

Nonane, 1-chloro-

Other names:	1-Chlorononane Nonyl chloride n-Nonyl chloride
Inchi:	InChI=1S/C9H19Cl/c1-2-3-4-5-6-7-8-9-10/h2-9H2,1H3
InchiKey:	RKAMCQVGHFRILV-UHFFFAOYSA-N
Formula:	C9H19Cl
SMILES:	CCCCCCCCCl
Mol. weight [g/mol]:	162.70
CAS:	2473-01-0

Physical Properties

Property code	Value	Unit	Source
gf	12.97	kJ/mol	Joback Method
hf	-244.83	kJ/mol	Joback Method
hfus	23.26	kJ/mol	Joback Method
hvap	55.90	kJ/mol	NIST Webbook
log10ws	-3.74		Crippen Method
logp	3.976		Crippen Method
mcvol	149.910	ml/mol	McGowan Method
pc	2227.09	kPa	Joback Method
rinpol	1159.00		NIST Webbook
rinpol	1154.00		NIST Webbook
rinpol	1159.00		NIST Webbook
rinpol	1152.00		NIST Webbook
rinpol	1159.00		NIST Webbook
rinpol	1167.00		NIST Webbook
rinpol	1152.00		NIST Webbook
rinpol	1150.00		NIST Webbook
rinpol	1154.00		NIST Webbook
ripol	1363.00		NIST Webbook
ripol	1350.00		NIST Webbook
ripol	1363.00		NIST Webbook
ripol	1364.00		NIST Webbook
ripol	1364.00		NIST Webbook
tb	475.15 ± 1.50	K	NIST Webbook
tb	476.70	K	NIST Webbook
tc	612.60	K	Joback Method

tf	221.11	K	Joback Method
vc	0.589	m ³ /kmol	Joback Method

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cpg	344.40	J/mol×K	527.67	Joback Method
cpg	318.43	J/mol×K	471.06	Joback Method
cpg	304.65	J/mol×K	442.75	Joback Method
cpg	368.31	J/mol×K	584.29	Joback Method
cpg	356.60	J/mol×K	555.98	Joback Method
cpg	379.53	J/mol×K	612.60	Joback Method
cpg	331.68	J/mol×K	499.37	Joback Method
cpl	329.63	J/mol×K	373.15	Temperature Dependence of the Thermophysical Properties of 1-Chlorohexane, 1-Iodohexane, 1-Iodoheptane, and 1-Chlorononane at Saturation Condition
cpl	313.85	J/mol×K	338.15	Temperature Dependence of the Thermophysical Properties of 1-Chlorohexane, 1-Iodohexane, 1-Iodoheptane, and 1-Chlorononane at Saturation Condition
cpl	311.57	J/mol×K	333.15	Temperature Dependence of the Thermophysical Properties of 1-Chlorohexane, 1-Iodohexane, 1-Iodoheptane, and 1-Chlorononane at Saturation Condition

cpl	309.46	J/mol×K	328.15	Temperature Dependence of the Thermophysical Properties of 1-Chlorohexane, 1-Iodohexane, 1-Iodoheptane, and 1-Chlorononane at Saturation Condition
cpl	307.18	J/mol×K	323.15	Temperature Dependence of the Thermophysical Properties of 1-Chlorohexane, 1-Iodohexane, 1-Iodoheptane, and 1-Chlorononane at Saturation Condition
cpl	304.90	J/mol×K	318.15	Temperature Dependence of the Thermophysical Properties of 1-Chlorohexane, 1-Iodohexane, 1-Iodoheptane, and 1-Chlorononane at Saturation Condition
cpl	302.78	J/mol×K	313.15	Temperature Dependence of the Thermophysical Properties of 1-Chlorohexane, 1-Iodohexane, 1-Iodoheptane, and 1-Chlorononane at Saturation Condition
cpl	300.67	J/mol×K	308.15	Temperature Dependence of the Thermophysical Properties of 1-Chlorohexane, 1-Iodohexane, 1-Iodoheptane, and 1-Chlorononane at Saturation Condition

