Thiophene

Other names:	CP 34
	Divinylene sulfide
	Furan, thio-
	Hopkin's lactic acid reagent
	Huile H50
	Huile HSO
	NSC 405073
	THIACYCLOPENTADIENE
	THIOFURAN
	Thiaphene
	Thiofen
	Thiofuram
	Thiofurfuran
	Thiole
	Thiophen
	Thiotetrole
	UN 2414
	USAF EK-1860
Inchi:	InChI=1S/C4H4S/c1-2-4-5-3-1/h1-4H
InchiKey:	YTPLMLYBLZKORZ-UHFFFAOYSA-N
Formula:	C4H4S
SMILES:	c1ccsc1
Mol. weight [g/mol]:	84.14
CAS:	110-02-1

Physical Properties

Property code	Value	Unit	Source
af	0.1960		KDB
affp	815.00	kJ/mol	NIST Webbook
basg	784.30	kJ/mol	NIST Webbook
dm	0.50	debye	KDB
gf	126.90	kJ/mol	KDB
hf	116.70	kJ/mol	NIST Webbook
hf	115.00 ± 1.00	kJ/mol	NIST Webbook
hf	116.40	kJ/mol	NIST Webbook
hf	218.40	kJ/mol	NIST Webbook
hf	115.80	kJ/mol	KDB

hvap	34.70 ± 0.03	kJ/mol	NIST Webbook
hvap	35.40	kJ/mol	NIST Webbook
hvap	34.79	kJ/mol	NIST Webbook
hvap	34.60	kJ/mol	NIST Webbook
ie	8.86 ± 0.01	eV	NIST Webbook
ie	8.80 ± 0.05	eV	NIST Webbook
ie	9.12 ± 0.05	eV	NIST Webbook
ie	8.87 ± 0.01	eV	NIST Webbook
ie	9.05	eV	NIST Webbook
ie	8.87 ± 0.05	eV	NIST Webbook
ie	8.86 ± 0.01	eV	NIST Webbook
ie	8.95 ± 0.02	eV	NIST Webbook
ie	8.85	eV	NIST Webbook
ie	8.90	eV	NIST Webbook
ie	8.90	eV	NIST Webbook
ie	8.86 ± 0.02	eV	NIST Webbook
ie	8.85	eV	NIST Webbook
ie	8.80 ± 0.05	eV	NIST Webbook
ie	9.00 ± 0.10	eV	NIST Webbook
ie	8.87 ± 0.01	eV	NIST Webbook
ie	8.90	eV	NIST Webbook
ie	8.85	eV	NIST Webbook
ie	8.87	eV	NIST Webbook
ie	8.85	eV	NIST Webbook
ie	8.80	eV	NIST Webbook
ie	8.87 ± 0.01	eV	NIST Webbook
log10ws	-1.33		Estimated Solubility Method
log10ws	-1.45		Aqueous Solubility Prediction Method
logp	1.748		Crippen Method
mcvol	64.110	ml/mol	McGowan Method
nfpaf	%!d(float64=3)		KDB
nfpah	%!d(float64=2)		KDB
pc	5700.00 ± 68.94	kPa	NIST Webbook
pc	5690.00	kPa	KDB
rinpol	693.00		NIST Webbook
rinpol	690.00		NIST Webbook
rinpol	672.00		NIST Webbook
rinpol	703.00		NIST Webbook
rinpol	673.00		NIST Webbook
rinpol	665.00		NIST Webbook
rinpol	665.00		NIST Webbook
rinpol	649.00		NIST Webbook
rinpol	671.00		NIST Webbook

