

# Nonane, 2-methyl-

Other names:	2-Methylnonane
Inchi:	InChI=1S/C10H22/c1-4-5-6-7-8-9-10(2)3/h10H,4-9H2,1-3H3
InchiKey:	SGVYKUFIHHTIFL-UHFFFAOYSA-N
Formula:	C10H22
SMILES:	CCCCCCCC(C)C
Mol. weight [g/mol]:	142.28
CAS:	871-83-0

## Physical Properties

Property code	Value	Unit	Source
af	0.4590		KDB
ap	353.450	K	KDB
chl	-6769.50 ± 2.30	kJ/mol	NIST Webbook
gf	30.88	kJ/mol	Joback Method
hcg	6772.98	kJ/mol	KDB
hcn	6288.845	kJ/mol	KDB
hf	-260.20	kJ/mol	NIST Webbook
hfl	-309.80 ± 2.40	kJ/mol	NIST Webbook
hfus	18.13	kJ/mol	Joback Method
hvap	49.64	kJ/mol	NIST Webbook
hvap	51.00	kJ/mol	NIST Webbook
log10ws	-3.77		Crippen Method
logp	4.003		Crippen Method
mcvol	151.760	ml/mol	McGowan Method
pc	2100.00	kPa	KDB
rinpol	964.00		NIST Webbook
rinpol	972.00		NIST Webbook
rinpol	965.20		NIST Webbook
rinpol	965.10		NIST Webbook
rinpol	962.00		NIST Webbook
rinpol	963.90		NIST Webbook
rinpol	964.70		NIST Webbook
rinpol	965.00		NIST Webbook
rinpol	964.00		NIST Webbook
rinpol	966.00		NIST Webbook
rinpol	968.00		NIST Webbook
rinpol	972.00		NIST Webbook

rinpol	966.00	NIST Webbook
rinpol	965.00	NIST Webbook
rinpol	967.00	NIST Webbook
rinpol	968.00	NIST Webbook
rinpol	963.00	NIST Webbook
rinpol	964.43	NIST Webbook
rinpol	964.43	NIST Webbook
rinpol	963.80	NIST Webbook
rinpol	964.00	NIST Webbook
rinpol	964.00	NIST Webbook
rinpol	964.00	NIST Webbook
rinpol	964.00	NIST Webbook
rinpol	964.00	NIST Webbook
rinpol	964.00	NIST Webbook
rinpol	971.70	NIST Webbook
rinpol	974.00	NIST Webbook
rinpol	964.00	NIST Webbook
rinpol	965.00	NIST Webbook
rinpol	966.20	NIST Webbook
rinpol	962.60	NIST Webbook
rinpol	964.00	NIST Webbook
rinpol	964.80	NIST Webbook
rinpol	968.60	NIST Webbook
rinpol	965.00	NIST Webbook
rinpol	964.00	NIST Webbook
rinpol	965.96	NIST Webbook
rinpol	966.07	NIST Webbook
rinpol	966.05	NIST Webbook
rinpol	965.23	NIST Webbook
rinpol	964.00	NIST Webbook
rinpol	965.28	NIST Webbook
rinpol	964.00	NIST Webbook
rinpol	962.00	NIST Webbook
rinpol	980.70	NIST Webbook
rinpol	964.00	NIST Webbook
rinpol	965.00	NIST Webbook
rinpol	966.00	NIST Webbook
rinpol	969.00	NIST Webbook
rinpol	964.00	NIST Webbook
rinpol	968.00	NIST Webbook
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rinpol	965.40	NIST Webbook
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rinpol	970.00	NIST Webbook
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rinpol	962.00		NIST Webbook
rinpol	964.00		NIST Webbook
rinpol	965.28		NIST Webbook
rinpol	965.00		NIST Webbook
sl	420.10	J/molxK	NIST Webbook
tb	440.00	K	NIST Webbook
tb	440.15 ± 0.15	K	NIST Webbook
tb	440.00 ± 0.30	K	NIST Webbook
tb	440.20	K	KDB
tb	440.20	K	NIST Webbook
tc	610.70	K	NIST Webbook
tc	610.30	K	KDB
tf	198.79 ± 0.20	K	NIST Webbook
tf	201.50 ± 0.15	K	NIST Webbook
tf	199.00	K	KDB
tt	198.80 ± 0.20	K	NIST Webbook
vc	0.596	m3/kmol	KDB
zc	0.2466530		KDB

# Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cpg	315.29	J/molxK	427.76	Joback Method
cpg	330.79	J/molxK	455.42	Joback Method
cpg	345.71	J/molxK	483.08	Joback Method
cpg	360.07	J/molxK	510.75	Joback Method
cpg	373.88	J/molxK	538.41	Joback Method
cpg	387.16	J/molxK	566.07	Joback Method
cpg	399.91	J/molxK	593.73	Joback Method
cpl	313.30	J/molxK	298.10	NIST Webbook
dvisc	0.0032190	Paxs	227.51	Joback Method
dvisc	0.0003093	Paxs	387.71	Joback Method
dvisc	0.0004537	Paxs	347.66	Joback Method
dvisc	0.0108083	Paxs	187.46	Joback Method
dvisc	0.0013777	Paxs	267.56	Joback Method
dvisc	0.0007355	Paxs	307.61	Joback Method
dvisc	0.0002265	Paxs	427.76	Joback Method
hfust	17.49	kJ/mol	198.80	NIST Webbook
hfust	17.49	kJ/mol	198.80	NIST Webbook
hfust	17.49	kJ/mol	198.80	NIST Webbook
hvapt	46.40 ± 0.20	kJ/mol	382.50	NIST Webbook
hvapt	38.23	kJ/mol	440.20	NIST Webbook
hvapt	39.20	kJ/mol	440.20	KDB
hvapt	46.20 ± 0.20	kJ/mol	343.00	NIST Webbook
hvapt	47.30 ± 0.20	kJ/mol	328.00	NIST Webbook
hvapt	45.00 ± 0.20	kJ/mol	358.00	NIST Webbook
rfi	1.40750		298.15	KDB
rhoI	680.89	kg/m3	353.15	Viscosity and Surface Tension of Branched Alkanes 2-Methylnonane and 4-Methylnonane
rhoI	672.81	kg/m3	363.15	Viscosity and Surface Tension of Branched Alkanes 2-Methylnonane and 4-Methylnonane

rhoI	723.54	kg/m3	298.15	Viscosity and Surface Tension of Branched Alkanes 2-Methylnonane and 4-Methylnonane	
rhoI	704.14	kg/m3	323.15	Viscosity and Surface Tension of Branched Alkanes 2-Methylnonane and 4-Methylnonane	
rhoI	684.45	kg/m3	348.15	Viscosity and Surface Tension of Branched Alkanes 2-Methylnonane and 4-Methylnonane	
rhoI	664.34	kg/m3	373.15	Viscosity and Surface Tension of Branched Alkanes 2-Methylnonane and 4-Methylnonane	
rhoI	643.46	kg/m3	398.15	Viscosity and Surface Tension of Branched Alkanes 2-Methylnonane and 4-Methylnonane	
rhoI	684.90	kg/m3	348.15	Viscosity and Surface Tension of Branched Alkanes 2-Methylnonane and 4-Methylnonane	
rhoI	734.70	kg/m3	283.15	Density, Viscosity, Speed of Sound, and Bulk Modulus of Methyl Alkanes, Dimethyl Alkanes, and Hydrotreated Renewable Fuels	
rhoI	727.10	kg/m3	293.15	Density, Viscosity, Speed of Sound, and Bulk Modulus of Methyl Alkanes, Dimethyl Alkanes, and Hydrotreated Renewable Fuels	

rhoI	719.40	kg/m3	303.15	Density, Viscosity, Speed of Sound, and Bulk Modulus of Methyl Alkanes, Dimethyl Alkanes, and Hydrotreated Renewable Fuels
rhoI	711.70	kg/m3	313.15	Density, Viscosity, Speed of Sound, and Bulk Modulus of Methyl Alkanes, Dimethyl Alkanes, and Hydrotreated Renewable Fuels
rhoI	703.90	kg/m3	323.15	Density, Viscosity, Speed of Sound, and Bulk Modulus of Methyl Alkanes, Dimethyl Alkanes, and Hydrotreated Renewable Fuels
rhoI	696.00	kg/m3	333.15	Density, Viscosity, Speed of Sound, and Bulk Modulus of Methyl Alkanes, Dimethyl Alkanes, and Hydrotreated Renewable Fuels
rhoI	688.10	kg/m3	343.15	Density, Viscosity, Speed of Sound, and Bulk Modulus of Methyl Alkanes, Dimethyl Alkanes, and Hydrotreated Renewable Fuels
rhoI	680.20	kg/m3	353.15	Density, Viscosity, Speed of Sound, and Bulk Modulus of Methyl Alkanes, Dimethyl Alkanes, and Hydrotreated Renewable Fuels
rhoI	672.10	kg/m3	363.15	Density, Viscosity, Speed of Sound, and Bulk Modulus of Methyl Alkanes, Dimethyl Alkanes, and Hydrotreated Renewable Fuels

