Hydrochloric acid

Other names:	Acide chlorhydrique
	Acido cloridrico
	Anhydrous hydrochloric acid
	Anhydrous hydrogen chloride
	BASILIN
	Chloorwaterstof
	Chlorohydric acid
	Chlorowodor
	Chlorwasserstoff
	HCl
	Hydrochloric acid gas
	Hydrochloric acid, anhydrous
	Hydrochloric ccid
	Hydrochloride
	Hydrogen chloride (HCl)
	Hydrogen chloride (acid)
	Hydrogen-chloride-anhydrous-
	Marine acid
	Muriatic acid
	NA 1789
	NSC 77365
	Salzsaeure
	Soldering acid
	Spirit of salt
	Spirits of salt
	Spirits of salts
	UN 1050
	UN 1789
	UN 2186
	hydrogen chloride
Inchi:	InChI=1S/ClH/h1H
InchiKey:	VEXZGXHMUGYJMC-UHFFFAOYSA-N
Formula:	HCl
SMILES:	Cl
Mol. weight [g/mol]:	36.46
CAS:	7647-01-0

Physical Properties

Property code	Value	Unit	Source
af	0.1330		KDB
affp	556.90	kJ/mol	NIST Webbook
basg	530.10	kJ/mol	NIST Webbook
dm	1.10	debye	KDB
gf	95.30	kJ/mol	KDB
gyrad	0.2990		KDB
hf	-92.31 ± 0.10	kJ/mol	NIST Webbook
hf	-92.36	kJ/mol	KDB
hfus	1.64	kJ/mol	Joback Method
ie	12.74 ± 0.01	eV	NIST Webbook
ie	12.75 ± 0.00	eV	NIST Webbook
ie	12.75 ± 0.01	eV	NIST Webbook
ie	12.74 ± 0.01	eV	NIST Webbook
ie	12.75 ± 0.01	eV	NIST Webbook
ie	12.79	eV	NIST Webbook
ie	12.74 ± 0.01	eV	NIST Webbook
ie	12.75	eV	NIST Webbook
ie	12.75	eV	NIST Webbook
ie	12.75	eV	NIST Webbook
ie	12.74 ± 0.01	eV	NIST Webbook
ie	12.72 ± 0.03	eV	NIST Webbook
logp	0.422		Crippen Method
mcvol	23.100	ml/mol	McGowan Method
pc	8256.00 ± 8.24	kPa	NIST Webbook
pc	8310.00	kPa	KDB
pt	13.80 ± 0.01	kPa	NIST Webbook
sgb	186.90 ± 0.01	J/mol×K	NIST Webbook
tb	188.00	K	KDB
tc	324.70	K	KDB
tc	324.68 ± 0.03	K	NIST Webbook
tf	161.15 ± 2.00	K	NIST Webbook
tf	158.97	K	KDB
tt	158.80	K	KDB
vc	0.081	m3/kmol	KDB
zc	0.2493260		KDB
zra	0.27		KDB

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cpg	15.02	J/mol×K	397.51	Joback Method
cpg	13.10	J/mol×K	263.03	Joback Method
cpg	13.78	J/mol×K	289.92	Joback Method
cpg	12.24	J/mol×K	236.13	Joback Method
cpg	14.30	J/mol×K	316.82	Joback Method
cpg	14.67	J/mol×K	343.72	Joback Method
cpg	14.90	J/mol×K	370.61	Joback Method
dvisc	0.0000929	Pa×s	202.77	Joback Method
dvisc	0.0000994	Pa×s	136.05	Joback Method
dvisc	0.0000972	Pa×s	152.73	Joback Method
dvisc	0.0000955	Pa×s	169.41	Joback Method
dvisc	0.0000941	Pa×s	186.09	Joback Method
dvisc	0.0000920	Pa×s	219.45	Joback Method
dvisc	0.0000912	Pa×s	236.13	Joback Method
hsubt	19.60	kJ/mol	142.00	NIST Webbook
hsubt	19.70	kJ/mol	127.00	NIST Webbook
hvapt	16.20	kJ/mol	188.00	NIST Webbook
rhol	1193.00	kg/m3	188.00	KDB
speedsl	705.00	m/s	263.00	Speed of Sound Measurements and a Fundamental Equation of State for Hydrogen Chloride
speedsl	646.00	m/s	273.00	Speed of Sound Measurements and a Fundamental Equation of State for Hydrogen Chloride
speedsl	676.00	m/s	268.00	Speed of Sound Measurements and a Fundamental Equation of State for Hydrogen Chloride
speedsl	940.00	m/s	218.30	Speed of Sound Measurements and a Fundamental Equation of State for Hydrogen Chloride

speedsl	734.00	m/s	258.00	Speed of Sound Measurements and a Fundamental Equation of State for Hydrogen Chloride
speedsl	762.00	m/s	252.90	Speed of Sound Measurements and a Fundamental Equation of State for Hydrogen Chloride
speedsl	790.00	m/s	248.00	Speed of Sound Measurements and a Fundamental Equation of State for Hydrogen Chloride
speedsl	814.00	m/s	243.00	Speed of Sound Measurements and a Fundamental Equation of State for Hydrogen Chloride
speedsl	865.00	m/s	233.10	Speed of Sound Measurements and a Fundamental Equation of State for Hydrogen Chloride
speedsl	887.00	m/s	229.20	Speed of Sound Measurements and a Fundamental Equation of State for Hydrogen Chloride
speedsl	910.00	m/s	224.30	Speed of Sound Measurements and a Fundamental Equation of State for Hydrogen Chloride

Correlations

Information	Value
Property code	pvap
Equation	ln(Pvp) = A + B/(T + C)

Coeff. A	1.46857e+01
Coeff. B	-1.76110e+03
Coeff. C	-1.32200e+01
Temperature range (K), min.	158.97
Temperature range (K), max.	324.65

Sources

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Synthesis, Characterization, and Thermodynamic Study of the Coordination Compound Cd(HNic)2Cl2(s):	https://www.doi.org/10.1021/je800141t
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Legend

af:	Acentric Factor
affp:	Proton affinity
basg:	Gas basicity
cpg:	Ideal gas heat capacity
dm:	Dipole Moment
dvisc:	Dynamic viscosity
gf:	Standard Gibbs free energy of formation
gyrad:	Radius of Gyration
hf:	Enthalpy of formation at standard conditions
hfus:	Enthalpy of fusion at standard conditions
hsubt:	Enthalpy of sublimation at a given temperature
hvapt:	Enthalpy of vaporization at a given temperature
ie:	Ionization energy
logp:	Octanol/Water partition coefficient
mcvol:	McGowan's characteristic volume
pc:	Critical Pressure
pt:	Triple Point Pressure
pvap:	Vapor pressure
rhol:	Liquid Density
sgb:	Molar entropy at standard conditions (1 bar)
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
zc:	Critical Compressibility
zra:	Rackett Parameter