane (CH4) in the Temperature Range of (110 to 125) K
pvap	2913.00	kPa	123.01	Vapor-Liquid Equilibrium for the Mixture Nitrogen (N2) + Methane (CH4) in the Temperature Range of (110 to 125) K
pvap	1466.70	kPa	110.01	Vapor-Liquid Equilibrium for the Mixture Nitrogen (N2) + Methane (CH4) in the Temperature Range of (110 to 125) K
pvap	1735.20	kPa	112.98	Vapor-Liquid Equilibrium for the Mixture Nitrogen (N2) + Methane (CH4) in the Temperature Range of (110 to 125) K

rhol	804.00	kg/m3	78.00	KDB
srf	6.63e-04	N/m	120.00	The liquid gas interface of oxygen nitrogen solutions 1. Surface tension
srf	0.00	N/m	115.00	The liquid gas interface of oxygen nitrogen solutions 1. Surface tension
srf	0.00	N/m	100.00	The liquid gas interface of oxygen nitrogen solutions 1. Surface tension
srf	0.01	N/m	90.00	The liquid gas interface of oxygen nitrogen solutions 1. Surface tension
srf	0.01	N/m	80.00	The liquid gas interface of oxygen nitrogen solutions 1. Surface tension

Correlations

Information	Value
Property code	pvap
Equation	ln(Pvp) = A + B/(T + C)
Coeff. A	1.34706e+01
Coeff. B	-6.57555e+02
Coeff. C	-3.06000e+00
Temperature range (K), min.	63.15
Temperature range (K), max.	126.10

Datasets

Thermal conductivity, W/m/K

Temperature, K - Gas	Pressure, kPa - Gas	Thermal conductivity, W/m/K - Gas

340.86	2579.40	0.0293
340.87	2579.40	0.0291
341.21	2579.40	0.0292
341.16	2579.40	0.0296
336.33	2657.40	0.0287
336.36	2657.40	0.0289
335.72	2657.40	0.0285
335.73	2657.40	0.0290
332.12	2682.60	0.0290
332.04	2682.60	0.0283
330.96	2682.60	0.0287
330.94	2682.60	0.0285
326.18	2705.70	0.0279
326.24	2705.70	0.0286
326.75	2705.70	0.0285
326.72	2705.70	0.0285
322.61	2776.20	0.0276
321.58	2776.20	0.0278
322.25	2776.20	0.0276
322.29	2776.20	0.0277
321.99	2778.70	0.0279
321.95	2778.70	0.0278
326.43	4299.50	0.0291
326.51	4299.50	0.0291
327.70	4299.50	0.0297
327.66	4299.50	0.0294
336.02	4212.30	0.0295
336.01	4212.30	0.0296
337.13	4212.30	0.0300
337.13	4212.30	0.0297
326.67	3835.80	0.0291
326.67	3835.80	0.0290
327.86	3835.80	0.0294
327.86	3835.80	0.0291
327.32	1657.70	0.0280
327.57	1657.70	0.0279
328.85	1657.70	0.0282
328.83	1657.70	0.0281
329.15	1209.30	0.0278
329.17	1209.30	0.0278
327.85	1209.30	0.0275
327.84	1209.30	0.0278
325.10	1008.80	0.0277
325.10	1008.80	0.0277

323.18	1008.80	0.0273
323.16	1008.80	0.0273
324.06	1008.80	0.0275
324.12	1008.80	0.0275
325.44	574.10	0.0282

Reference *https://www.doi.org/10.1016/j.fluid.2014.04.038*

Temperature, K	Pressure, kPa	Thermal conductivity, W/m/K
235.41	3405.40	0.0233
235.72	3405.40	0.0233
255.55	5432.80	0.0260
255.70	1281.10	0.0233
255.86	5432.80	0.0260
256.26	1281.10	0.0232
275.39	5057.30	0.0267
275.41	1027.70	0.0244
276.05	5057.30	0.0269
276.11	1027.70	0.0244
295.15	1844.10	0.0261
295.25	4380.80	0.0273
295.68	1844.10	0.0260
295.92	4380.80	0.0274
325.32	716.00	0.0276
325.43	2042.90	0.0284
326.20	2042.90	0.0284
326.23	4941.80	0.0296
326.39	716.00	0.0276

Reference *https://www.doi.org/10.1021/je050305z*

Viscosity, Pa*s

Temperature, K - Gas	Pressure, kPa - Gas	Viscosity, Pa*s - Gas
297.22	31330.00	0.0000280
297.23	40300.00	0.0000304
297.24	50620.00	0.0000346
297.25	24520.00	0.0000246
297.25	85020.00	0.0000474
297.26	70280.00	0.0000428

297.30	570.00	0.0000177
297.32	2900.00	0.0000184
297.32	4960.00	0.0000189
297.33	9020.00	0.0000199
297.45	60740.00	0.0000391
297.46	95040.00	0.0000529
333.14	10530.00	0.0000216
333.16	15340.00	0.0000222
333.22	24490.00	0.0000254
333.30	34970.00	0.0000295
333.42	48850.00	0.0000324
333.51	74270.00	0.0000397
333.59	95150.00	0.0000481
400.07	7230.00	0.0000230
400.07	10740.00	0.0000233
400.07	15630.00	0.0000243
400.07	25910.00	0.0000264
400.07	35280.00	0.0000284
400.07	47240.00	0.0000319
400.07	65020.00	0.0000357
400.07	95070.00	0.0000439
499.24	30120.00	0.0000295
499.24	48890.00	0.0000328
499.24	69570.00	0.0000366
499.24	94610.00	0.0000408
499.43	10560.00	0.0000270

Reference *https://www.doi.org/10.1007/s10765-011-0999-6*

Temperature, K	Pressure, kPa	Viscosity, Pa*s
303.42	4713.00	0.0000188
303.51	4518.00	0.0000188
303.52	4306.00	0.0000188
303.53	4109.00	0.0000187
303.54	3889.00	0.0000187
303.54	3711.00	0.0000187
303.54	3499.00	0.0000186
303.54	3319.00	0.0000185
303.54	3114.00	0.0000186
303.53	2920.00	0.0000185
303.53	2724.00	0.0000185
303.52	2495.00	0.0000185
303.52	2322.00	0.0000184

303.50	2080.00	0.0000183
303.49	1891.00	0.0000182
303.49	1694.00	0.0000183
303.49	1489.00	0.0000182
303.49	1251.00	0.0000182
303.48	1107.00	0.0000181
303.47	914.00	0.0000182
303.47	712.00	0.0000181
303.46	504.00	0.0000181
303.46	295.00	0.0000181
303.46	98.00	0.0000180

Reference *https://www.doi.org/10.1016/j.fluid.2014.10.023*

Pressure, kPa	Temperature, K	Viscosity, Pa*s
99.90	296.26	0.0000177
109.80	322.56	0.0000188
111.20	373.12	0.0000210
110.20	472.10	0.0000250
111.70	572.98	0.0000286
312.60	296.26	0.0000177
307.30	322.56	0.0000189
300.60	373.12	0.0000211
309.70	472.10	0.0000250
316.10	572.98	0.0000287
500.90	297.05	0.0000178
500.70	322.56	0.0000190
503.20	373.12	0.0000212
505.80	472.10	0.0000251
502.00	572.98	0.0000287
700.90	297.05	0.0000179
701.20	322.56	0.0000190
694.50	373.12	0.0000212
703.40	472.10	0.0000251
703.40	572.98	0.0000287

Reference *https://www.doi.org/10.1016/j.jct.2015.04.028*

Temperature, K	Pressure, kPa	Viscosity, Pa*s
298.25	1000.10	0.0000179
298.24	800.50	0.0000179
298.25	600.20	0.0000178