rhoI	664.00	kg/m3	373.15	Density, Viscosity, Speed of Sound, and Bulk Modulus of Methyl Alkanes, Dimethyl Alkanes, and Hydrotreated Renewable Fuels
rhoI	734.50	kg/m3	283.15	Density, Viscosity, Speed of Sound, and Bulk Modulus of Methyl Alkanes, Dimethyl Alkanes, and Hydrotreated Renewable Fuels
rhoI	726.90	kg/m3	293.15	Density, Viscosity, Speed of Sound, and Bulk Modulus of Methyl Alkanes, Dimethyl Alkanes, and Hydrotreated Renewable Fuels
rhoI	719.30	kg/m3	303.15	Density, Viscosity, Speed of Sound, and Bulk Modulus of Methyl Alkanes, Dimethyl Alkanes, and Hydrotreated Renewable Fuels
rhoI	711.60	kg/m3	313.15	Density, Viscosity, Speed of Sound, and Bulk Modulus of Methyl Alkanes, Dimethyl Alkanes, and Hydrotreated Renewable Fuels
rhoI	703.90	kg/m3	323.15	Density, Viscosity, Speed of Sound, and Bulk Modulus of Methyl Alkanes, Dimethyl Alkanes, and Hydrotreated Renewable Fuels
rhoI	676.83	kg/m3	358.15	Viscosity and Surface Tension of Branched Alkanes 2-Methylnonane and 4-Methylnonane

rhoI	688.88	kg/m3	343.15	Viscosity and Surface Tension of Branched Alkanes 2-Methylnonane and 4-Methylnonane	
rhoI	692.85	kg/m3	338.15	Viscosity and Surface Tension of Branched Alkanes 2-Methylnonane and 4-Methylnonane	
rhoI	696.79	kg/m3	333.15	Viscosity and Surface Tension of Branched Alkanes 2-Methylnonane and 4-Methylnonane	
rhoI	700.72	kg/m3	328.15	Viscosity and Surface Tension of Branched Alkanes 2-Methylnonane and 4-Methylnonane	
rhoI	704.63	kg/m3	323.15	Viscosity and Surface Tension of Branched Alkanes 2-Methylnonane and 4-Methylnonane	
rhoI	708.49	kg/m3	318.15	Viscosity and Surface Tension of Branched Alkanes 2-Methylnonane and 4-Methylnonane	
rhoI	712.27	kg/m3	313.15	Viscosity and Surface Tension of Branched Alkanes 2-Methylnonane and 4-Methylnonane	
rhoI	716.11	kg/m3	308.15	Viscosity and Surface Tension of Branched Alkanes 2-Methylnonane and 4-Methylnonane	
rhoI	719.96	kg/m3	303.15	Viscosity and Surface Tension of Branched Alkanes 2-Methylnonane and 4-Methylnonane	



rhoI	723.63	kg/m3	298.15	Viscosity and Surface Tension of Branched Alkanes 2-Methylnonane and 4-Methylnonane
rhoI	727.47	kg/m3	293.15	Viscosity and Surface Tension of Branched Alkanes 2-Methylnonane and 4-Methylnonane
rhoI	731.33	kg/m3	288.15	Viscosity and Surface Tension of Branched Alkanes 2-Methylnonane and 4-Methylnonane
rhoI	735.13	kg/m3	283.15	Viscosity and Surface Tension of Branched Alkanes 2-Methylnonane and 4-Methylnonane
rhoI	621.59	kg/m3	423.15	Viscosity and Surface Tension of Branched Alkanes 2-Methylnonane and 4-Methylnonane
sfust	87.97	J/molxK	198.80	NIST Webbook

