Octane, 4-methyl-

Other names: 1,3-Dimethylheptane
4-Methyloctane
Inchi: InChI=1S/C9H20/c1-4-6-8-9(3)7-5-2/h9H,4-8H2,1-3H3
InchiKey: DOGIHOCMZJUJNR-UHFFFAOYSA-N
Formula: C9H20
SMILES: CCCCC(C)CCC
Mol. weight [g/mol]: 128.26
CAS: 2216-34-4

Physical Properties

Property code	Value	Unit	Source
af	0.4160		KDB
ap	347.650	K	KDB
gf	22.46	kJ/mol	Joback Method
hcg	6121.78	kJ/mol	KDB
hcn	5681.663	kJ/mol	KDB
hf	-234.37	kJ/mol	Joback Method
hfus	15.54	kJ/mol	Joback Method
hvap	44.50	kJ/mol	NIST Webbook
log10ws	-3.35		Crippen Method
logp	3.613		Crippen Method
mcvol	137.670	ml/mol	McGowan Method
pc	2330.00	kPa	KDB
rinpol	863.00		NIST Webbook
rinpol	864.00		NIST Webbook
rinpol	873.00		NIST Webbook
rinpol	868.00		NIST Webbook
rinpol	863.00		NIST Webbook
rinpol	861.00		NIST Webbook
rinpol	863.00		NIST Webbook
rinpol	864.00		NIST Webbook
rinpol	865.00		NIST Webbook
rinpol	861.00		NIST Webbook
rinpol	864.10		NIST Webbook
rinpol	863.00		NIST Webbook
rinpol	862.00		NIST Webbook
rinpol	862.50		NIST Webbook

rinpol	862.70	NIST Webbook
rinpol	864.60	NIST Webbook
rinpol	864.70	NIST Webbook
rinpol	861.00	NIST Webbook
rinpol	863.30	NIST Webbook
rinpol	863.00	NIST Webbook
rinpol	863.00	NIST Webbook
rinpol	863.10	NIST Webbook
rinpol	868.00	NIST Webbook
rinpol	861.00	NIST Webbook
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rinpol	862.00	NIST Webbook
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rinpol	863.00	NIST Webbook
rinpol	863.00	NIST Webbook
rinpol	863.00	NIST Webbook
rinpol	862.00	NIST Webbook
rinpol	881.00	NIST Webbook
rinpol	864.00	NIST Webbook
rinpol	866.00	NIST Webbook
rinpol	862.85	NIST Webbook
rinpol	863.00	NIST Webbook
rinpol	861.00	NIST Webbook
rinpol	861.00	NIST Webbook
rinpol	874.40	NIST Webbook
rinpol	868.00	NIST Webbook
rinpol	863.00	NIST Webbook
rinpol	864.00	NIST Webbook
rinpol	865.90	NIST Webbook
rinpol	863.50	NIST Webbook
rinpol	856.30	NIST Webbook
rinpol	863.70	NIST Webbook
rinpol	862.91	NIST Webbook
rinpol	863.09	NIST Webbook
rinpol	866.00	NIST Webbook
rinpol	865.16	NIST Webbook
rinpol	865.34	NIST Webbook
rinpol	865.43	NIST Webbook
rinpol	864.58	NIST Webbook
rinpol	864.75	NIST Webbook
rinpol	864.91	NIST Webbook

rinpol	861.00		NIST Webbook
rinpol	858.00		NIST Webbook
rinpol	864.00		NIST Webbook
rinpol	863.00		NIST Webbook
rinpol	864.00		NIST Webbook
rinpol	865.00		NIST Webbook
rinpol	864.00		NIST Webbook
rinpol	865.00		NIST Webbook
rinpol	866.00		NIST Webbook
rinpol	867.00		NIST Webbook
rinpol	875.00		NIST Webbook
ripol	823.00		NIST Webbook
ripol	823.00		NIST Webbook
tb	415.60	K	KDB
tc	586.70	K	KDB
tf	159.95 ± 0.50	K	NIST Webbook
tf	159.85 ± 0.15	K	NIST Webbook
tf	154.02 ± 0.15	K	NIST Webbook
tf	219.62 ± 0.20	K	NIST Webbook
tf	160.00	K	KDB
vc	0.533	m3/kmol	KDB
zc	0.2548220		KDB

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cpg	272.60	J/mol×K	404.88	Joback Method
cpg	301.08	J/mol×K	460.44	Joback Method
cpg	314.53	J/mol×K	488.22	Joback Method
cpg	327.48	J/mol×K	516.01	Joback Method
cpg	339.92	J/mol×K	543.79	Joback Method
cpg	351.89	J/mol×K	571.57	Joback Method
cpg	287.11	J/mol×K	432.66	Joback Method
dvisc	0.0013934	Pa×s	252.42	Joback Method
dvisc	0.0108182	Pa×s	176.19	Joback Method
dvisc	0.0007485	Pa×s	290.53	Joback Method
dvisc	0.0004644	Pa×s	328.65	Joback Method
dvisc	0.0003182	Pa×s	366.76	Joback Method
dvisc	0.0002341	Pa×s	404.88	Joback Method
dvisc	0.0032357	Pa×s	214.31	Joback Method
hvapt	36.61	kJ/mol	415.60	KDB