298.25	400.70	0.0000178
298.25	200.50	0.0000178
298.25	100.70	0.0000178
323.26	1000.90	0.0000190
323.26	800.20	0.0000190
323.26	600.80	0.0000190
323.26	400.40	0.0000189
323.26	200.70	0.0000189
323.26	100.60	0.0000189
373.29	1807.20	0.0000212
373.29	1500.60	0.0000212
373.29	1000.30	0.0000211
373.29	601.00	0.0000211
373.29	401.00	0.0000211
373.29	201.10	0.0000210
373.29	100.80	0.0000210
423.33	1799.40	0.0000232
423.33	1500.20	0.0000232
423.33	1000.50	0.0000231
423.33	600.60	0.0000231
423.33	400.70	0.0000231
423.33	200.90	0.0000230
423.33	100.90	0.0000230
473.38	1799.30	0.0000250
473.38	1500.60	0.0000250
473.38	1000.70	0.0000250
473.38	600.90	0.0000250
473.38	398.50	0.0000250
473.38	200.80	0.0000249
473.38	100.70	0.0000249
253.21	1200.90	0.0000158
253.21	1000.90	0.0000158
253.21	800.80	0.0000157
253.21	600.80	0.0000157
253.21	400.70	0.0000157
253.21	200.90	0.0000156
253.21	100.80	0.0000156
273.24	1499.80	0.0000169
273.24	1000.60	0.0000167
273.24	800.60	0.0000167
273.24	600.40	0.0000167
273.24	400.50	0.0000166
273.24	200.80	0.0000166
273.24	100.70	0.0000166

298.25	1500.20	0.0000180
298.25	1000.10	0.0000179
298.25	400.80	0.0000178
298.25	99.60	0.0000178
323.27	1802.10	0.0000191
323.27	1501.90	0.0000191
323.26	1000.60	0.0000190
323.27	398.80	0.0000189
323.26	101.50	0.0000189

Reference *https://www.doi.org/10.1016/j.jct.2018.01.015*

Temperature, K	Pressure, kPa	Viscosity, Pa*s
298.15	100.00	0.0000178
298.15	150.00	0.0000178
298.15	200.00	0.0000178
298.15	250.00	0.0000178
298.15	300.10	0.0000178
298.15	350.10	0.0000178
298.15	400.00	0.0000178
298.15	450.10	0.0000178
298.15	500.10	0.0000178
298.15	600.10	0.0000179
298.15	700.10	0.0000179
298.15	800.10	0.0000179
298.15	900.10	0.0000179
298.15	1000.20	0.0000179
298.15	1100.20	0.0000179
298.15	1200.10	0.0000179
298.15	1300.10	0.0000180
298.15	1400.10	0.0000180
298.15	1500.10	0.0000180
298.15	1599.90	0.0000180
298.15	1700.00	0.0000180
298.15	1800.10	0.0000180
298.15	1899.90	0.0000180
298.15	2000.40	0.0000181
298.15	2250.00	0.0000181
298.15	2500.30	0.0000181
298.15	2750.40	0.0000182
298.15	3000.90	0.0000182
298.15	3250.30	0.0000183
298.15	3500.70	0.0000183

298.15	3750.70	0.0000184
298.15	4001.00	0.0000184
298.15	4250.50	0.0000185
298.15	4499.80	0.0000185
298.15	4749.90	0.0000186
298.15	5000.50	0.0000186
298.15	5500.90	0.0000187
298.15	6005.40	0.0000188
298.15	6500.40	0.0000190
298.15	7002.50	0.0000191
298.15	7501.60	0.0000192
298.15	8000.90	0.0000193
298.15	8500.90	0.0000195
298.15	8999.30	0.0000196
298.15	9499.40	0.0000197
298.15	10001.00	0.0000199
298.15	11005.00	0.0000202
298.15	12002.00	0.0000205
298.15	13004.00	0.0000208
298.15	14004.00	0.0000211
298.15	15006.00	0.0000214
298.15	16001.00	0.0000218
298.15	17010.00	0.0000221
298.15	18008.00	0.0000225
298.15	19006.00	0.0000228
298.15	20005.00	0.0000232
298.15	21000.00	0.0000235
298.15	22001.00	0.0000239
298.15	23008.00	0.0000243
298.15	24003.00	0.0000247
298.15	25014.00	0.0000250
298.15	26005.00	0.0000254
298.15	27010.00	0.0000258
298.15	28009.00	0.0000262
298.15	29013.00	0.0000266
298.15	30010.00	0.0000269
298.15	31009.00	0.0000273
298.15	31995.00	0.0000277
298.15	33004.00	0.0000281
298.15	33949.00	0.0000285
298.15	35027.00	0.0000289
323.15	100.00	0.0000189
323.15	200.10	0.0000189
323.15	300.10	0.0000189

323.15	400.10	0.0000190
323.15	600.10	0.0000190
323.15	800.30	0.0000190
323.15	1000.60	0.0000190
323.15	1500.70	0.0000191
323.15	2000.70	0.0000192
323.15	2500.90	0.0000192
323.15	3000.80	0.0000193
323.15	3502.60	0.0000194
323.15	4001.80	0.0000195
323.15	4500.40	0.0000196
323.15	5002.20	0.0000196
323.15	5503.90	0.0000198
323.15	6003.60	0.0000198
323.15	6503.60	0.0000199
323.15	7009.30	0.0000201
323.15	7502.70	0.0000202
323.15	8003.10	0.0000203
323.15	8504.20	0.0000204
323.15	9006.10	0.0000205
323.15	9500.40	0.0000206
323.15	10007.00	0.0000207
323.15	11007.00	0.0000210
323.15	12006.00	0.0000212
323.15	13005.00	0.0000215
323.15	14005.00	0.0000218
323.15	15005.00	0.0000221
323.15	16009.00	0.0000223
323.15	17007.00	0.0000226
323.15	18000.00	0.0000229
323.15	19007.00	0.0000232
323.15	19999.00	0.0000235
323.15	21010.00	0.0000238
323.15	22011.00	0.0000242
323.15	23013.00	0.0000245
323.15	24004.00	0.0000248
323.15	25005.00	0.0000251
323.15	26011.00	0.0000255
323.15	27000.00	0.0000258
323.15	28012.00	0.0000261
323.15	29014.00	0.0000265
323.15	30014.00	0.0000268
323.15	31013.00	0.0000271
323.15	31997.00	0.0000275

323.15	33007.00	0.0000278
323.15	34009.00	0.0000281
323.15	35066.00	0.0000285
348.15	100.10	0.0000200
348.15	200.10	0.0000200
348.15	300.10	0.0000200
348.15	400.20	0.0000201
348.15	600.50	0.0000201
348.15	800.60	0.0000201
348.15	1000.90	0.0000201
348.15	1501.90	0.0000202
348.15	2001.60	0.0000202
348.15	2502.00	0.0000203
348.15	3002.60	0.0000204
348.15	3504.20	0.0000204
348.15	3999.60	0.0000205
348.15	4508.20	0.0000206
348.15	5002.20	0.0000207
348.15	5502.80	0.0000207
348.15	6003.40	0.0000208
348.15	6501.30	0.0000209
348.15	7002.30	0.0000210
348.15	7502.50	0.0000211
348.15	8002.10	0.0000212
348.15	8501.80	0.0000213
348.15	9004.00	0.0000214
348.15	9498.90	0.0000215
348.15	10001.00	0.0000216
348.15	11007.00	0.0000218
348.15	12007.00	0.0000220
348.15	13006.00	0.0000223
348.15	14001.00	0.0000225
348.15	15011.00	0.0000227
348.15	16001.00	0.0000230
348.15	17002.00	0.0000233
348.15	18004.00	0.0000235
348.15	19008.00	0.0000238
348.15	20006.00	0.0000240
348.15	21004.00	0.0000243
348.15	22011.00	0.0000246
348.15	23006.00	0.0000249
348.15	24004.00	0.0000251
348.15	25007.00	0.0000254
348.15	26007.00	0.0000257