rinpol	658.00	NIST Webbook
rinpol	668.00	NIST Webbook
rinpol	648.00	NIST Webbook
rinpol	650.00	NIST Webbook
rinpol	646.00	NIST Webbook
rinpol	648.00	NIST Webbook
rinpol	661.00	NIST Webbook
rinpol	661.00	NIST Webbook
rinpol	626.00	NIST Webbook
rinpol	632.00	NIST Webbook
rinpol	686.00	NIST Webbook
rinpol	675.00	NIST Webbook
rinpol	680.00	NIST Webbook
rinpol	693.00	NIST Webbook
rinpol	655.00	NIST Webbook
rinpol	648.00	NIST Webbook
rinpol	646.00	NIST Webbook
rinpol	647.00	NIST Webbook
rinpol	643.23	NIST Webbook
rinpol	685.00	NIST Webbook
rinpol	650.00	NIST Webbook
rinpol	677.00	NIST Webbook
rinpol	644.00	NIST Webbook
rinpol	645.00	NIST Webbook
rinpol	644.00	NIST Webbook
rinpol	645.00	NIST Webbook
rinpol	665.00	NIST Webbook
rinpol	650.00	NIST Webbook
rinpol	665.00	NIST Webbook
rinpol	667.00	NIST Webbook
rinpol	647.00	NIST Webbook
rinpol	694.00	NIST Webbook
rinpol	680.00	NIST Webbook
rinpol	651.00	NIST Webbook
rinpol	653.00	NIST Webbook
rinpol	665.00	NIST Webbook
rinpol	650.00	NIST Webbook
rinpol	647.00	NIST Webbook
rinpol	700.00	NIST Webbook
rinpol	686.00	NIST Webbook
rinpol	672.00	NIST Webbook
rinpol	649.00	NIST Webbook
rinpol	650.00	NIST Webbook
rinpol	694.00	NIST Webbook

rinpol	685.30	NIST Webbook
rinpol	641.00	NIST Webbook
rinpol	644.00	NIST Webbook
rinpol	652.00	NIST Webbook
rinpol	644.00	NIST Webbook
rinpol	632.00	NIST Webbook
rinpol	644.00	NIST Webbook
rinpol	693.00	NIST Webbook
rinpol	648.00	NIST Webbook
rinpol	641.00	NIST Webbook
rinpol	664.60	NIST Webbook
rinpol	694.00	NIST Webbook
rinpol	675.00	NIST Webbook
rinpol	694.00	NIST Webbook
rinpol	686.00	NIST Webbook
rinpol	683.00	NIST Webbook
rinpol	668.00	NIST Webbook
rinpol	668.00	NIST Webbook
rinpol	668.00	NIST Webbook
rinpol	652.00	NIST Webbook
rinpol	671.00	NIST Webbook
rinpol	685.30	NIST Webbook
rinpol	674.60	NIST Webbook
rinpol	700.00	NIST Webbook
rinpol	686.10	NIST Webbook
rinpol	694.00	NIST Webbook
rinpol	670.00	NIST Webbook
rinpol	636.00	NIST Webbook
rinpol	679.60	NIST Webbook
ripol	1017.00	NIST Webbook
ripol	1021.00	NIST Webbook
ripol	1021.00	NIST Webbook
ripol	1041.00	NIST Webbook
ripol	995.00	NIST Webbook
ripol	1022.00	NIST Webbook
ripol	1035.00	NIST Webbook
ripol	1032.00	NIST Webbook
ripol	1034.00	NIST Webbook
ripol	1032.00	NIST Webbook
ripol	1035.00	NIST Webbook
ripol	1035.00	NIST Webbook
ripol	1054.00	NIST Webbook
ripol	1022.00	NIST Webbook
ripol	1025.00	NIST Webbook

ripol	1018.00		NIST Webbook
ripol	1017.00		NIST Webbook
ripol	1010.00		NIST Webbook
ripol	1021.00		NIST Webbook
ripol	1035.00		NIST Webbook
ripol	1054.00		NIST Webbook
ripol	1026.00		NIST Webbook
ripol	1024.00		NIST Webbook
ripol	1054.00		NIST Webbook
ripol	1028.00		NIST Webbook
ripol	1046.00		NIST Webbook
ripol	1023.00		NIST Webbook
ripol	1024.00		NIST Webbook
ripol	1010.00		NIST Webbook
ripol	1030.00		NIST Webbook
ripol	1034.00		NIST Webbook
ripol	1039.00		NIST Webbook
ripol	1022.00		NIST Webbook
ripol	1028.00		NIST Webbook
ripol	1023.00		NIST Webbook
ripol	1021.00		NIST Webbook
tb	357.90 ± 0.50	K	NIST Webbook
tb	357.10	K	KDB
tb	357.42	K	Isobaric vapor-liquid equilibrium for four binary systems of thiophene
tb	357.42	K	Isobaric vapor-liquid equilibrium for systems containing sulfur compounds
tb	357.40	K	NIST Webbook
tb	357.26 ± 0.20	K	NIST Webbook
tb	357.30	K	NIST Webbook
tb	356.80 ± 0.50	K	NIST Webbook
tb	357.15 ± 0.50	K	NIST Webbook
tb	357.35 ± 0.10	K	NIST Webbook
tc	580.00 ± 2.00	K	NIST Webbook
tc	579.40 ± 0.30	K	NIST Webbook
tc	579.40	K	KDB
tc	579.40	K	NIST Webbook
tf	234.93 ± 0.05	K	NIST Webbook
tf	234.68	K	Aqueous Solubility Prediction Method
tf	233.70	K	KDB
tf	234.94 ± 0.10	K	NIST Webbook
tf	233.15 ± 0.40	K	NIST Webbook

