

Cyclotetrasiloxane, octamethyl-

Other names:	CO9810 Cyclotetrasilane, octamethyl D4 (octamethylcyclotetrasiloxane) NUC Silicone VS 7207 O9810 Octamethylcyclotetrasiloxane Octamethyltetrasiloxane Oktamethylcyklotetrasiloxan
Inchi:	InChI=1S/C8H24O4Si4/c1-13(2)9-14(3,4)11-16(7,8)12-15(5,6)10-13/h1-8H3
InchiKey:	HMMGMWAXVFQUOA-UHFFFAOYSA-N
Formula:	C8H24O4Si4
SMILES:	C[Si]1(C)O[Si](C)(C)O[Si](C)(C)O[Si](C)(C)O1
Mol. weight [g/mol]:	296.62
CAS:	556-67-2

Physical Properties

Property code	Value	Unit	Source
hvap	56.10	kJ/mol	NIST Webbook
hvap	57.00 ± 0.80	kJ/mol	NIST Webbook
log10ws	6.05		Crippen Method
logp	2.874		Crippen Method
pc	1339.59 ± 6.86	kPa	NIST Webbook
pc	1320.00 ± 20.00	kPa	NIST Webbook
rhoc	295.13 ± 2.94	kg/m3	NIST Webbook
rinpol	1010.00		NIST Webbook
rinpol	1004.00		NIST Webbook
rinpol	1000.00		NIST Webbook
rinpol	1017.00		NIST Webbook
rinpol	1017.00		NIST Webbook
rinpol	1013.00		NIST Webbook
rinpol	1011.00		NIST Webbook
rinpol	1004.00		NIST Webbook
rinpol	1010.00		NIST Webbook
rinpol	1022.00		NIST Webbook
rinpol	994.00		NIST Webbook
tb	448.50 ± 0.50	K	NIST Webbook
tb	446.20 ± 0.60	K	NIST Webbook

tc	585.70 ± 0.30	K	NIST Webbook
tc	586.50 ± 0.20	K	NIST Webbook
tf	290.65 ± 0.20	K	NIST Webbook
tf	290.00 ± 0.10	K	NIST Webbook
tf	287.40 ± 0.10	K	NIST Webbook
tt	23.76 ± 0.04	K	NIST Webbook
tt	290.25 ± 0.02	K	NIST Webbook
vc	1.005 ± 0.001	m3/kmol	NIST Webbook
vc	0.984 ± 0.003	m3/kmol	NIST Webbook
volm	3.12e-04	m3/mol	Thermodynamic Study of Heptane + Silicone Mixtures. Excess Volumes and Enthalpies at 298.15 K

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cpl	522.70	J/mol×K	319.00	Selected Physicochemical Properties of Hexamethylcyclotrisiloxane, Octamethylcyclotetrasiloxane, and Decamethylcyclopentasiloxane
cpl	564.50	J/mol×K	415.73	Selected Physicochemical Properties of Hexamethylcyclotrisiloxane, Octamethylcyclotetrasiloxane, and Decamethylcyclopentasiloxane
cpl	560.80	J/mol×K	407.15	Selected Physicochemical Properties of Hexamethylcyclotrisiloxane, Octamethylcyclotetrasiloxane, and Decamethylcyclopentasiloxane
cpl	557.70	J/mol×K	399.83	Selected Physicochemical Properties of Hexamethylcyclotrisiloxane, Octamethylcyclotetrasiloxane, and Decamethylcyclopentasiloxane
cpl	554.70	J/mol×K	393.15	Selected Physicochemical Properties of Hexamethylcyclotrisiloxane, Octamethylcyclotetrasiloxane, and Decamethylcyclopentasiloxane

cpl	552.30	J/mol×K	388.65	Selected Physicochemical Properties of Hexamethylcyclotrisiloxane, Octamethylcyclotetrasiloxane, and Decamethylcyclopentasiloxane
cpl	550.10	J/mol×K	382.48	Selected Physicochemical Properties of Hexamethylcyclotrisiloxane, Octamethylcyclotetrasiloxane, and Decamethylcyclopentasiloxane
cpl	548.00	J/mol×K	377.55	Selected Physicochemical Properties of Hexamethylcyclotrisiloxane, Octamethylcyclotetrasiloxane, and Decamethylcyclopentasiloxane
cpl	543.00	J/mol×K	370.25	Selected Physicochemical Properties of Hexamethylcyclotrisiloxane, Octamethylcyclotetrasiloxane, and Decamethylcyclopentasiloxane
cpl	542.20	J/mol×K	364.28	Selected Physicochemical Properties of Hexamethylcyclotrisiloxane, Octamethylcyclotetrasiloxane, and Decamethylcyclopentasiloxane
cpl	539.90	J/mol×K	358.83	Selected Physicochemical Properties of Hexamethylcyclotrisiloxane, Octamethylcyclotetrasiloxane, and Decamethylcyclopentasiloxane
cpl	538.80	J/mol×K	352.20	Selected Physicochemical Properties of Hexamethylcyclotrisiloxane, Octamethylcyclotetrasiloxane, and Decamethylcyclopentasiloxane
cpl	535.20	J/mol×K	348.05	Selected Physicochemical Properties of Hexamethylcyclotrisiloxane, Octamethylcyclotetrasiloxane, and Decamethylcyclopentasiloxane

