Bismuth

Inchi: InChI=1S/Bi
InchiKey: JCXGWMGPZLAOME-UHFFFAOYSA-N
Formula: Bi
SMILES: [Bi]
Mol. weight [g/mol]: 208.98
CAS: 7440-69-9

Physical Properties

Property code	Value	Unit	Source
ea	0.94	eV	NIST Webbook
ea	0.95 ± 0.01	eV	NIST Webbook
ea	0.94 ± 0.10	eV	NIST Webbook
ea	1.20 ± 0.25	eV	NIST Webbook
hfus	11.11	kJ/mol	Enthalpy of Fusion of Bismuth: A Certified Reference Material for Differential Scanning Calorimetry
ie	7.29 ± 0.00	eV	NIST Webbook
ie	7.29	eV	NIST Webbook
ie	7.29 ± 0.00	eV	NIST Webbook
ie	7.29 ± 0.00	eV	NIST Webbook
ie	7.20 ± 0.50	eV	NIST Webbook
ie	7.29	eV	NIST Webbook
tt	544.00	K	Experimentally determined thermodynamic properties of schapbachite (a-AgBiS2) below T = 700 K

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source

tconds	8.35	W/m×K	382.65	Thermal conductivity and interfacial energy of solid Bi solution in the Bi-Al-Zn eutectic system
tconds	8.12	W/m×K	418.70	Thermal conductivity and interfacial energy of solid Bi solution in the Bi-Al-Zn eutectic system

Correlations

Information	Value
Property code	pvap
Equation	ln(Pvp) = A + B/(T + C)
Coeff. A	1.61888e+01
Coeff. B	-2.07741e+04
Coeff. C	-4.17100e+01
Temperature range (K), min.	941.15
Temperature range (K), max.	1837.15

Sources

Experimental investigation and modeling of phase equilibria for Cu-Bi and Cu-Bi-Sb alloys in vacuum distillation:	https://www.doi.org/10.1016/j.fluid.2019.03.003
Determination of the standard molar enthalpies of formation and heat capacities of Bi2FeO39 (s) and Bi2Fe4O9 (s) by calorimetry:	https://www.doi.org/10.1016/j.jct.2017.11.015
Variations of thermal conductivity with temperature and composition of Zn in the Bi [X] at. % Zn-2 at. % Al alloys:	https://www.doi.org/10.1016/j.tca.2012.07.033
Enthalpies of mixing of liquid Bi Cu and Bi Cu Sn alloys relevant for lead-free soldering:	https://www.doi.org/10.1016/j.tca.2008.02.023
Phase equilibria and thermodynamics of the Bi Cu In ternary system:	https://www.doi.org/10.1016/j.tca.2009.09.004
Enthalpy of Fusion of Bismuth: A Certified Reference Material for Differential Scanning Calorimetry:	https://www.doi.org/10.1021/je049913p
Cheméo Relay (1.0):	
Gibbs energy of formation of bismuth(III) oxide:	https://www.doi.org/10.1016/j.tca.2016.02.006
The Yaws Handbook of Vapor Pressure:	https://www.sciencedirect.com/book/9780128029992/the-yaws-handbook-of-vapor-pressure
Standard thermodynamic properties of Bi2O3 by a solid-oxide electrolyte EMF technique:	https://www.doi.org/10.1016/j.jct.2014.04.002
Determination of thermodynamic properties of Bi2Mo3O12 (s), Bi2MoO6 (s) and Bi6Mo2O15 (s):	https://www.doi.org/10.1016/j.jct.2019.105886
Thermal conductivity and interfacial energy of solid Bi solution in the Bi-Al-Zn eutectic system:	https://www.doi.org/10.1016/j.fluid.2010.02.029
Determination of standard molar enthalpies of formation of Bi2Mo3O12 (s), Bi2MoO6 (s), Bi6Mo2O15 (s) and Bi6MoO12 (s) by solution calorimetry:	https://www.doi.org/10.1016/j.tca.2019.178401
Chemeo Relay (1.0 beta):	

Thermodynamic investigation of the moderately dilute liquid Bi Fe Sb alloys:	https://www.doi.org/10.1016/j.tca.2006.02.029
NIST Webbook:	http://webbook.nist.gov/cgi/cbook.cgi?ID=C7440699&Units=SI
Mixing enthalpies of liquid Bi-Ni and Ag-Bi-Ni alloys:	https://www.doi.org/10.1016/j.tca.2017.09.002
Experimentally determined thermodynamic properties of schaphachite (α-Ag8In2Se) below T = 700 K:	https://www.doi.org/10.1016/j.jct.2013.11.006
The measurement of thermal conductivity variation with temperature for Sn-20 wt.% In based lead-free ternary solders:	https://www.doi.org/10.1016/j.tca.2012.12.012

Legend

ea:	Electron affinity
hfus:	Enthalpy of fusion at standard conditions
ie:	Ionization energy
pvap:	Vapor pressure
tconds:	Solid thermal conductivity
tt:	Triple Point Temperature