Decaborane(14)

Other names:	B10H14
	Boron hydride
	Boron hydride (B10H14)
	Decaborane
	Decaborane (B10H14)
	Decaborane(14),
	Tetradecahydrodecaborane
	nido-Decaborane(14)
Inchi:	InChI=1S/B10H14/c11-5-1-2-3(1,5)7(2,9(3,5,11)13-7)8(2)4(1,2)6(1,5)10(4,8,12-6)14-8/h1
InchiKey:	XAMMYYSPUSIWAS-UHFFFAOYSA-N
Formula:	B10H14
Mol. weight [g/mol]:	122.22
CAS:	17702-41-9

Physical Properties

Property code	Value	Unit	Source
ie	9.88 ± 0.03	eV	NIST Webbook; Lloyd, Lynaugh, et al., 1975
ie	10.30 ± 0.50	eV	NIST Webbook; Kaufman, Koski, et al., 1962
ie	11.00 ± 0.50	eV	NIST Webbook; Margrave, 1960
ie	10.15	eV	NIST Webbook; Roberts, 1974
tf	374.15	K	Jean-Claude Bradley Open Melting Point Dataset (2014, CC0)

Correlations

Information	Value
Property code	cpg
Equation	$Y = A + B \cdot t + C \cdot t^2 + D \cdot t^3 + E/t^2$, $t = T/1000$
Y unit	J/mol×K
Coeff. A	5.36309e+02
Coeff. B	2.41537e+01

Coeff. C	-4.68934e+00
Coeff. D	3.14674e-01
Coeff. E	-1.00891e+02
Reference	Chase, 1998
Comment	F=-351.7962, G=674.0759, H=47.27920; Data last reviewed in December, 1964
Temperature range (K), min.	1500.00
Temperature range (K), max.	6000.00

Information	Value
Property code	cpl
Equation	$Y = A + B \cdot t + C \cdot t^2 + D \cdot t^3 + E/t^2$, $t = T/1000$
Y unit	J/mol×K
Coeff. A	8.84498e+02
Coeff. B	-7.26543e+03
Coeff. C	2.38703e+04
Coeff. D	-2.29457e+04
Coeff. E	-9.66086e-01
Reference	Chase, 1998
Comment	F=-116.8984, G=2607.440, H=-7.133010; Data last reviewed in December, 1964
Temperature range (K), min.	371.93
Temperature range (K), max.	500.00

Information	Value
Property code	cpl
Equation	$Y = A + B \cdot t + C \cdot t^2 + D \cdot t^3 + E/t^2$, $t = T/1000$
Y unit	J/mol×K
Coeff. A	1.78582e+02
Coeff. B	4.78507e+02
Coeff. C	-1.27765e+02
Coeff. D	-1.80358e+01
Coeff. E	-9.12079e+00
Reference	Chase, 1998
Comment	F=-107.4794, G=272.3307, H=-7.133010; Data last reviewed in December, 1964
Temperature range (K), min.	500.00
Temperature range (K), max.	1500.00

Information	Value
Property code	cps
Equation	$Y = A + B \cdot t + C \cdot t^2 + D \cdot t^3 + E/t^2$, $t = T/1000$

Y unit	J/mol×K
Coeff. A	3.62006e+03
Coeff. B	-1.94846e+04
Coeff. C	4.12621e+04
Coeff. D	-2.83811e+04
Coeff. E	-4.52037e+01
Reference	Chase, 1998
Comment	F=-702.2400, G=8529.260, H=-28.86960; Data last reviewed in December, 1964
Temperature range (K), min.	298.00
Temperature range (K), max.	371.93

Information	Value
Property code	pvap
Equation	ln(Y) = A + B/(T + C)
Y unit	kPa
Coeff. A	8.59567e+00
Coeff. B	-1.18111e+03
Coeff. C	-2.24230e+02
Temperature range (K), min.	333.15
Temperature range (K), max.	436.95

Sources

The Yaws Handbook of Vapor Pressure: https://www.sciencedirect.com/book/9780128029992/the-yaws-handbook-of-vapor-pressure
Jean-Claude Bradley Open Melting Point Dataset (2014, CC0): https://figshare.com/articles/Jean_Claude_Bradley_Open_Melting_Point_Datset/1031637
NIST Webbook: http://webbook.nist.gov/cgi/cbook.cgi?ID=C17702419&Units=SI

Legend

cpg: Ideal gas heat capacity
cpl: Liquid phase heat capacity
cps: Solid phase heat capacity
ie: Ionization energy
pvap: Vapor pressure
tf: Normal melting (fusion) point

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