348.15	27005.00	0.0000260
348.15	27995.00	0.0000263
348.15	29000.00	0.0000265
348.15	30021.00	0.0000269
348.15	31015.00	0.0000272
348.15	32013.00	0.0000275
348.15	33000.00	0.0000278
348.15	34013.00	0.0000281
348.15	34919.00	0.0000283
373.15	100.30	0.0000210
373.15	200.10	0.0000211
373.15	301.00	0.0000211
373.15	400.20	0.0000211
373.15	600.70	0.0000211
373.15	800.60	0.0000211
373.15	1000.50	0.0000211
373.15	1501.20	0.0000212
373.15	2002.10	0.0000213
373.15	2501.40	0.0000213
373.15	3003.50	0.0000214
373.15	3503.30	0.0000214
373.15	4010.00	0.0000215
373.15	4501.60	0.0000216
373.15	5007.40	0.0000216
373.15	5504.70	0.0000217
373.15	6000.60	0.0000218
373.15	6507.40	0.0000219
373.15	7006.90	0.0000219
373.15	7500.70	0.0000220
373.15	8002.70	0.0000221
373.15	8504.30	0.0000222
373.15	9002.10	0.0000223
373.15	9499.10	0.0000224
373.15	10010.00	0.0000225
373.15	11006.00	0.0000227
373.15	12000.00	0.0000228
373.15	13002.00	0.0000231
373.15	14010.00	0.0000233
373.15	15013.00	0.0000235
373.15	16013.00	0.0000237
373.15	17018.00	0.0000239
373.15	18001.00	0.0000241
373.15	19005.00	0.0000244
373.15	19977.00	0.0000246

373.15	21015.00	0.0000249
373.15	22011.00	0.0000251
373.15	23004.00	0.0000254
373.15	24005.00	0.0000256
373.15	25012.00	0.0000258
373.15	26006.00	0.0000261
373.15	27007.00	0.0000263
373.15	28017.00	0.0000266
373.15	29005.00	0.0000269
373.15	30003.00	0.0000271
373.15	31001.00	0.0000274
373.15	32010.00	0.0000277
373.15	33011.00	0.0000279
373.15	34006.00	0.0000282
373.15	34834.00	0.0000284
398.15	100.10	0.0000220
398.15	200.90	0.0000221
398.15	300.80	0.0000221
398.15	400.50	0.0000221
398.15	600.30	0.0000221
398.15	800.50	0.0000221
398.15	1001.00	0.0000222
398.15	1501.80	0.0000222
398.15	2001.30	0.0000223
398.15	2495.80	0.0000223
398.15	3000.70	0.0000224
398.15	3501.80	0.0000224
398.15	4002.80	0.0000225
398.15	4503.10	0.0000225
398.15	5003.70	0.0000226
398.15	5502.60	0.0000227
398.15	6004.90	0.0000227
398.15	6501.80	0.0000228
398.15	7005.30	0.0000229
398.15	7507.10	0.0000229
398.15	8007.60	0.0000230
398.15	8501.00	0.0000231
398.15	9010.30	0.0000232
398.15	9506.90	0.0000232
398.15	10005.00	0.0000233
398.15	11003.00	0.0000235
398.15	11989.00	0.0000237
398.15	13002.00	0.0000239
398.15	13997.00	0.0000240

398.15	15013.00	0.0000242
398.15	16005.00	0.0000244
398.15	17010.00	0.0000246
398.15	18010.00	0.0000248
398.15	19003.00	0.0000250
398.15	20019.00	0.0000252
398.15	21009.00	0.0000255
398.15	22011.00	0.0000257
398.15	23034.00	0.0000259
398.15	23993.00	0.0000261
398.15	25001.00	0.0000263
398.15	25977.00	0.0000266
398.15	27031.00	0.0000268
398.15	28028.00	0.0000270
398.15	29028.00	0.0000273
398.15	29911.00	0.0000275
398.15	31023.00	0.0000277
398.15	32013.00	0.0000280
398.15	33034.00	0.0000282
398.15	34043.00	0.0000285
398.15	35040.00	0.0000287
423.15	100.10	0.0000230
423.15	200.10	0.0000231
423.15	300.40	0.0000231
423.15	400.10	0.0000231
423.15	600.20	0.0000231
423.15	800.30	0.0000231
423.15	1001.10	0.0000231
423.15	1502.50	0.0000232
423.15	1997.80	0.0000232
423.15	2498.00	0.0000233
423.15	3002.30	0.0000233
423.15	3505.80	0.0000234
423.15	4004.00	0.0000234
423.15	4501.20	0.0000235
423.15	5002.70	0.0000235
423.15	5502.80	0.0000236
423.15	6002.20	0.0000237
423.15	6502.30	0.0000237
423.15	7003.00	0.0000238
423.15	7497.90	0.0000238
423.15	8004.20	0.0000239
423.15	8503.00	0.0000240
423.15	9004.20	0.0000241

423.15	9504.30	0.0000241
423.15	10006.00	0.0000242
423.15	11004.00	0.0000243
423.15	11994.00	0.0000245
423.15	13002.00	0.0000247
423.15	14011.00	0.0000248
423.15	15002.00	0.0000250
423.15	16009.00	0.0000252
423.15	17009.00	0.0000254
423.15	17999.00	0.0000255
423.15	19008.00	0.0000257
423.15	20008.00	0.0000259
423.15	20987.00	0.0000261
423.15	22009.00	0.0000263
423.15	23014.00	0.0000265
423.15	24019.00	0.0000267
423.15	25024.00	0.0000269
423.15	26017.00	0.0000271
423.15	27035.00	0.0000273
423.15	28010.00	0.0000275
423.15	29015.00	0.0000277
423.15	30011.00	0.0000279
423.15	31001.00	0.0000282
423.15	31988.00	0.0000284
423.15	32989.00	0.0000286
423.15	34020.00	0.0000288
423.15	35050.00	0.0000290

Reference *https://www.doi.org/10.1021/je050399c*

Temperature, K	Pressure, kPa	Viscosity, Pa*s
298.15	101.00	0.0000179
298.15	240.00	0.0000179
298.15	672.00	0.0000179
323.15	101.00	0.0000190
323.15	290.00	0.0000190
323.15	466.00	0.0000191
323.15	856.00	0.0000191
348.15	101.00	0.0000201
348.15	518.00	0.0000202
348.15	1010.00	0.0000202
348.15	2028.00	0.0000204
373.15	101.00	0.0000212

373.15	495.00	0.0000212
373.15	1000.00	0.0000213
373.15	2006.00	0.0000214
373.15	2930.00	0.0000215
373.15	3985.00	0.0000217
373.15	4966.00	0.0000218
398.15	101.00	0.0000222
398.15	520.00	0.0000222
398.15	1003.00	0.0000223
398.15	2000.00	0.0000224
398.15	3473.00	0.0000226
398.15	4849.00	0.0000228
423.15	101.00	0.0000232
423.15	550.00	0.0000232
423.15	1032.00	0.0000233
423.15	2012.00	0.0000234
423.15	3435.00	0.0000235
423.15	4832.00	0.0000237

Reference *https://www.doi.org/10.1021/je8009545*

Temperature, K	Pressure, kPa	Viscosity, Pa*s
293.11	1737.30	0.0000178
293.11	12288.00	0.0000204
293.11	8684.10	0.0000193
293.12	24666.00	0.0000249
293.12	16079.00	0.0000217
293.12	22359.00	0.0000240
293.12	5188.40	0.0000184
293.12	6932.10	0.0000188
293.12	3456.50	0.0000181
293.13	14176.00	0.0000210
293.14	18079.00	0.0000224
293.15	867.69	0.0000176
293.15	434.63	0.0000176
293.15	260.16	0.0000175
293.16	27067.00	0.0000259
293.16	20166.00	0.0000232
293.16	10467.00	0.0000198
293.16	174.08	0.0000175
293.16	87.06	0.0000175
293.16	30306.00	0.0000271
293.17	434.86	0.0000176

