

Tetraethyl silicate

Other names:	(C ₂ H ₅ O) ₄ Si Dynasil A ES 100 ES 28 ES 28 (ester) Ethyl orthosilicate Ethyl silicate, ((EtO) ₄ Si) Etylu krzemian NSC 4790 Silicate d'ethyle Silicate tetraethylique Silicic acid (H ₄ SiO ₄), tetraethyl ester Silicic acid, tetraethyl ester Silicon ethoxide Silikan L TEOS Tetraethoxysilicon Tetraethyl orthosilicate Tetraethylsilikat UN 1292 silane, tetraethoxy- silicon tetraethoxide tetraethoxysilane
Inchi:	InChI=1S/C ₈ H ₂₀ O ₄ Si/c1-5-9-13(10-6-2,11-7-3)12-8-4/h5-8H ₂ ,1-4H ₃
InchiKey:	BOTDANWDWHJENH-UHFFFAOYSA-N
Formula:	C ₈ H ₂₀ O ₄ Si
SMILES:	CCO[Si](OCC)(OCC)OCC
Mol. weight [g/mol]:	208.33
CAS:	78-10-4

Physical Properties

Property code	Value	Unit	Source
h _{vap}	52.30	kJ/mol	NIST Webbook
h _{vap}	48.50 ± 0.30	kJ/mol	NIST Webbook
h _{vap}	53.90	kJ/mol	NIST Webbook
ie	9.77	eV	NIST Webbook

log10ws	0.68		Crippen Method
logp	1.568		Crippen Method
pc	2040.00	kPa	Vapor-Liquid Critical Properties of Some Tetraalkoxysilanes
rinpol	847.00		NIST Webbook
rinpol	850.00		NIST Webbook
rinpol	869.00		NIST Webbook
rinpol	850.00		NIST Webbook
rinpol	850.00		NIST Webbook
rinpol	847.00		NIST Webbook
rinpol	851.20		NIST Webbook
sl	533.10	J/molxK	NIST Webbook
tb	439.70 ± 1.00	K	NIST Webbook
tb	441.95 ± 0.50	K	NIST Webbook
tb	442.00	K	NIST Webbook
tf	191.00 ± 0.10	K	NIST Webbook

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cpl	364.40	J/molxK	298.15	NIST Webbook
cpl	352.10	J/molxK	298.15	NIST Webbook
hfust	13.20	kJ/mol	187.70	NIST Webbook
hfust	11.14	kJ/mol	191.00	NIST Webbook
hfust	11.14	kJ/mol	191.00	NIST Webbook
hvapt	40.90	kJ/mol	420.50	NIST Webbook
hvapt	49.50	kJ/mol	365.00	NIST Webbook
hvapt	50.00	kJ/mol	376.50	NIST Webbook
pvap	24.00	kPa	393.40	Vapor-Liquid Equilibrium Measurements for Tetraethyl Orthosilicate + Ethanol at 24.00 kPa and 53.32 kPa
pvap	53.32	kPa	419.20	Vapor-Liquid Equilibrium Measurements for Tetraethyl Orthosilicate + Ethanol at 24.00 kPa and 53.32 kPa

rfi	1.38250		298.15	(Vapor + liquid) equilibrium of the binary mixtures formed by acetonitrile with selected compounds at 95.5 kPa
rfi	1.38350		293.15	Isobaric Vapor Liquid Equilibrium Data for the Binary Mixtures 2-Methyl Propan-2-ol with Tetraethoxysilane and 1-Phenyl Ethanone at 95.5 kPa
rhof	1032.00	kg/m3	293.15	Bubble point measurements of binary mixtures formed by ethyl benzene with selected compounds at 95.35 kPa
sfust	70.32	J/molxK	187.70	NIST Webbook
sfust	58.33	J/molxK	191.00	NIST Webbook

Sources

Vapor-Liquid Critical Properties of Some Tetraalkoxysilanes: NIST Webbook:

<https://www.doi.org/10.1021/je800086s>

<http://webbook.nist.gov/cgi/cbook.cgi?ID=C78104&Units=SI>

Crippen Method:

https://www.chemeo.com/doc/models/crippen_log10ws

Phase behavior for carbon dioxide/tetraalkoxysilane systems: Isobaric Vapor Liquid Equilibrium Data for the Binary Mixtures 2-Methyl Propan-2-ol with Tetraethoxysilane and 1-Phenyl Ethanone with Carbon Dioxide: (Vapor + liquid) equilibrium of the binary mixtures formed by acetonitrile with selected compounds at 95.5 kPa: Bubble point measurements of binary mixtures formed by ethyl benzene with selected compounds at 95.35 kPa: Vapor-Liquid Equilibrium Measurements for Tetraethyl Crippen Method: Ethanol at 24.00 kPa and 53.32 kPa:

<https://www.doi.org/10.1016/j.fluid.2012.02.018>

<https://www.doi.org/10.1021/je300076y>

<https://www.doi.org/10.1021/je800422q>

<https://www.doi.org/10.1016/j.jct.2007.03.007>

<https://www.doi.org/10.1016/j.jct.2008.05.002>

<https://www.doi.org/10.1021/je0302248>

<http://pubs.acs.org/doi/abs/10.1021/ci990307i>

Legend

cpl: Liquid phase heat capacity

hfust: Enthalpy of fusion at a given temperature

h_{vap}:	Enthalpy of vaporization at standard conditions
h_{vapt}:	Enthalpy of vaporization at a given temperature
ie:	Ionization energy
log₁₀ws:	Log ₁₀ of Water solubility in mol/l
log_p:	Octanol/Water partition coefficient
pc:	Critical Pressure
p_{vap}:	Vapor pressure
r_{fi}:	Refractive Index
ρ_l:	Liquid Density
r_{inpol}:	Non-polar retention indices
s_{fust}:	Entropy of fusion at a given temperature
sl:	Liquid phase molar entropy at standard conditions
tb:	Normal Boiling Point Temperature
tf:	Normal melting (fusion) point

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