Xenon

Other names:	UN 2036
	UN 2591
	Xe
	Xeneisol 133A
	Xenomatic
	Xenon atom
Inchi:	InChI=1S/Xe
InchiKey:	FHNFHKCVQCLJFQ-UHFFFAOYSA-N
Formula:	Xe
SMILES:	[Xe]
Mol. weight [g/mol]:	131.29
CAS:	7440-63-3

Physical Properties

Property code	Value	Unit	Source
af	0.0080		KDB
affp	495.80 ± 8.40	kJ/mol	NIST Webbook
affp	499.60	kJ/mol	NIST Webbook
basg	478.10	kJ/mol	NIST Webbook
basg	474.50 ± 8.40	kJ/mol	NIST Webbook
dm	0.00	debye	KDB
ep	37.00	J/mol×K	NIST Webbook
ie	12.13 ± 0.00	eV	NIST Webbook
ie	12.12 ± 0.01	eV	NIST Webbook
ie	12.15 ± 0.03	eV	NIST Webbook
ie	12.12 ± 0.00	eV	NIST Webbook
ie	12.13 ± 0.00	eV	NIST Webbook
ie	12.09 ± 0.03	eV	NIST Webbook
ie	12.17	eV	NIST Webbook
ie	12.13	eV	NIST Webbook
ie	12.13 ± 0.00	eV	NIST Webbook
ie	12.13	eV	NIST Webbook
ie	12.13	eV	NIST Webbook
ie	12.03	eV	NIST Webbook
ie	12.13	eV	NIST Webbook
ie	12.13	eV	NIST Webbook
ie	12.13	eV	NIST Webbook

ie	12.12 ± 0.02	eV	NIST Webbook
pc	5840.00	kPa	KDB
pt	81.60 ± 0.01	kPa	NIST Webbook
pt	81.59	kPa	KDB
pt	81.65 ± 0.19	kPa	NIST Webbook
pt	61.66 ± 0.01	kPa	NIST Webbook
rhoc	1099.05 ± 1.09	kg/m3	NIST Webbook
sgb	169.69 ± 0.00	J/mol×K	NIST Webbook
tb	165.02 ± 0.05	K	NIST Webbook
tb	165.11	K	KDB
tc	289.73	K	KDB
tc	289.74 ± 0.02	K	NIST Webbook
tf	161.40	K	KDB
tt	161.40	K	KDB
tt	161.38 ± 0.02	K	NIST Webbook
tt	161.37 ± 0.05	K	NIST Webbook
tt	161.40 ± 0.30	K	NIST Webbook
tt	161.36 ± 0.20	K	NIST Webbook
vc	0.118	m3/kmol	KDB
zc	0.2860650		KDB
zra	0.28		KDB

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
hvapt	15.79	kJ/mol	53.50	Measurements of enthalpy of sublimation of Ne, N2, O2, Ar, CO2, Kr, Xe, and H2O using a double paddle oscillator
rhol	3060.00	kg/m3	165.00	KDB

Correlations

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

Coeff. A	1.41675e+01
Coeff. B	-1.61435e+03
Coeff. C	3.91000e+00
Temperature range (K), min.	161.40
Temperature range (K), max.	289.70

Sources

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
On the behaviour of solutions of xenon in liquid cycloalkanes: Solubility of xenon in cyclopentane:	https://www.doi.org/10.1016/j.fluid.2011.02.001
The Yaws Handbook of Vapor Pressure:	https://www.sciencedirect.com/book/9780128029992/the-yaws-handbook-of-vapor-pressure
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 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
Solubility of the Single Gases Methane and Xenon in the Ionic Liquid [hmim][Tf2N]:	https://www.doi.org/10.1021/je700319x
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
Solubilities of gases in cycloethers. The solubility of 13 nonpolar gases in 2,5-dimethyltetrahydrofuran at 273.15 to 303.15 K and 101.32 kPa:	https://www.doi.org/10.1016/j.jct.2018.12.037
NIST Webbook:	http://webbook.nist.gov/cgi/cbook.cgi?ID=C7440633&Units=SI
Solubility of gases in fluoroorganic alcohols. Part II. Solubilities of noble gases in (water + 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
KDB:	https://www.cheric.org/research/kdb/hcprop/showprop.php?cmpid=1967

Legend

af:	Acentric Factor
affp:	Proton affinity
basg:	Gas basicity
dm:	Dipole Moment
ep:	Protonation entropy at 298K
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