tt	235.02 ± 0.05	K	NIST Webbook
tt	233.70 ± 0.40	K	NIST Webbook
tt	234.95 ± 0.06	K	NIST Webbook
tt	234.90 ± 0.08	K	NIST Webbook
vc	0.220 ± 0.005	m3/kmol	NIST Webbook
vc	0.219	m3/kmol	KDB
zc	0.2586670		KDB

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
hfust	4.97	kJ/mol	235.20	NIST Webbook
hsubt	49.00	kJ/mol	202.50	NIST Webbook
hsubt	46.80	kJ/mol	211.50	NIST Webbook
hvapt	33.60 ± 0.10	kJ/mol	319.00	NIST Webbook
hvapt	34.80	kJ/mol	353.00	NIST Webbook
hvapt	31.46	kJ/mol	357.00	KDB
hvapt	33.70	kJ/mol	352.00	NIST Webbook
hvapt	35.80	kJ/mol	324.00	NIST Webbook
hvapt	32.70 ± 0.10	kJ/mol	336.00	NIST Webbook
hvapt	31.50 ± 0.10	kJ/mol	357.00	NIST Webbook
hvapt	32.60	kJ/mol	353.50	NIST Webbook
hvapt	34.10	kJ/mol	333.00	NIST Webbook
hvapt	35.00	kJ/mol	258.50	NIST Webbook
hvapt	31.48	kJ/mol	357.30	NIST Webbook
pvap	17.10	kPa	308.15	Vapor-Liquid Equilibrium for Thiophene + Butane, + trans-But-2-ene, + 2-Methylpropane, and + 2-Methylpropene
pvap	25.31	kPa	318.15	Vapor Pressure Measurements for Binary Mixtures Containing Ionic Liquid and Predictions by the Conductor-like Screening Model for Real Solvents

pvap	20.59	kPa	313.15	Vapor Pressure Measurements for Binary Mixtures Containing Ionic Liquid and Predictions by the Conductor-like Screening Model for Real Solvents	
pvap	37.40	kPa	328.15	Vapor Pressure Measurements for Binary Mixtures Containing Ionic Liquid and Predictions by the Conductor-like Screening Model for Real Solvents	
pvap	44.98	kPa	333.15	Vapor Pressure Measurements for Binary Mixtures Containing Ionic Liquid and Predictions by the Conductor-like Screening Model for Real Solvents	
pvap	16.70	kPa	308.12	Vapor-Liquid Equilibrium for Thiophene + Butane, + trans-But-2-ene, + 2-Methylpropane, and + 2-Methylpropene	
pvap	16.50	kPa	308.13	Vapor-Liquid Equilibrium for Thiophene + Butane, + trans-But-2-ene, + 2-Methylpropane, and + 2-Methylpropene	
pvap	17.10	kPa	308.14	Vapor-Liquid Equilibrium for Thiophene + Butane, + trans-But-2-ene, + 2-Methylpropane, and + 2-Methylpropene	