293.17	30306.00	0.0000271
293.17	347.38	0.0000176
293.18	69.62	0.0000175

Reference *https://www.doi.org/10.1021/je900131q*

Mass density, kg/m3

Temperature, K - Gas	Pressure, kPa - Gas	Mass density, kg/m3 - Gas
250.00	4032.00	55.8105
250.00	4032.00	55.8107
250.00	11944.30	167.5304
250.00	19672.10	264.4362
250.00	31915.60	377.5128
250.00	4032.00	55.8109
250.00	4032.00	55.8112
250.00	7922.00	111.2011
250.00	11944.30	167.5305
250.00	15945.40	220.078
250.00	19672.10	264.4357
250.00	23917.70	309.0332
250.00	23918.60	309.0428
250.00	27921.70	345.6187
250.00	27921.90	345.6199
250.00	27922.30	345.6238
250.00	27922.80	345.6288
250.00	31913.80	377.4977
250.00	31915.00	377.5055
250.00	31916.30	377.516
250.00	4032.00	55.8104
250.00	7922.00	111.2009
250.00	11944.30	167.531
250.00	7922.10	111.2012
250.00	11944.30	167.5306
250.00	15945.30	220.0776
250.00	19672.30	264.4371
250.00	19672.40	264.4384
250.00	23918.20	309.0349
250.00	23920.80	309.0618
250.00	27922.80	345.6271
250.00	31914.30	377.4996

250.00	31914.80	377.5038
250.00	11944.30	167.5298
250.00	15945.30	220.0778
250.00	11944.30	167.5299
250.00	7922.10	111.2012
250.00	15945.30	220.0762
250.00	15945.60	220.0791
250.00	19672.00	264.4339
250.00	23918.50	309.0379
250.00	23920.40	309.0561
250.00	27922.40	345.6208
273.16	6172.50	77.4431
273.16	3969.20	49.6242
273.16	6172.50	77.4438
273.16	8165.10	102.4783
273.16	12167.90	151.5658
273.16	12168.00	151.5667
273.16	16375.90	200.1297
273.16	16376.10	200.1314
273.16	20308.20	241.7355
273.16	20309.00	241.7456
273.16	28793.70	318.0674
273.16	33964.40	356.4025
273.16	3969.20	49.6241
273.16	6172.50	77.4433
273.16	8165.10	102.4798
273.16	6172.60	77.4441
273.16	8165.20	102.4804
273.16	12168.00	151.5676
273.16	12168.10	151.568
273.16	16376.30	200.1327
273.16	20308.50	241.7389
273.16	20308.90	241.7448
273.16	24524.50	281.9097
273.16	24526.00	281.9219
273.16	28792.40	318.0555
273.16	33963.70	356.3973
273.16	3969.20	49.6244
273.16	3969.30	49.6242
273.16	6172.60	77.4442
273.16	8165.10	102.4795
273.16	8165.20	102.4802
273.16	12167.80	151.5632
273.16	16375.90	200.1274

273.16	16376.00	200.1292
273.16	28792.90	318.057
273.16	28793.70	318.0651
273.16	33963.10	356.3909
273.16	33965.40	356.4068
273.16	3969.20	49.6239
273.16	8165.20	102.479
273.16	20309.00	241.743
273.16	24525.00	281.9126
273.16	24525.40	281.9148
273.16	24526.00	281.9206
273.16	28793.30	318.0575
273.16	33966.20	356.4129
293.14	1498.50	17.2764
293.14	1998.00	23.0541
293.14	2997.10	34.6235
293.14	3996.10	46.1973
293.14	5994.20	69.291
293.14	1498.50	17.2762
293.14	299.70	3.4472
293.14	499.50	5.7477
293.14	999.00	11.5071
293.14	1498.50	17.2761
293.14	1998.00	23.0541
293.14	2997.10	34.6233
293.14	3996.10	46.1976
293.14	4995.20	57.7597
293.14	5994.20	69.2908
293.14	5994.30	69.2914
293.14	299.70	3.447
293.14	499.50	5.7475
293.14	999.00	11.5071
293.14	1498.50	17.2763
293.14	1998.00	23.0541
293.14	2997.10	34.6235
293.14	3996.10	46.1976
293.14	4995.20	57.7599
293.14	5994.20	69.291
293.14	299.70	3.4472
293.14	999.00	11.5075
293.14	1498.50	17.2763
293.14	1998.00	23.0539
293.14	2997.10	34.6233
293.14	3996.10	46.1974

293.14	299.70	3.4472
293.14	999.00	11.5075
293.14	1498.50	17.2763
293.14	2997.10	34.6236
293.14	3996.10	46.1974
293.14	299.70	3.447
293.14	999.00	11.5074
293.14	1498.50	17.2763
293.14	3996.10	46.1982
293.14	299.70	3.4473
293.14	999.00	11.5074
293.14	3996.10	46.198
293.14	999.00	11.5074
293.14	99.90	1.1486
293.14	199.80	2.2978
293.14	299.70	3.4473
293.14	499.50	5.7477
293.14	749.20	8.6261
293.14	749.30	8.6261
293.14	999.00	11.5071
293.14	1498.50	17.2761
293.14	4995.10	57.7592
293.14	5994.20	69.2909
293.14	5994.30	69.2915
293.14	99.90	1.1488
293.14	199.80	2.2977
293.14	299.70	3.4472
293.14	499.50	5.7476
293.14	749.20	8.626
293.14	999.00	11.5072
293.14	1498.50	17.2762
293.14	5994.20	69.2909
293.14	199.80	2.2976
293.14	299.70	3.4472
293.14	749.20	8.626
293.14	199.80	2.2977
293.14	299.70	3.4473
293.14	749.20	8.626
293.14	199.80	2.2978
293.14	199.80	2.2976
293.14	99.90	1.1487
293.14	99.90	1.1485
293.14	99.90	1.1487
293.15	5964.90	68.951

293.15	7948.60	91.6867
293.15	32147.00	317.9221
293.15	32147.50	317.9256
293.15	4004.80	46.2932
293.15	5964.90	68.951
293.15	7948.60	91.6871
293.15	7948.80	91.689
293.15	11979.60	136.7132
293.15	11979.70	136.7149
293.15	15954.70	178.7821
293.15	19567.10	214.4519
293.15	19567.70	214.4565
293.15	28412.10	290.4478
293.15	28413.00	290.455
293.15	32145.30	317.9093
293.15	32145.90	317.9116
293.15	4004.80	46.2934
293.15	19567.70	214.4565
293.15	4004.80	46.2936
293.15	4004.90	46.2937
293.15	5964.90	68.9516
293.15	7948.60	91.6868
293.15	7948.80	91.6881
293.15	11979.80	136.7158
293.15	11980.10	136.7194
293.15	15954.50	178.7796
293.15	15954.60	178.7811
293.15	15954.80	178.7837
293.15	19567.40	214.4528
293.15	24175.80	256.0494
293.15	24176.00	256.0518
293.15	32144.50	317.9018
293.15	32145.10	317.9053
293.15	7948.60	91.6869
293.15	4004.80	46.2933
293.15	5964.90	68.9512
293.15	11979.70	136.7146
293.15	11979.80	136.7158
293.15	15954.70	178.7803
293.15	15954.80	178.7829
293.15	19567.40	214.4535
293.15	19567.60	214.4572
293.15	24175.20	256.0423
293.15	28411.90	290.4433