cpl	327.35	J/mol×K	368.15	Temperature Dependence of the Thermophysical Properties of 1-Chlorohexane, 1-Iodohexane, 1-Iodoheptane, and 1-Chlorononane at Saturation Condition
cpl	296.44	J/mol×K	298.15	Temperature Dependence of the Thermophysical Properties of 1-Chlorohexane, 1-Iodohexane, 1-Iodoheptane, and 1-Chlorononane at Saturation Condition
cpl	294.32	J/mol×K	293.15	Temperature Dependence of the Thermophysical Properties of 1-Chlorohexane, 1-Iodohexane, 1-Iodoheptane, and 1-Chlorononane at Saturation Condition
cpl	318.24	J/mol×K	348.15	Temperature Dependence of the Thermophysical Properties of 1-Chlorohexane, 1-Iodohexane, 1-Iodoheptane, and 1-Chlorononane at Saturation Condition
cpl	320.52	J/mol×K	353.15	Temperature Dependence of the Thermophysical Properties of 1-Chlorohexane, 1-Iodohexane, 1-Iodoheptane, and 1-Chlorononane at Saturation Condition

cpl	322.80	J/mol×K	358.15	Temperature Dependence of the Thermophysical Properties of 1-Chlorohexane, 1-Iodoheptane, and 1-Chlorononane at Saturation Condition
cpl	325.07	J/mol×K	363.15	Temperature Dependence of the Thermophysical Properties of 1-Chlorohexane, 1-Iodoheptane, and 1-Chlorononane at Saturation Condition
cpl	315.96	J/mol×K	343.15	Temperature Dependence of the Thermophysical Properties of 1-Chlorohexane, 1-Iodoheptane, and 1-Chlorononane at Saturation Condition
cpl	298.55	J/mol×K	303.15	Temperature Dependence of the Thermophysical Properties of 1-Chlorohexane, 1-Iodoheptane, and 1-Chlorononane at Saturation Condition
dvisc	0.0007241	Paxs	331.93	Joback Method
dvisc	0.0003493	Paxs	405.81	Joback Method
dvisc	0.0022788	Paxs	258.05	Joback Method
dvisc	0.0002658	Paxs	442.75	Joback Method
dvisc	0.0053880	Paxs	221.11	Joback Method
dvisc	0.0004849	Paxs	368.87	Joback Method
dvisc	0.0011955	Paxs	294.99	Joback Method
hvapt	53.40	kJ/mol	410.00	NIST Webbook
hvapt	51.50	kJ/mol	436.00	NIST Webbook

kvisc	0.0000009	m2/s	343.15	Kinematic Viscosity of 1-Iodoheptane, 1-Iodoheptane, and 1-Chlorononane at Temperatures from (293.15 to 423.15) K
kvisc	0.0000016	m2/s	300.65	Kinematic Viscosity of 1-Iodoheptane, 1-Iodoheptane, and 1-Chlorononane at Temperatures from (293.15 to 423.15) K
kvisc	0.0000013	m2/s	313.15	Kinematic Viscosity of 1-Iodoheptane, 1-Iodoheptane, and 1-Chlorononane at Temperatures from (293.15 to 423.15) K
kvisc	0.0000012	m2/s	318.15	Kinematic Viscosity of 1-Iodoheptane, 1-Iodoheptane, and 1-Chlorononane at Temperatures from (293.15 to 423.15) K
kvisc	0.0000011	m2/s	323.15	Kinematic Viscosity of 1-Iodoheptane, 1-Iodoheptane, and 1-Chlorononane at Temperatures from (293.15 to 423.15) K
kvisc	0.0000011	m2/s	328.15	Kinematic Viscosity of 1-Iodoheptane, 1-Iodoheptane, and 1-Chlorononane at Temperatures from (293.15 to 423.15) K
kvisc	0.0000010	m2/s	333.15	Kinematic Viscosity of 1-Iodoheptane, 1-Iodoheptane, and 1-Chlorononane at Temperatures from (293.15 to 423.15) K