pvap	16.61	kPa	308.15	Vapor Pressure Measurements for Binary Mixtures Containing Ionic Liquid and Predictions by the Conductor-like Screening Model for Real Solvents
pvap	49.70	kPa	335.61	Vapor-Liquid Equilibrium for Thiophene + Butane, + trans-But-2-ene, + 2-Methylpropane, and + 2-Methylpropene
pvap	49.60	kPa	335.84	Vapor-Liquid Equilibrium for Thiophene + Butane, + trans-But-2-ene, + 2-Methylpropane, and + 2-Methylpropene
pvap	49.60	kPa	335.87	Vapor-Liquid Equilibrium for Thiophene + Butane, + trans-But-2-ene, + 2-Methylpropane, and + 2-Methylpropene
pvap	51.20	kPa	336.83	Vapor-Liquid Equilibrium for Thiophene + Butane, + trans-But-2-ene, + 2-Methylpropane, and + 2-Methylpropene
pvap	6.78	kPa	288.15	Experimental Measurement and Modeling of Phase Diagrams of Binary Systems Encountered in the Gasoline Desulfurization Process Using Ionic Liquids

pvap	8.70	kPa	293.15	Experimental Measurement and Modeling of Phase Diagrams of Binary Systems Encountered in the Gasoline Desulfurization Process Using Ionic Liquids
pvap	10.37	kPa	298.15	Experimental Measurement and Modeling of Phase Diagrams of Binary Systems Encountered in the Gasoline Desulfurization Process Using Ionic Liquids
pvap	6.75	kPa	288.15	Experimental Measurement and Modeling of Phase Diagrams of Binary Systems Encountered in the Gasoline Desulfurization Process Using Ionic Liquids
pvap	8.74	kPa	293.15	Experimental Measurement and Modeling of Phase Diagrams of Binary Systems Encountered in the Gasoline Desulfurization Process Using Ionic Liquids
pvap	10.58	kPa	298.15	Experimental Measurement and Modeling of Phase Diagrams of Binary Systems Encountered in the Gasoline Desulfurization Process Using Ionic Liquids

pvap	12.98	kPa	303.15	Experimental Measurement and Modeling of Phase Diagrams of Binary Systems Encountered in the Gasoline Desulfurization Process Using Ionic Liquids	
pvap	13.29	kPa	303.15	Vapor Pressure Measurements for Binary Mixtures Containing Ionic Liquid and Predictions by the Conductor-like Screening Model for Real Solvents	
pvap	119.90	kPa	363.15	Measurement and correlation of vapour pressures of pyridine and thiophene with [EMIM][SCN] ionic liquid	
pvap	88.33	kPa	353.15	Measurement and correlation of vapour pressures of pyridine and thiophene with [EMIM][SCN] ionic liquid	
pvap	63.71	kPa	343.15	Measurement and correlation of vapour pressures of pyridine and thiophene with [EMIM][SCN] ionic liquid	
pvap	44.88	kPa	333.15	Measurement and correlation of vapour pressures of pyridine and thiophene with [EMIM][SCN] ionic liquid	
pvap	30.80	kPa	323.15	Measurement and correlation of vapour pressures of pyridine and thiophene with [EMIM][SCN] ionic liquid	

pvap	20.52	kPa	313.15	Measurement and correlation of vapour pressures of pyridine and thiophene with [EMIM][SCN] ionic liquid
pvap	8.22	kPa	293.15	Measurement and correlation of vapour pressures of pyridine and thiophene with [EMIM][SCN] ionic liquid
pvap	4.89	kPa	283.15	Measurement and correlation of vapour pressures of pyridine and thiophene with [EMIM][SCN] ionic liquid
pvap	2.78	kPa	273.15	Measurement and correlation of vapour pressures of pyridine and thiophene with [EMIM][SCN] ionic liquid
pvap	13.23	kPa	303.15	Measurement and correlation of vapour pressures of pyridine and thiophene with [EMIM][SCN] ionic liquid
pvap	30.87	kPa	323.15	Vapor Pressure Measurements for Binary Mixtures Containing Ionic Liquid and Predictions by the Conductor-like Screening Model for Real Solvents
rfi	1.52581		298.15	Phase behaviour of 1-methyl-3-octylimidazolium bis[trifluoromethylsulfonyl]imide with thiophene and aliphatic hydrocarbons: The influence of n-alkane chain length