rfi	1.40390		298.15	KDB
rhol	695.90	kg/m3	323.15	Density, Viscosity, Speed of Sound, and Bulk Modulus of Methyl Alkanes, Dimethyl Alkanes, and Hydrotreated Renewable Fuels
rhol	703.90	kg/m3	313.15	Density, Viscosity, Speed of Sound, and Bulk Modulus of Methyl Alkanes, Dimethyl Alkanes, and Hydrotreated Renewable Fuels
rhol	711.90	kg/m3	303.15	Density, Viscosity, Speed of Sound, and Bulk Modulus of Methyl Alkanes, Dimethyl Alkanes, and Hydrotreated Renewable Fuels
rhol	719.80	kg/m3	293.15	Density, Viscosity, Speed of Sound, and Bulk Modulus of Methyl Alkanes, Dimethyl Alkanes, and Hydrotreated Renewable Fuels
rhol	727.60	kg/m3	283.15	Density, Viscosity, Speed of Sound, and Bulk Modulus of Methyl Alkanes, Dimethyl Alkanes, and Hydrotreated Renewable Fuels
rhol	653.90	kg/m3	373.15	Density, Viscosity, Speed of Sound, and Bulk Modulus of Methyl Alkanes, Dimethyl Alkanes, and Hydrotreated Renewable Fuels

rhol	662.50	kg/m3	363.15	Density, Viscosity, Speed of Sound, and Bulk Modulus of Methyl Alkanes, Dimethyl Alkanes, and Hydrotreated Renewable Fuels
rhol	671.00	kg/m3	353.15	Density, Viscosity, Speed of Sound, and Bulk Modulus of Methyl Alkanes, Dimethyl Alkanes, and Hydrotreated Renewable Fuels
rhol	679.30	kg/m3	343.15	Density, Viscosity, Speed of Sound, and Bulk Modulus of Methyl Alkanes, Dimethyl Alkanes, and Hydrotreated Renewable Fuels
rhol	687.50	kg/m3	333.15	Density, Viscosity, Speed of Sound, and Bulk Modulus of Methyl Alkanes, Dimethyl Alkanes, and Hydrotreated Renewable Fuels
rhol	695.70	kg/m3	323.15	Density, Viscosity, Speed of Sound, and Bulk Modulus of Methyl Alkanes, Dimethyl Alkanes, and Hydrotreated Renewable Fuels
rhol	703.70	kg/m3	313.15	Density, Viscosity, Speed of Sound, and Bulk Modulus of Methyl Alkanes, Dimethyl Alkanes, and Hydrotreated Renewable Fuels
rhol	711.70	kg/m3	303.15	Density, Viscosity, Speed of Sound, and Bulk Modulus of Methyl Alkanes, Dimethyl Alkanes, and Hydrotreated Renewable Fuels

rhol	719.70	kg/m3	293.15	Density, Viscosity, Speed of Sound, and Bulk Modulus of Methyl Alkanes, Dimethyl Alkanes, and Hydrotreated Renewable Fuels
rhol	727.50	kg/m3	283.15	Density, Viscosity, Speed of Sound, and Bulk Modulus of Methyl Alkanes, Dimethyl Alkanes, and Hydrotreated Renewable Fuels

Correlations

Information	Value
Property code	pvap
Equation	ln(Pvp) = A + B/(T + C)
Coeff. A	1.45395e+01
Coeff. B	-3.68657e+03
Coeff. C	-4.40050e+01
Temperature range (K), min.	302.68
Temperature range (K), max.	443.50

Information	Value
Property code	pvap
Equation	ln(Pvp) = A + B/T + C*ln(T) + D*T^2
Coeff. A	7.99304e+01
Coeff. B	-7.86955e+03
Coeff. C	-9.48846e+00
Coeff. D	4.85511e-06
Temperature range (K), min.	159.95
Temperature range (K), max.	587.65

Sources

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

KDB:	https://www.cheric.org/research/kdb/hcprop/showprop.php?cmpid=66
The Yaws Handbook of Vapor Pressure:	https://www.sciencedirect.com/book/9780128029992/the-yaws-handbook-of-vapor-pressure
McGowan Method:	http://link.springer.com/article/10.1007/BF02311772
NIST Webbook:	http://webbook.nist.gov/cgi/cbook.cgi?ID=C2216344&Units=SI
KDB Vapor Pressure Data:	https://www.cheric.org/research/kdb/hcprop/showprop.php?cmpid=66
Joback Method:	https://en.wikipedia.org/wiki/Joback_method
Crippen Method:	http://pubs.acs.org/doi/abs/10.1021/ci990307l
Density, Viscosity, Speed of Sound, and Bulk Modulus of Methyl Alkanes, Dimethyl Alkanes, and Hydrotreated Renewable Fuels:	https://www.doi.org/10.1021/je400274f

Legend

af:	Acentric Factor
ap:	Aniline Point
cpg:	Ideal gas heat capacity
dvisc:	Dynamic viscosity
gf:	Standard Gibbs free energy of formation
hcg:	Heat of Combustion, Gross form
hcn:	Heat of Combustion, Net Form
hf:	Enthalpy of formation at standard conditions
hfus:	Enthalpy of fusion at standard conditions
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
mcvol:	McGowan's characteristic volume
pc:	Critical Pressure
pvap:	Vapor pressure
rfi:	Refractive Index
rhol:	Liquid Density
rinpol:	Non-polar retention indices
ripol:	Polar retention indices
tb:	Normal Boiling Point Temperature
tc:	Critical Temperature
tf:	Normal melting (fusion) point
vc:	Critical Volume
zc:	Critical Compressibility

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