## Correlations

Information	Value
Property code	pvap
Equation	$\ln(P_{vp}) = A + B/(T + C)$
Coeff. A	1.44006e+01
Coeff. B	-3.68356e+03
Coeff. C	-6.35970e+01
Temperature range (K), min.	324.60
Temperature range (K), max.	468.87

Information	Value
Property code	pvap

Equation	$\ln(P_{vp}) = A + B/T + C \cdot \ln(T) + D \cdot T^2$
Coeff. A	1.28452e+02
Coeff. B	-1.05839e+04
Coeff. C	-1.67146e+01
Coeff. D	1.00957e-05
Temperature range (K), min.	198.50
Temperature range (K), max.	610.00

## Sources

KDB Vapor Pressure Data:	<a href="https://www.thermo.com/research/kdb/hcprop/showprop.php?cmpid=98">https://www.thermo.com/research/kdb/hcprop/showprop.php?cmpid=98</a>
McGowan Method:	<a href="http://link.springer.com/article/10.1007/BF02311772">http://link.springer.com/article/10.1007/BF02311772</a>
Liquid Viscosity and Interfacial Tension of Binary and Ternary Mixtures	<a href="https://www.doi.org/10.1021/acs.jced.8b01139">https://www.doi.org/10.1021/acs.jced.8b01139</a>
Crippen Method	<a href="http://pubs.acs.org/doi/abs/10.1021/ci9903071">http://pubs.acs.org/doi/abs/10.1021/ci9903071</a>
Light Scattering:	<a href="https://en.wikipedia.org/wiki/Joback_method">https://en.wikipedia.org/wiki/Joback_method</a>
Joback Method:	<a href="https://www.chemed.com/doc/models/crippen_log10ws">https://www.chemed.com/doc/models/crippen_log10ws</a>
Crippen Method:	<a href="http://webbook.nist.gov/cgi/cbook.cgi?ID=C871830&amp;Units=SI">http://webbook.nist.gov/cgi/cbook.cgi?ID=C871830&amp;Units=SI</a>
NIST Webbook:	<a href="https://www.thermo.com/files/research/kdb/mol/mol98.mol">https://www.thermo.com/files/research/kdb/mol/mol98.mol</a>
KDB:	<a href="https://www.sciencedirect.com/book/9780128029992/the-yaws-handbook-of-vapor-pressure">https://www.sciencedirect.com/book/9780128029992/the-yaws-handbook-of-vapor-pressure</a>
The Yaws Handbook of Vapor Pressure:	<a href="https://www.doi.org/10.1021/je400274f">https://www.doi.org/10.1021/je400274f</a>
Density, Viscosity, Speed of Sound, and Bulk Modulus of Methyl Alkanes, Branched Alkanes and Tension of 2-Methylnonane and 4-Methylnonane:	<a href="https://www.doi.org/10.1021/acs.jced.8b00163">https://www.doi.org/10.1021/acs.jced.8b00163</a>

## Legend

af:	Acentric Factor
ap:	Aniline Point
chl:	Standard liquid enthalpy of combustion
cpg:	Ideal gas heat capacity
cpl:	Liquid phase 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
hfl:	Liquid phase enthalpy of formation at standard conditions
hfus:	Enthalpy of fusion at standard conditions
hfust:	Enthalpy of fusion at a given temperature
hvap:	Enthalpy of vaporization at standard conditions

<b>hvapt:</b>	Enthalpy of vaporization at a given temperature
<b>log10ws:</b>	Log10 of Water solubility in mol/l
<b>logp:</b>	Octanol/Water partition coefficient
<b>mcvol:</b>	McGowan's characteristic volume
<b>pc:</b>	Critical Pressure
<b>pvap:</b>	Vapor pressure
<b>rfi:</b>	Refractive Index
<b>rho:</b>	Liquid Density
<b>rinpol:</b>	Non-polar retention indices
<b>sfust:</b>	Entropy of fusion at a given temperature
<b>sl:</b>	Liquid phase molar entropy at standard conditions
<b>tb:</b>	Normal Boiling Point Temperature
<b>tc:</b>	Critical Temperature
<b>tf:</b>	Normal melting (fusion) point
<b>tt:</b>	Triple Point Temperature
<b>vc:</b>	Critical Volume
<b>zc:</b>	Critical Compressibility

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