cpl	532.70	J/mol×K	342.23	Selected Physicochemical Properties of Hexamethylcyclotrisiloxane, Octamethylcyclotetrasiloxane, and Decamethylcyclopentasiloxane
cpl	530.80	J/mol×K	337.88	Selected Physicochemical Properties of Hexamethylcyclotrisiloxane, Octamethylcyclotetrasiloxane, and Decamethylcyclopentasiloxane
cpl	529.10	J/mol×K	334.75	Selected Physicochemical Properties of Hexamethylcyclotrisiloxane, Octamethylcyclotetrasiloxane, and Decamethylcyclopentasiloxane
cpl	526.40	J/mol×K	327.55	Selected Physicochemical Properties of Hexamethylcyclotrisiloxane, Octamethylcyclotetrasiloxane, and Decamethylcyclopentasiloxane
cpl	524.50	J/mol×K	323.25	Selected Physicochemical Properties of Hexamethylcyclotrisiloxane, Octamethylcyclotetrasiloxane, and Decamethylcyclopentasiloxane
cpl	511.50	J/mol×K	293.15	Selected Physicochemical Properties of Hexamethylcyclotrisiloxane, Octamethylcyclotetrasiloxane, and Decamethylcyclopentasiloxane
cpl	520.10	J/mol×K	313.12	Selected Physicochemical Properties of Hexamethylcyclotrisiloxane, Octamethylcyclotetrasiloxane, and Decamethylcyclopentasiloxane
cpl	517.20	J/mol×K	306.25	Selected Physicochemical Properties of Hexamethylcyclotrisiloxane, Octamethylcyclotetrasiloxane, and Decamethylcyclopentasiloxane
cpl	515.80	J/mol×K	303.15	Selected Physicochemical Properties of Hexamethylcyclotrisiloxane, Octamethylcyclotetrasiloxane, and Decamethylcyclopentasiloxane

cpl	513.60	J/mol×K	298.00	Selected Physicochemical Properties of Hexamethylcyclotrisiloxane, Octamethylcyclotetrasiloxane, and Decamethylcyclopentasiloxane
cpl	568.40	J/mol×K	425.95	Selected Physicochemical Properties of Hexamethylcyclotrisiloxane, Octamethylcyclotetrasiloxane, and Decamethylcyclopentasiloxane
hfust	23.77	kJ/mol	290.50	NIST Webbook
hvapt	47.60	kJ/mol	415.00	NIST Webbook
hvapt	44.10	kJ/mol	378.50	NIST Webbook
hvapt	48.50	kJ/mol	365.50	NIST Webbook
hvapt	45.60	kJ/mol	365.50	NIST Webbook
pvap	5.11	kPa	368.15	Temperature-Dependent Vapor Pressure of Selected Cyclic and Linear Polydimethylsiloxane Oligomers
pvap	0.43	kPa	318.15	Temperature-Dependent Vapor Pressure of Selected Cyclic and Linear Polydimethylsiloxane Oligomers
pvap	0.75	kPa	328.15	Temperature-Dependent Vapor Pressure of Selected Cyclic and Linear Polydimethylsiloxane Oligomers
pvap	1.26	kPa	338.15	Temperature-Dependent Vapor Pressure of Selected Cyclic and Linear Polydimethylsiloxane Oligomers
pvap	2.06	kPa	348.15	Temperature-Dependent Vapor Pressure of Selected Cyclic and Linear Polydimethylsiloxane Oligomers

pvap	3.29	kPa	358.15	Temperature-Dependent Vapor Pressure of Selected Cyclic and Linear Polydimethylsiloxane Oligomers
pvap	0.24	kPa	308.15	Temperature-Dependent Vapor Pressure of Selected Cyclic and Linear Polydimethylsiloxane Oligomers
rhoI	956.03	kg/m3	293.15	The mixing properties of 1,3,5-trimethyl-1,3,5-tris(3,3,3-trifluoropropyl) cyclotrisiloxane with various organosilicon compounds at different temperatures
rhoI	938.83	kg/m3	308.15	The mixing properties of 1,3,5-trimethyl-1,3,5-tris(3,3,3-trifluoropropyl) cyclotrisiloxane with various organosilicon compounds at different temperatures
rhoI	933.13	kg/m3	313.15	The mixing properties of 1,3,5-trimethyl-1,3,5-tris(3,3,3-trifluoropropyl) cyclotrisiloxane with various organosilicon compounds at different temperatures
rhoI	927.38	kg/m3	318.15	The mixing properties of 1,3,5-trimethyl-1,3,5-tris(3,3,3-trifluoropropyl) cyclotrisiloxane with various organosilicon compounds at different temperatures
rhoI	921.62	kg/m3	323.15	The mixing properties of 1,3,5-trimethyl-1,3,5-tris(3,3,3-trifluoropropyl) cyclotrisiloxane with various organosilicon compounds at different temperatures