rfi	1.52550	298.15	Vapor liquid equilibrium for binary system of thiophene + 2,2,4-trimethylpentane at 343.15 and 353.15K and thiophene + 2-ethoxy-2-methylpropane at 333.15 and 343.15K
rfi	1.52530	298.15	Thiophene separation from aliphatic hydrocarbons using the 1-ethyl-3-methylimidazolium ethylsulfate ionic liquid
rfi	1.52581	298.15	(Liquid + liquid) equilibria of [C8mim][NTf2] ionic liquid with a sulfur-component and hydrocarbons
rfi	1.52550	298.15	Vapor-Liquid Equilibrium for Binary System of 1-Propanethiol, Thiophene, and Diethyl Sulfide with Toluene at 90.03 kPa
rfi	1.52550	298.15	Vapor-Liquid Equilibrium for Binary System of Thiophene + n-Hexane at (338.15 and 323.15) K and Thiophene + 1-Hexene at (333.15 and 323.15) K
rfi	1.52869	298.15	Vapor Liquid Equilibrium for Methoxymethane + Thiophene, + Diethylsulfide, + 2-Methyl-2-propanethiol and 1-Hexene, + 1-Propanethiol
rfi	1.52581	298.15	Liquid-Liquid Equilibria for Systems Composed by 1-Methyl-3-octylimidazolium Tetrafluoroborate Ionic Liquid, Thiophene, and n-Hexane or Cyclohexane

rfi	1.52581		298.15	Measurement and Correlation of Liquid-Liquid Equilibria of Two Imidazolium Ionic Liquids with Thiophene and Methylcyclohexane
rfi	1.52530		298.10	Liquid-Liquid Equilibria for [C8mim][NTf2] + Thiophene + 2,2,4-Trimethylpentane or + Toluene
rhol	1071.00	kg/m3	289.00	KDB
rhol	1058.61	kg/m3	298.15	Hexyl dimethylpyridinium ionic liquids for desulfurization of fuels. Effect of the position of the alkyl side chains
rhol	1058.56	kg/m3	298.15	Thermodynamic behavior of thiophene with octane, 1-hexyl-3-methylimidazolium bromide, or 1-octyl-3-methylimidazolium bromide in dilute region at T = (288.15 to 303.15) K
rhol	1058.46	kg/m3	298.15	Measurements and equation-of-state modelling of thermodynamic properties of binary mixtures of 1-butyl-1-methylpyrrolidinium tetracyanoborate ionic liquid with molecular compounds
rhol	1058.56	kg/m3	298.15	Volumetric, acoustic, and refractometric properties of (thiophene + hexane/cyclohexane) solutions in the presence of some imidazolium based ionic liquids at T = 298.15 K

rhol	1058.92	kg/m3	298.15	Extraction desulfurization process of fuels with ionic liquids
rhol	1058.92	kg/m3	298.15	Effect of the alkyl side chain of the 1-alkylpiperidinium-based ionic liquids on desulfurization of fuels
rhol	1058.64	kg/m3	298.15	Separation of sulfur compounds from alkanes with 1-alkylcyanopyridinium-based ionic liquids
rhol	1058.50	kg/m3	298.15	Solvent extraction of thiophene from n-alkanes (C7, C12, and C16) using the ionic liquid [C8mim][BF4]
rhol	1058.56	kg/m3	298.15	Phase diagrams of binary systems containing tricyanomethanide-based ionic liquids and thiophene or pyridine - new experimental data and PC-SAFT modeling
rhol	1058.48	kg/m3	298.15	Phase behaviour of tricyanomethanide-based ionic liquids with alcohols and hydrocarbons
rhol	1058.61	kg/m3	298.15	Desulfurization of fuels by liquid-liquid extraction with1-ethyl-3-methylimidazolium ionic liquids
rhol	1058.48	kg/m3	298.15	Phase behaviour of ionic liquid 1-butyl-1-methylpyrrolidinium tris(pentafluoroethyl)trifluorophosphate with alcohols, water and aromatic hydrocarbons
srf	0.03	N/m	293.20	KDB

Correlations

Information	Value
Property code	pvap
Equation	ln(Pvp) = A + B/(T + C)
Coeff. A	1.42640e+01
Coeff. B	-2.98618e+03
Coeff. C	-4.77130e+01
Temperature range (K), min.	234.94
Temperature range (K), max.	579.35