kvisc	0.0000009	m2/s	338.15	Kinematic Viscosity of 1-Iodoheptane, 1-Iodoheptane, and 1-Chlorononane at Temperatures from (293.15 to 423.15) K
kvisc	0.0000017	m2/s	296.21	Kinematic Viscosity of 1-Iodoheptane, 1-Iodoheptane, and 1-Chlorononane at Temperatures from (293.15 to 423.15) K
kvisc	0.0000009	m2/s	348.15	Kinematic Viscosity of 1-Iodoheptane, 1-Iodoheptane, and 1-Chlorononane at Temperatures from (293.15 to 423.15) K
kvisc	0.0000008	m2/s	353.15	Kinematic Viscosity of 1-Iodoheptane, 1-Iodoheptane, and 1-Chlorononane at Temperatures from (293.15 to 423.15) K
kvisc	0.0000008	m2/s	358.15	Kinematic Viscosity of 1-Iodoheptane, 1-Iodoheptane, and 1-Chlorononane at Temperatures from (293.15 to 423.15) K
kvisc	0.0000007	m2/s	368.15	Kinematic Viscosity of 1-Iodoheptane, 1-Iodoheptane, and 1-Chlorononane at Temperatures from (293.15 to 423.15) K
kvisc	0.0000007	m2/s	373.15	Kinematic Viscosity of 1-Iodoheptane, 1-Iodoheptane, and 1-Chlorononane at Temperatures from (293.15 to 423.15) K

kvisc	0.0000006	m ² /s	383.15	Kinematic Viscosity of 1-Iodoheptane, and 1-Chlorononane at Temperatures from (293.15 to 423.15) K
kvisc	0.0000006	m ² /s	393.15	Kinematic Viscosity of 1-Iodoheptane, and 1-Chlorononane at Temperatures from (293.15 to 423.15) K
kvisc	0.0000005	m ² /s	403.15	Kinematic Viscosity of 1-Iodoheptane, and 1-Chlorononane at Temperatures from (293.15 to 423.15) K
kvisc	0.0000007	m ² /s	363.15	Kinematic Viscosity of 1-Iodoheptane, and 1-Chlorononane at Temperatures from (293.15 to 423.15) K
kvisc	0.0000005	m ² /s	413.15	Kinematic Viscosity of 1-Iodoheptane, and 1-Chlorononane at Temperatures from (293.15 to 423.15) K
speedsl	856.00	m/s	423.15	Temperature Dependence of the Speed of Sound of Nonane + 1-Chlorononane in the Range of (293.15 to 423.15) K
speedsl	871.40	m/s	418.15	Temperature Dependence of the Speed of Sound of Nonane + 1-Chlorononane in the Range of (293.15 to 423.15) K

speedsl	887.00	m/s	413.15	Temperature Dependence of the Speed of Sound of Nonane + 1-Chlorononane in the Range of (293.15 to 423.15) K
speedsl	902.60	m/s	408.15	Temperature Dependence of the Speed of Sound of Nonane + 1-Chlorononane in the Range of (293.15 to 423.15) K
speedsl	918.40	m/s	403.15	Temperature Dependence of the Speed of Sound of Nonane + 1-Chlorononane in the Range of (293.15 to 423.15) K
speedsl	934.30	m/s	398.15	Temperature Dependence of the Speed of Sound of Nonane + 1-Chlorononane in the Range of (293.15 to 423.15) K
speedsl	950.30	m/s	393.15	Temperature Dependence of the Speed of Sound of Nonane + 1-Chlorononane in the Range of (293.15 to 423.15) K
speedsl	966.40	m/s	388.15	Temperature Dependence of the Speed of Sound of Nonane + 1-Chlorononane in the Range of (293.15 to 423.15) K
speedsl	982.70	m/s	383.15	Temperature Dependence of the Speed of Sound of Nonane + 1-Chlorononane in the Range of (293.15 to 423.15) K

speedsl	999.10	m/s	378.15	Temperature Dependence of the Speed of Sound of Nonane + 1-Chlorononane in the Range of (293.15 to 423.15) K
speedsl	1015.90	m/s	373.15	Temperature Dependence of the Speed of Sound of Nonane + 1-Chlorononane in the Range of (293.15 to 423.15) K
speedsl	1032.20	m/s	368.15	Temperature Dependence of the Speed of Sound of Nonane + 1-Chlorononane in the Range of (293.15 to 423.15) K
speedsl	1048.50	m/s	363.15	Temperature Dependence of the Speed of Sound of Nonane + 1-Chlorononane in the Range of (293.15 to 423.15) K
speedsl	1065.10	m/s	358.15	Temperature Dependence of the Speed of Sound of Nonane + 1-Chlorononane in the Range of (293.15 to 423.15) K
speedsl	1081.90	m/s	353.15	Temperature Dependence of the Speed of Sound of Nonane + 1-Chlorononane in the Range of (293.15 to 423.15) K
speedsl	1098.80	m/s	348.15	Temperature Dependence of the Speed of Sound of Nonane + 1-Chlorononane in the Range of (293.15 to 423.15) K