293.15	28412.20	290.4472
293.15	32146.60	317.9172
293.15	4004.80	46.2931
293.15	5964.90	68.9517
293.15	4004.80	46.2933
293.15	4004.80	46.2935
293.15	11980.10	136.7181
293.15	15954.70	178.7812
293.15	15954.90	178.7828
293.15	24175.60	256.0474
293.15	24176.50	256.0548
293.15	28411.90	290.4438
293.15	28412.90	290.4526
320.00	4775.80	50.1489
320.00	4775.80	50.1482
320.00	4775.80	50.1481
320.00	4775.90	50.1492
320.00	10134.60	104.9993
320.00	4775.90	50.1493
320.00	4775.90	50.149
320.00	10134.90	105.0014
320.00	10134.90	105.0014
320.00	10134.90	105.0019
320.00	10135.00	105.0021
320.00	20209.60	198.7985
320.00	20209.80	198.7991
320.00	10135.00	105.0014
320.00	20209.50	198.7966
320.00	20209.70	198.7988
320.00	20209.90	198.8005
320.00	20209.50	198.7961
339.98	499.50	4.9482
339.98	1998.00	19.7585
339.98	499.50	4.9481
339.98	1998.00	19.7583
339.98	499.50	4.9482
339.98	499.50	4.948
339.98	499.50	4.9481
339.98	999.00	9.8915
339.98	1998.00	19.7583
339.98	3996.00	39.382
339.98	999.00	9.8916
339.98	1998.00	19.7583
339.98	999.00	9.8915

339.98	999.00	9.8915
339.98	1998.00	19.7584
339.98	3996.00	39.3817
339.98	5994.10	58.7959
339.98	999.00	9.8916
339.98	3996.00	39.3819
339.98	5994.10	58.7959
339.98	3996.00	39.3818
339.98	5994.10	58.7959
339.98	3996.00	39.3818
339.98	5994.10	58.7959
339.98	5994.10	58.796
339.99	5081.90	49.9596
339.99	5082.10	49.9616
339.99	5082.00	49.9602
339.99	21784.30	198.014
339.99	5082.00	49.9596
340.00	5082.00	49.96
340.00	10840.40	104.5878
340.00	10840.50	104.589
340.00	10840.40	104.5878
340.00	10840.40	104.5886
340.00	10840.50	104.5892
340.00	21783.80	198.0078
340.00	10840.40	104.5876
340.00	21783.80	198.006
340.00	21784.10	198.0096
340.00	21784.10	198.0087
340.00	21783.80	198.0068
340.01	11961.90	114.8453
340.01	3874.60	38.1897
340.01	5932.30	58.1965
340.01	7789.70	76.0005
340.01	11961.80	114.8449
340.01	15961.40	150.2409
340.01	20071.70	184.4431
340.01	20071.90	184.4451
340.01	20072.40	184.4501
340.01	24069.20	215.4629
340.01	24069.90	215.4674
340.01	28607.80	247.996
340.01	28608.00	247.9986
340.01	33720.30	281.3894
340.01	3874.60	38.1898

340.01	5932.30	58.1955
340.01	3874.60	38.1897
340.01	7789.60	75.9992
340.01	7789.70	76.0006
340.01	11961.70	114.8441
340.01	15961.20	150.2383
340.01	15961.50	150.242
340.01	20072.20	184.4486
340.01	20072.70	184.4528
340.01	24069.30	215.4629
340.01	28606.80	247.989
340.01	33718.50	281.3791
340.01	33719.50	281.3858
340.01	11961.70	114.8423
340.01	15961.50	150.2396
340.01	3874.60	38.1896
340.01	7789.70	76.0004
340.01	11961.80	114.8443
340.01	15961.30	150.2393
340.01	24069.70	215.4654
340.01	24069.80	215.4662
340.01	28607.20	247.9904
340.01	28607.60	247.9933
340.01	33718.70	281.38
340.01	33719.30	281.3836
340.01	7789.70	76.0001
340.01	3874.60	38.1894
340.01	5932.40	58.1962
340.01	7789.70	75.9998
340.01	20072.20	184.447
340.01	3874.60	38.1895
340.01	5932.40	58.1962
359.99	5385.30	49.7747
359.99	5385.40	49.7738
359.99	5385.40	49.7746
359.99	5385.50	49.7747
359.99	11538.60	104.182
359.99	23336.90	197.2465
359.99	5385.50	49.7744
359.99	5385.50	49.7747
360.00	11538.50	104.1806
360.00	11538.50	104.1806
360.00	11538.60	104.1816
360.00	23336.60	197.2431

360.00	11538.60	104.1809
360.00	11538.50	104.1802
360.00	23336.60	197.2426
360.00	23336.10	197.2376
360.00	23336.20	197.2387
360.00	23336.40	197.241
379.99	5685.80	49.589
379.99	5685.70	49.5891
379.99	5685.70	49.5887
379.99	5685.80	49.5891
379.99	5685.70	49.5886
379.99	5685.70	49.5883
379.99	12228.30	103.7761
379.99	12228.40	103.7759
379.99	12228.50	103.7783
380.00	12228.30	103.7752
380.00	12228.30	103.7749
380.00	12228.40	103.7761
380.00	24869.10	196.497
380.00	24868.20	196.492
380.00	24868.40	196.4927
380.00	24869.10	196.4959
380.00	24868.20	196.491
380.00	24868.60	196.4924
399.97	999.00	8.3914
399.97	1998.00	16.7314
399.97	999.00	8.3913
399.97	499.50	4.2016
399.97	999.00	8.3912
399.97	1998.00	16.7313
399.97	3996.00	33.2413
399.97	5994.10	49.4948
399.97	499.50	4.2016
399.97	1998.00	16.7315
399.97	3996.00	33.241
399.97	5994.10	49.4949
399.97	499.50	4.2015
399.97	1998.00	16.7315
399.97	3996.00	33.241
399.97	5994.10	49.4948
399.97	499.50	4.2015
399.97	5994.10	49.4947
399.97	499.50	4.2014
399.97	999.00	8.3913

399.97	1998.00	16.7314
399.97	3996.00	33.241
399.97	3996.00	33.2411
399.99	5983.60	49.4072
399.99	5983.80	49.4087
399.99	5983.60	49.4075
399.99	5983.70	49.4089
399.99	5983.80	49.4092
399.99	5983.70	49.4079
399.99	12911.10	103.3833
399.99	12911.50	103.3867
400.00	12911.20	103.385
400.00	12911.50	103.3879
400.00	12911.00	103.3836
400.00	12911.00	103.3827
400.00	26381.00	195.7629
400.00	26381.80	195.7697
400.00	26382.60	195.774
400.00	26380.90	195.7628
400.00	26381.30	195.7658
400.00	26381.90	195.7696
419.99	6278.60	49.2274
419.99	6278.60	49.2271
419.99	6278.60	49.2273
419.99	6278.60	49.2276
419.99	6278.60	49.2274
419.99	13586.70	103.0011
419.99	13586.90	103.0021
420.00	13586.70	102.9999
420.00	13586.80	103.0014
420.00	27878.00	195.0695
420.00	13586.70	103.001
420.00	13586.90	103.0019
420.00	27875.70	195.0566
420.00	27876.70	195.0645
420.00	27876.90	195.0639
420.00	27875.90	195.0582
420.00	27876.50	195.0605
439.98	499.50	3.8187
439.98	999.00	7.6237
439.98	1998.00	15.1913
439.98	499.50	3.8186
439.98	999.00	7.6237
439.98	1998.00	15.1914