Information	Value
Property code	pvap
Equation	ln(Pvp) = A + B/T + C*ln(T) + D*T^2
Coeff. A	8.19473e+01
Coeff. B	-6.84652e+03
Coeff. C	-1.00558e+01
Coeff. D	7.42178e-06
Temperature range (K), min.	234.94
Temperature range (K), max.	579.35

Datasets

Mass density, kg/m3

Temperature, K - Liquid	Pressure, kPa - Liquid	Mass density, kg/m3 - Liquid
293.15	101.00	1063.59
303.15	101.00	1051.55
313.09	1029.00	1040.96
313.09	1969.00	1041.84
313.09	2970.00	1042.78
313.09	3987.00	1043.71
313.09	5055.00	1044.72
313.09	5952.00	1045.51
313.09	6937.00	1046.43

313.09	8032.00	1047.39
313.09	9218.00	1048.44
313.09	10045.00	1049.18
313.09	11012.00	1050.03
313.09	12014.00	1050.9
313.09	12995.00	1051.74
313.09	13961.00	1052.59
313.09	14970.00	1053.43
313.09	15953.00	1054.26
313.09	17004.00	1055.16
313.09	18003.00	1055.95
313.09	18904.00	1056.76
313.15	101.00	1039.32
323.01	1047.00	1028.97
323.01	2059.00	1029.98
323.01	3070.00	1031.02
323.01	4047.00	1031.99
323.01	5002.00	1032.9
323.01	6005.00	1033.9
323.01	7068.00	1034.92
323.01	8021.00	1035.81
323.01	9013.00	1036.76
323.01	10005.00	1037.67
323.01	10991.00	1038.62
323.01	12034.00	1039.58
323.01	12977.00	1040.44
323.01	13999.00	1041.38
323.01	14991.00	1042.26
323.01	15995.00	1043.17
323.01	16998.00	1044.03
323.01	17983.00	1044.93
323.01	18951.00	1045.78
323.15	101.00	1026.98
332.85	1015.00	1016.93
332.85	2035.00	1018.0
332.85	3004.00	1019.06
332.85	3964.00	1020.05
332.85	4991.00	1021.14
332.85	6001.00	1022.17
332.85	7014.00	1023.21
332.85	7998.00	1024.2
332.85	9009.00	1025.23
332.85	9995.00	1026.19
332.85	10989.00	1027.18

332.85	12006.00	1028.17
332.85	13009.00	1029.18
332.85	13971.00	1030.09
332.85	15006.00	1031.04
332.85	15990.00	1032.01
332.85	17050.00	1033.03
332.85	17976.00	1033.88
332.85	19018.00	1034.92
333.15	101.00	1014.58
342.77	1039.00	1004.75
342.77	2072.00	1005.93
342.77	3033.00	1007.02
342.77	4023.00	1008.17
342.77	5027.00	1009.26
342.77	6033.00	1010.36
342.77	7008.00	1011.44
342.77	7998.00	1012.5
342.77	9005.00	1013.59
342.77	10000.00	1014.65
342.77	10963.00	1015.65
342.77	12009.00	1016.72
342.77	13023.00	1017.82
342.77	13928.00	1018.74
342.77	15009.00	1019.83
342.77	15998.00	1020.79
342.77	17025.00	1021.8
342.77	17995.00	1022.8
342.77	19013.00	1023.79
342.77	20001.00	1024.73
343.15	101.00	1002.15
352.67	1064.00	992.39
352.67	2003.00	993.54
352.67	3024.00	994.79
352.67	4003.00	995.98
352.67	5048.00	997.22
352.67	6013.00	998.36
352.67	7013.00	999.51
352.67	8050.00	1000.73
352.67	9018.00	1001.82
352.67	10003.00	1002.93
352.67	11003.00	1004.07
352.67	12004.00	1005.16
352.67	12998.00	1006.25
352.67	14005.00	1007.34