speedsl	1115.90	m/s	343.15	Temperature Dependence of the Speed of Sound of Nonane + 1-Chlorononane in the Range of (293.15 to 423.15) K
speedsl	1133.20	m/s	338.15	Temperature Dependence of the Speed of Sound of Nonane + 1-Chlorononane in the Range of (293.15 to 423.15) K
speedsl	1150.70	m/s	333.15	Temperature Dependence of the Speed of Sound of Nonane + 1-Chlorononane in the Range of (293.15 to 423.15) K
speedsl	1168.40	m/s	328.15	Temperature Dependence of the Speed of Sound of Nonane + 1-Chlorononane in the Range of (293.15 to 423.15) K
speedsl	1186.30	m/s	323.15	Temperature Dependence of the Speed of Sound of Nonane + 1-Chlorononane in the Range of (293.15 to 423.15) K
speedsl	1204.30	m/s	318.15	Temperature Dependence of the Speed of Sound of Nonane + 1-Chlorononane in the Range of (293.15 to 423.15) K
speedsl	1222.50	m/s	313.15	Temperature Dependence of the Speed of Sound of Nonane + 1-Chlorononane in the Range of (293.15 to 423.15) K

speedsl	1240.90	m/s	308.15	Temperature Dependence of the Speed of Sound of Nonane + 1-Chlorononane in the Range of (293.15 to 423.15) K
speedsl	1259.50	m/s	303.15	Temperature Dependence of the Speed of Sound of Nonane + 1-Chlorononane in the Range of (293.15 to 423.15) K
speedsl	1278.20	m/s	298.15	Temperature Dependence of the Speed of Sound of Nonane + 1-Chlorononane in the Range of (293.15 to 423.15) K
speedsl	1297.20	m/s	293.15	Temperature Dependence of the Speed of Sound of Nonane + 1-Chlorononane in the Range of (293.15 to 423.15) K

Correlations

Information	Value
Property code	pvap
Equation	$\ln(P_{vp}) = A + B/(T + C)$
Coeff. A	1.57153e+01
Coeff. B	-4.46724e+03
Coeff. C	-7.41370e+01
Temperature range (K), min.	363.70
Temperature range (K), max.	503.52

Sources

Temperature Dependence of the Speed of Sound of Nonane + 1-Chlorononane in the Temperature Range of (293.15 to 423.15) K:	https://www.doi.org/10.1021/je700021f
The Yaws Handbook of Vapor Pressure:	https://www.sciencedirect.com/book/9780128029992/the-yaws-handbook-of-vapor-pressure
NIST Webbook:	http://webbook.nist.gov/cgi/cbook.cgi?ID=C2473010&Units=SI
Crippen Method:	https://www.chemeo.com/doc/models/crippen_log10ws
McGowan Method:	http://link.springer.com/article/10.1007/BF02311772
Temperature Dependence of the Thermophysical Properties of 1-Chlorononane, 1-Iodohexane, 1-Iodoheptane, and 1-Chlorononane at Saturation Condition:	https://www.doi.org/10.1021/je034013e
Crippen Method:	https://en.wikipedia.org/wiki/Joback_method
Joback Method:	http://pubs.acs.org/doi/abs/10.1021/ci990307i
Kinematic Viscosity of 1-Iodohexane, 1-Iodoheptane, and 1-Chlorononane at Temperatures from (293.15 to 423.15) K:	https://www.doi.org/10.1021/je060158k

Legend

cpg:	Ideal gas heat capacity
cpl:	Liquid phase heat capacity
dvisc:	Dynamic viscosity
gf:	Standard Gibbs free energy of formation
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
kvisc:	Kinematic viscosity
log10ws:	Log10 of Water solubility in mol/l
logp:	Octanol/Water partition coefficient
mcvol:	McGowan's characteristic volume
pc:	Critical Pressure
pvap:	Vapor pressure
rinpol:	Non-polar retention indices
ripol:	Polar retention indices
speedsl:	Speed of sound in fluid
tb:	Normal Boiling Point Temperature
tc:	Critical Temperature
tf:	Normal melting (fusion) point
vc:	Critical Volume

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