rho1	915.91	kg/m3	328.15	The mixing properties of 1,3,5-trimethyl-1,3,5-tris(3,3,3-trifluoropropyl) cyclotrisiloxane with various organosilicon compounds at different temperatures	
rho1	938.88	kg/m3	308.15	Volumetric and refractive properties of the mixtures of 1,1,3,3-tetramethyl-1,3-diphenyldisiloxane with various organosilicon compounds at T = (308.15 to 328.15) K	
rho1	933.06	kg/m3	313.15	Volumetric and refractive properties of the mixtures of 1,1,3,3-tetramethyl-1,3-diphenyldisiloxane with various organosilicon compounds at T = (308.15 to 328.15) K	
rho1	927.34	kg/m3	318.15	Volumetric and refractive properties of the mixtures of 1,1,3,3-tetramethyl-1,3-diphenyldisiloxane with various organosilicon compounds at T = (308.15 to 328.15) K	
rho1	921.59	kg/m3	323.15	Volumetric and refractive properties of the mixtures of 1,1,3,3-tetramethyl-1,3-diphenyldisiloxane with various organosilicon compounds at T = (308.15 to 328.15) K	
rho1	915.80	kg/m3	328.15	Volumetric and refractive properties of the mixtures of 1,1,3,3-tetramethyl-1,3-diphenyldisiloxane with various organosilicon compounds at T = (308.15 to 328.15) K	

Correlations

Information	Value
Property code	pvap
Equation	$\ln(P_{vp}) = A + B/(T + C)$
Coeff. A	1.38745e+01
Coeff. B	-3.32842e+03
Coeff. C	-8.89110e+01
Temperature range (K), min.	333.88
Temperature range (K), max.	477.61

Datasets

Speed of sound, m/s

Temperature, K - Fluid (supercritical or subcritical phases)	Pressure, kPa - Fluid (supercritical or subcritical phases)	Speed of sound, m/s - Fluid (supercritical or subcritical phases)
450.00	38.90	110.351
450.00	46.70	109.656
450.00	57.41	108.801
450.00	62.89	108.299
450.00	69.33	107.727
465.00	31.29	113.043
465.00	32.63	112.986
465.00	36.51	112.753
465.00	40.99	112.32
465.00	46.84	111.935
465.00	47.85	111.913
465.00	49.18	111.723
465.00	57.21	111.202
465.00	58.99	110.976
465.00	61.46	110.824
465.00	68.51	110.332
465.00	70.69	110.062
465.00	73.59	109.872
465.00	74.87	109.829

465.00	77.48	109.53
465.00	81.72	109.278
465.00	87.87	108.72
465.00	92.89	108.286
465.00	97.68	107.963
465.00	101.01	107.535
465.00	105.11	107.277
465.00	106.95	107.179
465.00	111.40	106.695
465.00	116.93	106.3
465.00	121.67	105.761
465.00	123.48	105.664
480.00	42.70	114.022
480.00	54.67	113.202
480.00	65.08	112.478
480.00	71.30	112.038
480.00	85.50	111.071
480.00	92.46	110.502
480.00	109.21	109.241
480.00	118.88	108.493
480.00	129.21	107.675
480.00	140.39	106.769
480.00	152.36	105.769
480.00	165.42	104.642
495.00	27.45	117.135
495.00	36.20	116.658
495.00	47.54	115.985
495.00	143.41	109.744
495.00	159.70	108.434
495.00	160.40	108.391
495.00	174.53	107.346
495.00	186.64	106.439
495.00	198.61	105.492
495.00	224.52	103.408

Reference

<https://www.doi.org/10.1016/j.fluid.2007.04.028>

Temperature, K	Pressure, kPa	Speed of sound, m/s
299.79	130.00	911.09
299.80	520.00	913.77
299.81	980.00	916.96
299.81	1500.00	920.51
299.82	1980.00	923.9