352.67	15038.00	1008.46
352.67	16006.00	1009.49
352.67	17027.00	1010.58
352.67	18001.00	1011.6
352.67	19031.00	1012.65
352.67	20017.00	1013.74
353.15	101.00	989.76
362.51	1007.00	979.8
362.51	2022.00	981.13
362.51	3029.00	982.49
362.51	4004.00	983.74
362.51	5006.00	985.01
362.51	6003.00	986.27
362.51	6999.00	987.5
362.51	7993.00	988.73
362.51	9007.00	989.99
362.51	9993.00	991.16
362.51	10997.00	992.36
362.51	11993.00	993.56
362.51	12838.00	994.53
362.51	14038.00	995.94
362.51	15044.00	997.1
362.51	16029.00	998.18
362.51	17006.00	999.27
362.51	18016.00	1000.4
362.51	18987.00	1001.47

Reference *https://www.doi.org/10.1016/j.fluid.2005.07.017*

Temperature, K	Pressure, kPa	Mass density, kg/m3
298.15	100.00	1058.44

Reference *https://www.doi.org/10.1016/j.jct.2013.02.020*

Temperature, K	Pressure, kPa	Mass density, kg/m3
283.15	100.00	1076.4
288.15	100.00	1070.54
293.15	100.00	1064.59
298.15	100.00	1058.65
303.15	100.00	1052.71
308.15	100.00	1046.7
313.15	100.00	1040.68

318.15	100.00	1034.64
323.15	100.00	1028.59
328.15	100.00	1022.43
333.15	100.00	1016.27
338.15	100.00	1010.08
283.15	2000.00	1077.94
288.15	2000.00	1072.11
293.15	2000.00	1066.21
298.15	2000.00	1060.32
303.15	2000.00	1054.43
308.15	2000.00	1048.48
313.15	2000.00	1042.52
318.15	2000.00	1036.54
323.15	2000.00	1030.52
328.15	2000.00	1024.49
333.15	2000.00	1018.35
338.15	2000.00	1012.22
283.15	5000.00	1080.27
288.15	5000.00	1074.53
293.15	5000.00	1068.67
298.15	5000.00	1062.91
303.15	5000.00	1057.07
308.15	5000.00	1051.21
313.15	5000.00	1045.35
318.15	5000.00	1039.44
323.15	5000.00	1033.54
328.15	5000.00	1027.57
333.15	5000.00	1021.56
338.15	5000.00	1015.53
283.15	7000.00	1081.81
288.15	7000.00	1076.12
293.15	7000.00	1070.33
298.15	7000.00	1064.57
303.15	7000.00	1058.82
308.15	7000.00	1052.99
313.15	7000.00	1047.19
318.15	7000.00	1041.36
323.15	7000.00	1035.52
328.15	7000.00	1029.6
333.15	7000.00	1023.65
338.15	7000.00	1017.69
283.15	10000.00	1084.09
288.15	10000.00	1078.46
293.15	10000.00	1072.75

298.15	10000.00	1067.05
303.15	10000.00	1061.36
308.15	10000.00	1055.61
313.15	10000.00	1049.91
318.15	10000.00	1044.15
323.15	10000.00	1038.37
328.15	10000.00	1032.58
333.15	10000.00	1026.72
338.15	10000.00	1020.86
283.15	15000.00	1087.78
288.15	15000.00	1082.24
293.15	15000.00	1076.63
298.15	15000.00	1071.07
303.15	15000.00	1065.48
308.15	15000.00	1059.87
313.15	15000.00	1054.25
318.15	15000.00	1048.65
323.15	15000.00	1042.99
328.15	15000.00	1037.33
333.15	15000.00	1031.63
338.15	15000.00	1025.92
283.15	20000.00	1091.37
288.15	20000.00	1085.9
293.15	20000.00	1080.39
298.15	20000.00	1074.94
303.15	20000.00	1069.46
308.15	20000.00	1063.97
313.15	20000.00	1058.47
318.15	20000.00	1052.97
323.15	20000.00	1047.45
328.15	20000.00	1041.91
333.15	20000.00	1036.34
338.15	20000.00	1030.78
283.15	25000.00	1094.82
288.15	25000.00	1089.45
293.15	25000.00	1084.05
298.15	25000.00	1078.69
303.15	25000.00	1073.3
308.15	25000.00	1067.92
313.15	25000.00	1062.52
318.15	25000.00	1057.12
323.15	25000.00	1051.73
328.15	25000.00	1046.31
333.15	25000.00	1040.87