439.98	499.50	3.8188
439.98	999.00	7.6237
439.98	1998.00	15.1914
439.98	499.50	3.8187
439.98	999.00	7.6236
439.98	1998.00	15.1913
439.98	499.50	3.8185
439.98	999.00	7.6238
439.98	1998.00	15.1913
439.98	3995.90	30.1496
439.98	3995.90	30.1496
439.98	3995.90	30.1495
439.98	3995.90	30.1492
439.98	3995.90	30.1497
439.98	5993.90	44.8531
439.98	5993.90	44.8534
439.98	5993.90	44.8532
439.98	5993.90	44.853
439.99	6571.10	49.0504
439.99	6571.00	49.0492
439.99	6571.10	49.0497
439.99	6571.10	49.05
440.00	14255.10	102.6214
440.00	14255.20	102.6215
440.00	14255.30	102.6222
440.00	14255.30	102.6225
440.00	14255.40	102.624
440.00	14255.20	102.6219
440.00	29347.70	194.3402
440.00	29348.00	194.3416
440.00	29348.30	194.3438
440.00	29348.70	194.3454
440.00	29348.90	194.3467
440.00	29349.30	194.3481
459.99	6861.30	48.8758
459.99	6861.30	48.8757
460.00	6861.30	48.8757
460.00	6861.40	48.8764
460.00	6861.30	48.8759
460.00	14917.40	102.253
460.00	14917.10	102.2504
460.00	14917.20	102.2509
460.00	14917.50	102.2532
460.00	14917.20	102.2515

460.00	14917.30	102.2519
460.00	30809.20	193.675
460.00	30810.70	193.6832
460.00	30812.10	193.6903
460.00	30810.50	193.6813
460.00	30809.60	193.6773
460.00	30810.10	193.6784
479.99	7148.70	48.7027
479.99	7148.60	48.7024
480.00	7148.70	48.7027
480.00	7148.60	48.7016
480.00	15572.50	101.8857
480.00	7148.60	48.7015
480.00	15572.20	101.8829
480.00	15572.40	101.8846
480.00	15572.60	101.886
480.00	15572.30	101.8835
480.00	15572.30	101.884
480.00	32254.50	193.0251
480.00	32256.00	193.0317
480.00	32256.40	193.0345
480.00	1998.00	13.9149
480.00	32254.80	193.0268
480.00	32255.70	193.0316
480.00	1998.00	13.9143
480.00	1998.00	13.9142
480.00	1998.00	13.9139
480.00	499.50	3.4996
480.00	999.00	6.9857
480.00	1998.00	13.915
480.00	32255.30	193.0292
480.00	499.50	3.4991
480.00	999.00	6.9856
480.00	499.50	3.4995
480.00	999.00	6.9852
480.00	3996.00	27.6012
480.00	5994.10	41.0449
480.00	999.00	6.9854
480.00	3996.00	27.6015
480.00	999.00	6.9853
480.00	3996.00	27.6009
480.00	499.50	3.4998
480.00	5994.00	41.0449
480.00	5994.10	41.0443

480.00	499.50	3.4995
480.00	5994.00	41.045
480.00	5994.10	41.045
500.00	7433.70	48.5307
500.00	7433.80	48.531
500.00	7433.70	48.5313
500.00	7433.80	48.5323
500.00	16220.30	101.5167
500.00	16220.60	101.519
500.00	16220.80	101.5207
500.00	7433.80	48.5317
500.00	7433.90	48.5314
500.00	16220.40	101.5177
500.00	16220.40	101.5181
500.00	16220.50	101.5188
500.00	33681.20	192.3769
500.00	33681.80	192.3795
500.00	33683.60	192.3886
500.00	33685.50	192.3964
500.00	33682.90	192.3842
500.00	33682.50	192.3822

Reference *https://www.doi.org/10.1016/j.jct.2006.09.012*

Temperature, K	Pressure, kPa	Mass density, kg/m3
322.97	2004.45	20.889
322.98	1502.85	15.668
322.97	1127.12	11.749
322.97	845.67	8.818
322.98	634.95	6.619

Reference *https://www.doi.org/10.1016/j.jct.2013.10.031*

Temperature, K	Pressure, kPa	Mass density, kg/m3
304.03	17990.00	190.64
304.10	16877.00	180.004
304.15	15984.00	171.278
304.16	14927.00	160.84
304.17	13944.00	150.964
304.11	12948.00	140.851
304.15	11901.00	129.994
304.16	10861.00	119.075

304.23	9837.00	108.209
304.13	8812.00	97.213
304.15	7820.00	86.489
304.11	6796.00	75.316
304.12	5782.00	64.151
304.14	4379.00	48.633
304.15	2926.00	32.502
304.88	18305.00	192.939
304.73	16296.00	173.901
304.77	14270.00	153.864
304.75	12245.00	133.207
304.78	10988.00	120.097
304.83	10043.00	110.076
304.75	8937.00	98.306
304.83	8012.00	88.26
304.66	7983.00	88.017
304.69	7136.00	78.822
304.89	6933.00	76.521
304.82	5885.00	65.065
305.04	4986.00	55.132
305.17	4987.00	55.12
304.77	4983.00	55.145
304.66	3534.00	39.15
304.88	3013.00	33.353
304.80	3016.00	33.394
304.55	2607.00	28.885

Reference *https://www.doi.org/10.1016/j.jct.2016.11.009*

Temperature, K	Pressure, kPa	Mass density, kg/m3
927.10	26090.00	86.03
874.60	24580.00	86.14
805.80	22603.00	86.28
727.30	20352.00	86.58

Reference *https://www.doi.org/10.1021/acs.jced.9b00399*

Pressure, kPa	Temperature, K	Mass density, kg/m3
6000.00	293.20	69.11
5600.00	293.20	62.2
5100.00	293.20	58.28
4600.00	293.20	53.49

4100.00	293.20	46.43
3600.00	293.20	40.54
3100.00	293.20	33.96
2600.00	293.20	27.88
2100.00	293.20	23.64
1600.00	293.20	17.77
1100.00	293.20	11.22
4000.00	473.20	27.65
3100.00	473.20	21.05
2100.00	473.20	14.69
1600.00	473.20	11.8
1000.00	473.20	8.0
600.00	473.20	3.79
100.00	473.20	0.6800
600.00	293.20	7.36
100.00	293.20	1.15

Reference *https://www.doi.org/10.1021/je500314x*

Mass density, kg/m3

Temperature, K - Liquid	Pressure, kPa - Liquid	Mass density, kg/m3 - Liquid
249.96	10070.50	141.6121
249.96	2007.64	27.4619
249.96	5024.18	69.9018
249.96	5023.94	69.8983
249.96	15269.60	211.5786
249.96	15270.00	211.5881
249.96	15267.20	211.5483
249.96	19857.10	266.5607
250.00	2008.64	27.471
250.00	4994.50	69.4686
274.97	10066.30	125.0157
274.97	2011.64	24.8371
274.97	10066.20	125.0142
274.97	19875.00	235.358
274.97	19871.10	235.3186
299.97	4925.58	55.5145
299.97	10974.30	122.2531
299.97	13854.70	152.5596
299.97	4925.73	55.5158

299.97	10974.40	122.2529
299.97	13854.90	152.5607
299.97	16780.10	181.9817
299.97	2457.07	27.6844
299.98	2457.00	27.6837
299.98	16787.60	182.0504
399.99	14807.10	117.4409
399.99	17249.60	135.0429
399.99	10100.70	81.9701
400.00	2781.23	23.2317
400.00	2408.43	20.1395
400.00	4803.72	39.843
400.00	19952.70	153.8529
400.00	7435.40	61.0376
400.00	10100.50	81.9663
400.00	19958.90	153.899

