Krypton

Other names:	Kr
	UN 1056
	UN 1970
Inchi:	InChI=1S/Kr
InchiKey:	DNNSSWSSYDEUBZ-UHFFFAOYSA-N
Formula:	Kr
SMILES:	[Kr]
Mol. weight [g/mol]:	83.80
CAS:	7439-90-9

Physical Properties

Property code	Value	Unit	Source
af	0.0050		KDB
affp	424.60	kJ/mol	NIST Webbook
basg	402.40	kJ/mol	NIST Webbook
dm	0.00	debye	KDB
ie	13.99	eV	NIST Webbook
ie	14.00 ± 0.00	eV	NIST Webbook
ie	14.00	eV	NIST Webbook
ie	14.05	eV	NIST Webbook
ie	14.00 ± 0.00	eV	NIST Webbook
ie	14.01 ± 0.01	eV	NIST Webbook
ie	14.00 ± 0.05	eV	NIST Webbook
ie	13.97 ± 0.00	eV	NIST Webbook
ie	14.00	eV	NIST Webbook
ie	14.67 ± 0.00	eV	NIST Webbook
ie	14.00 ± 0.00	eV	NIST Webbook
ie	14.00	eV	NIST Webbook
ie	14.00 ± 0.00	eV	NIST Webbook
ie	14.00	eV	NIST Webbook
ie	14.66 ± 0.00	eV	NIST Webbook
ie	13.99 ± 0.00	eV	NIST Webbook
pc	5520.19 ± 5.51	kPa	NIST Webbook
pc	5500.00	kPa	KDB
pt	72.92	kPa	KDB
pt	73.15 ± 0.06	kPa	NIST Webbook
rhoc	921.78 ± 9.13	kg/m3	NIST Webbook

sgb	164.09 ± 0.00	J/mol×K	NIST Webbook
tb	119.93	K	KDB
tb	119.78 ± 0.05	K	NIST Webbook
tc	209.41	K	KDB
tc	209.46 ± 0.02	K	NIST Webbook
tf	115.79	K	KDB
tt	115.76 ± 0.08	K	NIST Webbook
tt	115.80	K	KDB
tt	115.95 ± 0.20	K	NIST Webbook
tt	116.10 ± 0.40	K	NIST Webbook
vc	0.091	m3/kmol	KDB
zc	0.2874550		KDB
zra	0.29		KDB

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
hvapt	11.54	kJ/mol	40.50	Measurements of enthalpy of sublimation of Ne, N2, O2, Ar, CO2, Kr, Xe, and H2O using a double paddle oscillator
rhol	2420.00	kg/m3	120.00	KDB

Correlations

Information	Value
Property code	pvap
Equation	ln(Pvp) = A + B/(T + C)
Coeff. A	1.41355e+01
Coeff. B	-1.17804e+03
Coeff. C	3.98000e+00
Temperature range (K), min.	115.78
Temperature range (K), max.	209.35

Sources

Solubilities of Nonpolar Gases in Triethylene Glycol Dimethyl Ether, Tetraethylene Glycol Dimethyl Ether, Dimethyl Carbonate, and Diethyl Carbonate at 298.15 K and 101.33 kPa Partial Pressure of Gas:	https://www.doi.org/10.1021/je020199q
KDB:	https://www.cheric.org/research/kdb/hcprop/showprop.php?cmpid=1957
Physical data for a process to separate krypton from air by selective absorption in an ionic liquid:	https://www.doi.org/10.1016/j.fluid.2015.06.037
Solubilities of gases in cycloethers. The solubility of 13 nonpolar gases in 1,1,1,3,3,3-hexafluoropropan-2-ol at 298.15 K and 101.33 kPa:	https://www.doi.org/10.1016/j.jct.2011.11.019
Solubilities of gases in fluoroorganic alcohols. Part II. Solubilities of noble gases in [water + 2,2,2-trifluoroethanol] at 298.15 K and 101.33 kPa:	https://www.doi.org/10.1016/j.jct.2018.12.037
Solubilities of gases in cycloethers. The solubility of 13 nonpolar gases in 1,1,1,3,3,3-hexafluoropropan-2-ol at 298.15 K and 101.33 kPa:	https://www.doi.org/10.1016/j.jct.2013.03.007
Solubilities of gases in room temperature ionic liquids: Measurements of enthalpy of sublimation of Ne, N2, O2, Ar, CO2, Kr, Xe, and H2O using a double paddle oscillator:	https://www.doi.org/10.1016/j.jct.2017.11.004
NIST Webbook:	http://webbook.nist.gov/cgi/cbook.cgi?ID=C7439909&Units=SI
Binary Diffusion Coefficient Data of Various Gas Systems Determined Using a Loschmidt Cell and Holographic Interferometry:	https://www.doi.org/10.1007/s10765-015-1981-5
The Yaws Handbook of Vapor Pressure:	https://www.sciencedirect.com/book/9780128029992/the-yaws-handbook-of-vapor-pressure

Legend

af:	Acentric Factor
affp:	Proton affinity
basg:	Gas basicity
dm:	Dipole Moment
hvapt:	Enthalpy of vaporization at a given temperature
ie:	Ionization energy
pc:	Critical Pressure
pt:	Triple Point Pressure
pvap:	Vapor pressure
rhoc:	Critical density
rhol:	Liquid Density
sgb:	Molar entropy at standard conditions (1 bar)
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

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