299.83	3440.00	933.79
299.85	6010.00	950.89
300.15	10240.00	978.63
299.67	14920.00	1006.82
350.07	120.00	747.75
350.06	530.00	751.64
350.05	960.00	755.62
350.05	1480.00	760.43
350.04	1960.00	764.8
350.04	3530.00	778.49
350.03	6210.00	800.86
350.00	10200.00	832.31
349.98	14970.00	866.97
350.35	22660.00	915.86
349.96	26230.00	939.02
399.71	120.00	600.99
399.70	510.00	605.91
399.70	1030.00	612.25
399.70	1460.00	617.43
399.70	2040.00	624.18
399.68	3610.00	641.86
399.64	6070.00	667.98
399.64	10120.00	706.83
399.63	15100.00	749.46
399.69	19290.00	782.02
399.62	19680.00	784.97
449.64	130.00	461.18
449.64	500.00	467.67
449.63	960.00	475.36
449.70	1490.00	484.22
449.69	1960.00	491.86
449.77	3600.00	516.36
449.87	5900.00	547.45
450.00	10040.00	596.17
450.19	15080.00	646.97
450.23	16420.00	659.13
499.92	330.00	321.35
499.94	520.00	329.04
499.92	1490.00	354.75
499.91	2030.00	367.4
499.88	3480.00	398.42
499.88	6030.00	444.06
500.00	10650.00	509.56
499.93	11150.00	515.95

549.61	3880.00	300.55
549.56	4550.00	317.1
549.55	5070.00	329.01
549.54	5510.00	338.9
549.97	6640.00	364.29

Reference

<https://www.doi.org/10.1021/acs.jced.6b00261>

Sources

Volumetric and refractive properties of <https://www.doi.org/10.1021/acs.jced.5b00820>

the mixtures of <https://www.doi.org/10.1021/acs.jced.6b00261>

1,3,5-trimethyl-1,3,5-tris(3,3,3-trifluoropropyl) <http://pubs.acs.org/doi/abs/10.1021/ci990307l>

Octamethylcyclotrisiloxane compounds <https://www.doi.org/10.1021/je050173+>

Crippen Method (308.15 to 328.15) K: <https://www.sciencedirect.com/book/9780128029992/the-yaws-handbook-of-vapor-pressure>

Selected Physicochemical Properties of Hexamethylcyclotrisiloxane, <https://www.doi.org/10.1021/je400985u>

Decamethylcyclotrisiloxane, and <https://www.doi.org/10.1021/je400985u>

Hexamethylcyclotrisiloxane: <https://www.doi.org/10.1021/je400985u>

Vapor Liquid Phase Equilibrium Data of <https://www.doi.org/10.1021/je400985u>

CO₂ in Some Physical Solvents from <https://www.doi.org/10.1021/je400985u>

The mixing properties of <https://www.doi.org/10.1021/je400985u>

1,3,5-trimethyl-1,3,5-tris(3,3,3-trifluoropropyl) <https://www.doi.org/10.1021/je400985u>

Thermodynamic Study of heptane + <https://www.doi.org/10.1021/je400985u>

Siloxane Mixtures: Excess Volumes and <https://www.doi.org/10.1021/je400985u>

Enthalpies of Mixing at Various Temperatures <https://www.doi.org/10.1021/je400985u>

Ideal-gas heat capacities of <https://www.doi.org/10.1021/je400985u>

dimethylsiloxanes from <https://www.doi.org/10.1021/je400985u>

NIST Webbook <http://webbook.nist.gov/cgi/cbook.cgi?ID=C556672&Units=SI>

Speed of sound measurements and ab <https://www.doi.org/10.1021/je400985u>

initio calculations: <https://www.doi.org/10.1021/je400985u>

Solubilities of <https://www.doi.org/10.1021/je400985u>

1,3-dimethyl-1,1,3,3-tetraphenyldisiloxane <https://www.doi.org/10.1021/je400985u>

in different solvents from 289.15 to <https://www.doi.org/10.1021/je400985u>

815.15 K <https://www.doi.org/10.1021/je400985u>

Pressure of Selected Cyclic and Linear <https://www.doi.org/10.1021/je400985u>

Polydimethylsiloxane Oligomers: <https://www.doi.org/10.1021/je400985u>

Legend

cpl:	Liquid phase heat capacity
hfust:	Enthalpy of fusion at a given temperature
hvap:	Enthalpy of vaporization at standard conditions
hvapt:	Enthalpy of vaporization at a given temperature
log10ws:	Log10 of Water solubility in mol/l
logp:	Octanol/Water partition coefficient
pc:	Critical Pressure
pvap:	Vapor pressure
rhoc:	Critical density
rho:	Liquid Density
rinpol:	Non-polar retention indices
speedsl:	Speed of sound in fluid

tb:	Normal Boiling Point Temperature
tc:	Critical Temperature
tf:	Normal melting (fusion) point
tt:	Triple Point Temperature
vc:	Critical Volume
volm:	Molar Volume

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