Reference *https://www.doi.org/10.1016/j.jct.2005.10.004*

Temperature, K	Pressure, kPa	Mass density, kg/m3
298.23	10976.00	123.118
298.23	12976.00	144.452
298.24	14976.00	165.17
298.23	16971.00	185.161
298.24	18975.00	204.467
298.23	20970.00	222.928
298.23	22971.00	240.653
298.24	24970.00	257.55
298.23	26968.00	273.675
298.23	28965.00	289.039
298.22	30959.00	303.674
298.12	32109.00	311.953
298.33	30945.00	303.445
298.23	28966.00	289.035
298.23	26969.00	273.679
298.24	24971.00	257.546
298.24	22992.00	240.817
298.24	21004.00	223.219
298.23	19010.00	204.785
298.24	17014.00	185.557
298.25	15014.00	165.544
298.24	13017.00	144.868
298.24	11019.00	123.569

348.25	10981.00	103.086
348.28	12976.00	120.712
348.28	14976.00	137.928
348.26	16972.00	154.648
348.24	18974.00	170.907
348.26	20971.00	186.577
348.25	22970.00	201.759
348.25	24970.00	216.421
348.24	26968.00	230.548
348.21	28966.00	244.176
348.25	30963.00	257.253
348.23	32959.00	269.893
348.25	30963.00	257.258
348.24	28967.00	244.162
348.25	26979.00	230.612
348.29	25001.00	216.612
348.28	23006.00	202.007
348.27	21013.00	186.886
348.28	19011.00	171.174
348.23	17010.00	154.974
348.26	15015.00	138.272
348.25	13016.00	121.065
348.27	11019.00	103.42
398.25	12976.00	104.354
398.28	14977.00	119.222
398.29	16973.00	133.67
398.28	18975.00	147.786
398.24	20972.00	161.499
398.25	22969.00	174.806
398.26	24969.00	187.737
398.24	26967.00	200.287
398.24	28966.00	212.445
398.26	30962.00	224.219
398.22	32961.00	235.672
398.27	30977.00	224.298
398.22	28993.00	212.616
398.21	27000.00	200.503
398.23	25002.00	187.957
398.19	23005.00	175.071
398.17	21012.00	161.802
398.22	19011.00	148.062
398.36	17012.00	133.928
398.39	15006.00	119.391
398.30	13014.00	104.623

398.32	11005.00	89.328
Reference		*https://www.doi.org/10.1016/j.jct.2015.07.014*

Temperature, K	Pressure, kPa	Mass density, kg/m3
233.02	2000.87	29.5563
233.02	3001.45	44.779
233.02	506.32	7.363
233.02	5030.21	76.3292
233.02	5501.02	83.7756
233.02	1007.11	14.7253
233.03	4002.56	60.2496
233.03	506.34	7.3668
253.36	3010.13	40.8167
253.36	5651.89	77.5333
253.37	1025.25	13.7338
253.37	5051.89	69.1481
253.37	158.12	2.1053
253.38	2061.73	27.8018
253.38	158.09	2.1098
253.38	4007.14	54.5977
273.05	1000.43	12.3984
273.06	500.09	6.1854
273.06	4000.03	50.0451
273.06	500.07	6.1902
273.06	5000.40	62.6679
273.06	2000.02	24.878
273.06	5500.01	68.9746
273.06	500.06	6.1864
273.06	3000.08	37.4313
293.02	5015.12	58.0251
293.03	1037.05	11.9492
293.03	2013.97	23.2508
293.03	3106.16	35.9063
293.03	5611.30	64.8959
293.03	109.97	1.2672
293.03	3996.48	46.2267
293.04	109.35	1.2578
313.12	1999.83	21.5387
313.12	1000.32	10.7709
313.12	508.11	5.4681
313.12	3999.91	43.0379
313.12	508.10	5.4688

313.12	5000.13	53.7535
313.13	5499.99	59.0903
313.13	2999.71	32.2955
333.12	4001.53	40.3032
333.12	5029.05	50.5504
333.12	147.29	1.4891
333.12	147.34	1.4831
333.12	3039.03	30.6553
333.12	2020.62	20.4085
333.12	1049.02	10.6026
333.12	5511.30	55.3242
353.31	500.05	4.7615
353.31	4000.67	37.8636
353.31	500.09	4.7637
353.31	1001.83	9.5385
353.32	500.08	4.7645
353.32	4999.93	47.189
353.32	5500.03	51.8318
353.32	3001.82	28.4762
353.32	1999.99	19.0116

Reference *https://www.doi.org/10.1021/je0497496*

Temperature, K	Pressure, kPa	Mass density, kg/m3
265.00	967.00	12.355
265.00	1937.00	24.865
265.00	3929.00	50.84
265.00	5996.00	77.972
265.00	7985.00	104.063
265.00	9835.00	128.039
265.00	15014.00	192.346
265.00	20022.00	248.359
265.00	25019.00	297.183
265.00	30006.00	339.165
265.00	35119.00	376.198
265.00	50041.00	459.104
265.00	74887.00	549.76
265.00	100559.00	613.291
293.00	965.00	11.119
293.00	1933.00	22.306
293.00	3923.00	45.361
293.00	5988.00	69.244
293.00	7971.00	91.982

293.00	9822.00	112.91
293.00	14872.00	167.663
293.00	19976.00	218.428
293.00	24948.00	262.722
293.00	29965.00	302.337
293.00	34993.00	337.389
293.00	39916.00	367.801
293.00	50130.00	421.0
293.00	74957.00	513.932
293.00	99903.00	578.472
293.00	125585.00	628.863
293.00	150976.00	668.88
298.15	10005.00	112.564
298.15	30026.00	296.94
298.15	49844.00	413.221
298.15	74988.00	507.852
298.15	100175.00	573.318
298.15	124825.00	622.069
298.15	151239.00	664.101
350.00	2974.00	28.486
350.00	4917.00	46.878
350.00	5971.00	56.772
350.00	7481.00	70.762
350.00	9976.00	93.531
350.00	13786.00	127.029
350.00	17230.00	155.891
350.00	20677.00	183.287
350.00	24132.00	209.197
350.00	27582.00	233.51
350.00	29848.00	248.687
350.00	34691.00	279.018
350.00	49978.00	358.872
350.00	74999.00	452.98
350.00	99994.00	520.331
350.00	124395.00	571.157
350.00	150364.00	614.997
400.00	1004.00	8.432
400.00	1999.00	16.747
400.00	2999.00	25.04
400.00	4000.00	33.281
400.00	5001.00	41.463
400.00	7000.00	57.573
400.00	8004.00	65.564
400.00	10000.00	81.202

400.00	14997.00	118.841
400.00	19991.00	154.143
400.00	24998.00	187.116
400.00	29991.00	217.621
400.00	35015.00	246.029
400.00	40004.00	272.126
400.00	49964.00	318.659
400.00	59948.00	358.969
400.00	69931.00	394.143
400.00	79958.00	425.322
400.00	89963.00	453.061
400.00	99951.00	477.982
400.00	110031.00	500.804
400.00	120573.00	522.585

Reference *https://www.doi.org/10.1021/je100381g*

Amount density, mol/m3

Temperature, K - Gas	Pressure, kPa - Gas	Amount density, mol/m3 - Gas
353.24	1277.00	433.96
353.24	1796.00	609.68
353.24	2528.00	856.53
353.24	3560.00	1203.3
353.24	5020.00	1690.3
353.24	7099.00	2374.4
353.24	10083.00	3335.1
353.24	14454.00	4684.4
353.24	21085.00	6580.2
353.24	31865.00	9245.4
353.24	51818.00	12994.0
353.24	97567.00	18264.0
353.24	918.00	312.11
353.24	1290.00	438.52
353.24	1815.00	616.1
353.24	2554.00	865.58
353.24	3597.00	1216.0
353.24	5073.00	1708.3
353.24	7173.00	2399.7
353.24	10189.00	3370.9
353.24	14608.00	4734.9

