

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	7.60 ± 0.20	eV	NIST Webbook
ie	7.61	eV	NIST Webbook
ie	7.63	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
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

The Yaws Handbook of Vapor Pressure: <https://www.sciencedirect.com/book/9780128029992/the-yaws-handbook-of-vapor-pressure>

Mixing enthalpies of liquid Bi-Ni and Ag-Bi-Ni alloys: NIST Webbook: <https://www.doi.org/10.1016/j.tca.2017.09.002>

Standard molar enthalpies of formation of two crystalline phases: <http://webbook.nist.gov/cgi/cbook.cgi?ID=C7440020&Units=SI>

Thermodynamic properties of liquid silver-nickel alloys determined from vapor pressure studies: <https://www.doi.org/10.1016/j.jct.2004.04.009>

Vapor pressure studies over (NiO + Ni₂Te₃O₈) in the Ni-Te-O system by enthalpy of mixing of liquid systems for lead-free soldering: The Ni-Sn-Sb system: <https://www.doi.org/10.1016/j.tca.2005.02.005>

Thermodynamic stability of RNi₂ Laves phases: <https://www.doi.org/10.1016/j.tca.2014.11.024>

Thermodynamic activity measurements in nickel-base industrial alloys and correlations between molar volume and thermodynamic functions of liquid phase: <https://www.doi.org/10.1016/j.tca.2012.01.024>

Thermodynamic stability of RNi₂ Laves phases: <https://www.doi.org/10.1016/j.jct.2004.04.001>

Thermodynamic activity measurements in nickel-base industrial alloys and correlations between molar volume and thermodynamic functions of liquid phase: <https://www.doi.org/10.1016/j.jct.2013.05.044>

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Thermodynamic activity measurements in nickel-base industrial alloys and correlations between molar volume and thermodynamic functions of liquid phase: <https://www.doi.org/10.1016/j.jct.2018.09.037>

Thermodynamic activity measurements in nickel-base industrial alloys and correlations between molar volume and thermodynamic functions of liquid phase: <https://www.doi.org/10.1016/j.tca.2012.02.024>

Synthesis, crystal structure and thermochemistry of nickel hydrogen pyridine-2,6-dicarboxylate: <https://www.doi.org/10.1016/j.tca.2013.03.007>

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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