

Nickel

Other names:	nickel element
Inchi:	InChI=1S/Ni
InchiKey:	PXHVJJICTQNCMI-UHFFFAOYSA-N
Formula:	Ni
SMILES:	[Ni]
Mol. weight [g/mol]:	58.69
CAS:	7440-02-0

Physical Properties

Property code	Value	Unit	Source
affp	737.00	kJ/mol	NIST Webbook
basg	714.10	kJ/mol	NIST Webbook
ea	1.16 ± 0.01	eV	NIST Webbook
ea	1.16 ± 0.00	eV	NIST Webbook
ea	1.16 ± 0.05	eV	NIST Webbook
ie	7.64	eV	NIST Webbook
ie	7.60 ± 0.20	eV	NIST Webbook
ie	7.63	eV	NIST Webbook
ie	7.61	eV	NIST Webbook
ie	7.64 ± 0.00	eV	NIST Webbook
ie	7.64	eV	NIST Webbook
ie	7.64	eV	NIST Webbook
ie	7.64	eV	NIST Webbook

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
hvapt	432.70	kJ/mol	298.00	Thermodynamic activity measurements in nickel-base industrial alloys and steels by Knudsen cell Mass spectrometry

Correlations

Information	Value
Property code	pvap
Equation	$\ln(P_{vp}) = A + B/(T + C)$
Coeff. A	1.81231e+01
Coeff. B	-4.11757e+04
Coeff. C	-1.38160e+02
Temperature range (K), min.	1783.15
Temperature range (K), max.	3184.15

Sources

Cheméo Relay (1.0):

Standard molar enthalpies of formation of nickel(II) 12-diketonates and thermal stability of RNi2 Laves phases: <https://www.doi.org/10.1016/j.jct.2006.08.004>

Synthesis, crystal structure and thermochemistry of nickel hydrogen cyanide complexes: <https://www.doi.org/10.1016/j.jct.2013.05.044>

Dynamic oxidation measurements in nickel-base industrial alloys and NiTiTiAl alloys: <https://www.doi.org/10.1016/j.tca.2013.03.007>

NIST Webbook Mass spectrometry: <http://webbook.nist.gov/cgi/cbook.cgi?ID=C7440020&Units=SI>

Cheméo Relay (1.0, beta):

Vaporization studies over (NiO + Ni2Te3O8) in the Ni-Te-O system by laser interferometry: <https://www.doi.org/10.1016/j.tca.2014.11.024>

Maximal enthalpies of liquid Fe and Ag-Bi alloys: <https://www.doi.org/10.1016/j.tca.2017.09.002>

Ag-Bi alloys: mass spectrometry: <https://www.doi.org/10.1016/j.tca.2007.04.004>

Interfaces in lead-free solder alloys: <https://www.doi.org/10.1016/j.tca.2005.02.005>

Enthalpy of formation of binary Ag Sn, Cu-Sn and Ni-Sn intermetallics: <https://www.doi.org/10.1016/j.tca.2012.01.024>

Thermodynamic properties of liquid silver alloys determined from emf measurements: <https://www.doi.org/10.1016/j.jct.2016.11.008>

Enthalpy of mixing of liquid systems for lead free soldering: The Ni-Sb-Sn system: <https://www.doi.org/10.1016/j.jct.2018.09.037>

Enthalpy of mixing of liquid Ni-Ti-Zr alloys at 1873 K: <https://www.sciencedirect.com/book/9780128029992/the-yaws-handbook-of-vapor-pressure>

Correlation between excess volume and thermodynamic functions of liquid Pb-Va, Fe, Cu and Ni binary systems: <https://www.doi.org/10.1016/j.tca.2018.11.009>

On the partial enthalpy of mixing of Nb in liquid Al: <https://www.doi.org/10.1016/j.jct.2004.04.001>

Thermochemical studies of three bis(O-alkyl-N-benzoylthiocarbamate)nickel(II) complexes: <https://www.doi.org/10.1016/j.jct.2004.04.009>

Standard molar enthalpies of formation of two crystalline <https://www.doi.org/10.1016/j.tca.2012.02.024>

Thermodynamic properties of liquid Ni-Sb-Sn alloys: <https://www.doi.org/10.1016/j.tca.2012.02.024>

Complexes:

Legend

affp:	Proton affinity
basg:	Gas basicity
ea:	Electron affinity
hvapt:	Enthalpy of vaporization at a given temperature
ie:	Ionization energy
pvap:	Vapor pressure

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