353.24	21330.00	6651.4
353.24	32289.00	9345.7
353.24	52662.00	13136.0
353.24	99815.00	18462.0
373.25	939.00	302.17
373.25	1321.00	424.39
373.25	1858.00	596.03
373.25	2615.00	837.07
373.25	3683.00	1175.5
373.25	5197.00	1650.8
373.25	7353.00	2318.0
373.25	10457.00	3254.7
373.25	15008.00	4569.9
373.25	21923.00	6417.3
373.25	33124.00	9014.5
373.25	53631.00	12668.0
373.25	99433.00	17806.0
393.21	960.00	292.94
393.21	1350.00	411.28
393.21	1899.00	577.41
393.21	2672.00	810.61
393.21	3765.00	1137.9
393.21	5315.00	1597.4
393.21	7525.00	2242.1
393.21	10708.00	3146.9
393.21	15382.00	4416.7
393.21	22477.00	6200.1
393.21	33930.00	8706.9
393.21	54593.00	12234.0
393.21	99452.00	17196.0
433.20	1000.00	276.6
433.20	1405.00	388.07
433.20	1975.00	544.44
433.20	2780.00	763.77
433.20	3917.00	1071.4
433.20	5531.00	1502.8
433.20	7834.00	2107.8
433.20	11156.00	2956.1
433.20	16037.00	4145.9
433.20	23429.00	5816.1
433.20	35253.00	8163.8
433.20	56091.00	11468.0
433.20	99190.00	16118.0
473.20	1035.00	262.01

473.20	1453.00	367.35
473.20	2043.00	515.01
473.20	2873.00	721.98
473.20	4047.00	1012.1
473.20	5715.00	1418.5
473.20	8090.00	1988.2
473.20	11522.00	2786.3
473.20	16567.00	3905.2
473.20	24181.00	5475.1
473.20	36270.00	7681.8
473.20	57163.00	10788.0
473.20	98712.00	15161.0

Reference *https://www.doi.org/10.1007/s10765-011-1120-x*

Temperature, K	Pressure, kPa	Amount density, mol/m3
353.17	2425.20	822.9
353.17	1733.10	588.8
353.17	1239.10	421.3
353.17	886.10	301.4
353.17	633.80	215.7
353.17	453.40	154.3
353.17	324.40	110.4
353.17	232.10	79.0
413.16	2553.60	737.2
413.16	1822.60	527.5
413.16	1301.90	377.4
413.16	930.40	270.1
413.16	665.10	193.2
413.16	475.60	138.3
413.16	340.20	98.93
413.16	243.30	70.78

Reference *https://www.doi.org/10.1021/acs.jced.7b00263*

Temperature, K	Pressure, kPa	Amount density, mol/m3
352.80	13273.00	4370.0
352.80	8100.00	2710.0
352.80	5003.00	1688.0
352.80	3103.00	1051.0
352.80	1927.00	654.0
352.80	1197.00	407.2

353.20	13317.00	4370.0
353.20	8129.00	2720.0
353.20	5020.00	1692.0
353.20	3114.00	1053.0
353.20	1935.00	656.0
353.20	1204.00	408.6
353.20	749.00	254.5
393.10	19085.00	5420.0
393.10	11438.00	3360.0
393.10	6998.00	2090.0
393.10	4316.00	1299.0
393.10	2671.00	808.0
393.10	1655.00	503.0
393.10	1028.00	313.7
393.10	639.00	195.5
473.10	19290.00	4510.0
473.10	11426.00	2770.0
473.10	6895.00	1702.0
473.10	4200.00	1048.0
473.10	2570.00	646.0
473.10	1577.00	398.0
473.10	970.00	245.9
473.10	597.00	151.6
673.10	24630.00	3980.0
673.10	14250.00	2400.0
673.10	8423.00	1452.0
673.10	5038.00	881.0
673.10	3033.00	535.0
673.10	1833.00	325.0
673.10	1110.00	197.5
673.10	673.00	120.1
923.10	26060.00	3110.0
923.10	14835.00	1840.0
923.10	8620.00	1091.0
923.10	5060.00	648.0
923.10	2989.00	385.0
923.10	1771.00	229.3
923.10	1051.00	136.6
923.10	624.00	81.3

Reference *https://www.doi.org/10.1021/acs.jced.8b01206*

Speed of sound, m/s

Temperature, K - Gas	Pressure, kPa - Gas	Speed of sound, m/s - Gas
275.00	20114.20	415.493
275.00	22615.90	431.063
275.00	25117.60	447.188
275.00	27619.40	463.66
275.00	30121.10	480.315
275.00	40128.60	546.502
275.00	50135.80	609.259
275.00	60143.00	667.425
275.00	70150.20	721.11
275.00	80157.40	770.778
275.00	90164.60	816.939
275.00	100172.00	860.048
300.00	20113.60	426.564
300.01	22615.20	440.288
300.01	25117.00	454.506
300.01	27618.80	469.076
300.01	30120.50	483.876
300.01	40127.60	543.578
300.01	50134.80	601.519
300.01	60142.00	656.23
300.01	70149.20	707.429
300.01	85159.90	778.054
300.01	100171.00	842.208
325.01	20113.90	438.312
325.01	22615.80	450.728
325.01	25117.60	463.568
325.01	27619.40	476.727
325.01	30121.20	490.118
325.01	40128.40	544.577
325.00	50135.70	598.272
325.00	60142.90	649.705
325.00	70150.10	698.408
325.00	80157.20	744.35
325.00	90164.30	787.683
325.00	100172.00	828.629
350.00	20116.00	450.179
350.00	22617.90	461.635
350.00	25119.60	473.445
350.00	27621.40	485.536

350.00	30123.10	497.838
350.00	40130.30	548.073
350.00	50137.60	598.108
350.00	60144.70	646.566
350.00	70151.70	692.89
350.00	80158.60	736.934
350.00	90165.60	778.75
350.00	100173.00	818.469
375.00	25117.50	483.635
375.00	27619.30	494.895
375.00	30121.10	506.343
375.00	32622.90	517.932
375.00	35124.60	529.619
375.00	40128.30	553.146
375.00	50135.60	600.059
375.00	60147.20	645.878
375.00	70154.30	689.996
375.00	80161.20	732.225
375.00	90168.20	772.547
375.00	100175.00	811.029
400.00	25120.60	493.914
400.00	27622.30	504.508
400.00	30124.00	515.267
400.00	32625.70	526.15
400.00	35127.40	537.129
400.00	40131.00	559.246
400.00	50138.40	603.49
400.00	60145.60	646.938
400.00	70152.80	689.043
400.00	80160.10	729.571
400.00	90167.30	768.459
400.00	100175.00	805.731

Reference *https://www.doi.org/10.1021/acs.jced.6b00720*

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Legend

af:	Acentric Factor
affp:	Proton affinity
basg:	Gas basicity
dm:	Dipole Moment
dvisc:	Dynamic viscosity
gyrad:	Radius of Gyration
hvapt:	Enthalpy of vaporization at a given temperature
ie:	Ionization energy
log10ws:	Log10 of Water solubility in mol/l
logp:	Octanol/Water partition coefficient
mcvol:	McGowan's characteristic volume
pc:	Critical Pressure
pt:	Triple Point Pressure
pvap:	Vapor pressure
rhoc:	Critical density

rhog:	Gas Density
rhol:	Liquid Density
rhomg:	Gas Amount Density
sgb:	Molar entropy at standard conditions (1 bar)
speedsl:	Speed of sound in fluid
srf:	Surface Tension
tb:	Normal Boiling Point Temperature
tc:	Critical Temperature
tcondg:	Gas thermal conductivity
tf:	Normal melting (fusion) point
tt:	Triple Point Temperature
vc:	Critical Volume
zc:	Critical Compressibility
zra:	Rackett Parameter

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