338.15	25000.00	1035.41
283.15	30000.00	1098.18
288.15	30000.00	1092.91
293.15	30000.00	1087.58
298.15	30000.00	1082.3
303.15	30000.00	1077.03
308.15	30000.00	1071.73
313.15	30000.00	1066.43
318.15	30000.00	1061.15
323.15	30000.00	1055.85
328.15	30000.00	1050.54
333.15	30000.00	1045.21
338.15	30000.00	1039.88
283.15	35000.00	1101.44
288.15	35000.00	1096.24
293.15	35000.00	1091.01
298.15	35000.00	1085.81
303.15	35000.00	1080.62
308.15	35000.00	1075.4
313.15	35000.00	1070.21
318.15	35000.00	1065.02
323.15	35000.00	1059.82
328.15	35000.00	1054.61
333.15	35000.00	1049.39
338.15	35000.00	1044.17
283.15	40000.00	1104.61
288.15	40000.00	1099.5
293.15	40000.00	1094.34
298.15	40000.00	1089.21
303.15	40000.00	1084.1
308.15	40000.00	1078.99
313.15	40000.00	1073.88
318.15	40000.00	1068.77
323.15	40000.00	1063.67
328.15	40000.00	1058.55
333.15	40000.00	1053.43
338.15	40000.00	1048.31
283.15	45000.00	1107.7
288.15	45000.00	1102.65
293.15	45000.00	1097.57
298.15	45000.00	1092.53
303.15	45000.00	1087.49
308.15	45000.00	1082.45
313.15	45000.00	1077.41

318.15	45000.00	1072.41
323.15	45000.00	1067.38
328.15	45000.00	1062.36
333.15	45000.00	1057.32
338.15	45000.00	1052.28
283.15	50000.00	1110.71
288.15	50000.00	1105.72
293.15	50000.00	1100.7
298.15	50000.00	1095.73
303.15	50000.00	1090.79
308.15	50000.00	1085.8
313.15	50000.00	1080.86
318.15	50000.00	1075.92
323.15	50000.00	1070.98
328.15	50000.00	1066.05
333.15	50000.00	1061.09
338.15	50000.00	1056.13
283.15	55000.00	1113.62
288.15	55000.00	1108.7
293.15	55000.00	1103.77
298.15	55000.00	1098.86
303.15	55000.00	1093.96
308.15	55000.00	1089.07
313.15	55000.00	1084.2
318.15	55000.00	1079.33
323.15	55000.00	1074.48
328.15	55000.00	1069.6
333.15	55000.00	1064.72
338.15	55000.00	1059.87
283.15	60000.00	1116.47
288.15	60000.00	1111.61
293.15	60000.00	1106.72
298.15	60000.00	1101.89
303.15	60000.00	1097.06
308.15	60000.00	1092.23
313.15	60000.00	1087.42
318.15	60000.00	1082.65
323.15	60000.00	1077.86
328.15	60000.00	1073.07
333.15	60000.00	1068.26
338.15	60000.00	1063.48
283.15	65000.00	1119.27
288.15	65000.00	1114.44
293.15	65000.00	1109.63

298.15	65000.00	1104.85
303.15	65000.00	1100.09
308.15	65000.00	1095.31
313.15	65000.00	1090.59
318.15	65000.00	1085.87
323.15	65000.00	1081.13
328.15	65000.00	1076.42
333.15	65000.00	1071.7
338.15	65000.00	1066.99
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Legend

af:	Acentric Factor
affp:	Proton affinity
basg:	Gas basicity
dm:	Dipole Moment
gf:	Standard Gibbs free energy of formation
hf:	Enthalpy of formation at standard conditions
hfust:	Enthalpy of fusion at a given temperature
hsubt:	Enthalpy of sublimation at a given temperature
hvap:	Enthalpy of vaporization at standard conditions
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
nfpaf:	NFPA Fire Rating
nfpah:	NFPA Health Rating
pc:	Critical Pressure
pvap:	Vapor pressure
rfi:	Refractive Index
rhol:	Liquid Density
rinpol:	Non-polar retention indices
ripol:	Polar retention indices
srf:	Surface Tension
tb:	Normal Boiling Point Temperature
tc:	Critical Temperature
tf:	Normal melting (fusion) point
tt:	Triple Point Temperature
vc:	Critical Volume
zc:	Critical Compressibility