

neodymium

Inchi:	InChI=1S/Nd
InchiKey:	QEFYFXOXNSNQGX-UHFFFAOYSA-N
Formula:	Nd
SMILES:	[Nd]
Mol. weight [g/mol]:	144.24
CAS:	7440-00-8

Physical Properties

Property code	Value	Unit	Source
ie	5.53 ± 0.00	eV	NIST Webbook
ie	5.53	eV	NIST Webbook
ie	5.53 ± 0.00	eV	NIST Webbook
ie	5.53 ± 0.00	eV	NIST Webbook
ie	5.52 ± 0.00	eV	NIST Webbook
ie	5.53 ± 0.00	eV	NIST Webbook
ie	5.50 ± 0.10	eV	NIST Webbook
ie	6.50	eV	NIST Webbook
ie	5.49 ± 0.05	eV	NIST Webbook
ie	5.49 ± 0.02	eV	NIST Webbook
ie	5.50 ± 0.10	eV	NIST Webbook
ie	5.51 ± 0.02	eV	NIST Webbook

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cps	5.57	J/mol×K	10.04	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	5.56	J/mol×K	10.20	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation

cps	5.60	J/mol×K	10.39	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	5.69	J/mol×K	10.60	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	5.74	J/mol×K	10.81	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	5.81	J/mol×K	11.01	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	5.88	J/mol×K	11.21	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	5.95	J/mol×K	11.41	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	6.05	J/mol×K	11.63	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	6.14	J/mol×K	11.84	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	6.24	J/mol×K	12.03	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	6.34	J/mol×K	12.24	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation

cps	6.44	J/mol×K	12.44	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	6.57	J/mol×K	12.66	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	6.67	J/mol×K	12.86	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	6.80	J/mol×K	13.06	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	6.92	J/mol×K	13.26	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	7.05	J/mol×K	13.47	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	7.21	J/mol×K	13.68	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	7.14	J/mol×K	13.77	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	7.30	J/mol×K	13.88	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	7.44	J/mol×K	14.10	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation

cps	7.62	J/mol×K	14.28	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	7.75	J/mol×K	14.48	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	7.88	J/mol×K	14.69	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	8.03	J/mol×K	14.92	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	8.20	J/mol×K	15.12	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	8.29	J/mol×K	15.23	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	8.38	J/mol×K	15.32	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	8.71	J/mol×K	15.77	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	9.12	J/mol×K	16.30	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	9.61	J/mol×K	16.83	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation

cps	10.08	J/mol×K	17.36	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	10.46	J/mol×K	17.88	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	10.52	J/mol×K	18.09	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	10.87	J/mol×K	18.42	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	11.22	J/mol×K	18.95	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	11.63	J/mol×K	19.48	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	11.62	J/mol×K	20.09	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	11.44	J/mol×K	20.59	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	10.32	J/mol×K	21.10	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	10.49	J/mol×K	21.61	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation

cps	11.13	J/mol×K	22.17	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	11.25	J/mol×K	22.39	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	13.57	J/mol×K	26.70	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	15.80	J/mol×K	31.01	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	17.93	J/mol×K	35.30	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	19.66	J/mol×K	39.60	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	21.19	J/mol×K	43.89	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	22.54	J/mol×K	48.19	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	23.47	J/mol×K	52.48	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	24.17	J/mol×K	56.77	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation

cps	24.73	J/mol×K	61.06	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	25.19	J/mol×K	65.35	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	25.58	J/mol×K	69.65	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	25.83	J/mol×K	73.95	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	25.98	J/mol×K	78.25	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	26.16	J/mol×K	82.54	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	26.23	J/mol×K	86.85	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	26.36	J/mol×K	91.14	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	26.37	J/mol×K	95.45	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	26.49	J/mol×K	99.73	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation

cps	26.61	J/mol×K	104.00	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	26.65	J/mol×K	108.30	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	26.74	J/mol×K	112.60	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	26.72	J/mol×K	116.90	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	26.78	J/mol×K	121.20	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	26.72	J/mol×K	125.50	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	26.67	J/mol×K	129.80	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	26.77	J/mol×K	134.00	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	26.81	J/mol×K	138.30	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	26.97	J/mol×K	142.60	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation

cps	26.95	J/mol×K	146.80	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	27.04	J/mol×K	151.10	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	27.01	J/mol×K	155.40	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	26.93	J/mol×K	159.70	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	26.99	J/mol×K	164.00	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	27.12	J/mol×K	168.30	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	27.08	J/mol×K	172.60	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	27.20	J/mol×K	176.90	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	27.26	J/mol×K	181.20	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	27.14	J/mol×K	185.50	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation

cps	27.14	J/mol×K	189.80	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	27.14	J/mol×K	194.10	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	27.21	J/mol×K	198.30	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	27.44	J/mol×K	202.60	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	27.36	J/mol×K	206.90	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	27.35	J/mol×K	211.20	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	27.48	J/mol×K	215.50	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	27.48	J/mol×K	219.80	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	27.64	J/mol×K	224.10	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	27.65	J/mol×K	228.40	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation

cps	27.61	J/mol×K	232.70	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	27.52	J/mol×K	237.00	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	27.50	J/mol×K	241.30	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	27.95	J/mol×K	245.60	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	27.71	J/mol×K	249.80	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	27.92	J/mol×K	254.10	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	27.80	J/mol×K	258.40	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	27.77	J/mol×K	262.70	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	27.72	J/mol×K	267.00	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	28.15	J/mol×K	271.30	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation

cps	27.76	J/mol×K	275.60	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	28.06	J/mol×K	279.90	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	28.25	J/mol×K	284.20	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	28.11	J/mol×K	288.50	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	28.27	J/mol×K	292.80	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	28.29	J/mol×K	297.10	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation
cps	28.22	J/mol×K	301.50	Calorimetric Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation

Correlations

Information	Value
Property code	pvap
Equation	$\ln(P_{vp}) = A + B/(T + C)$
Coeff. A	1.39931e+01
Coeff. B	-2.96672e+04
Coeff. C	-1.76030e+02
Temperature range (K), min.	1595.45
Temperature range (K), max.	3336.15

Sources

Enthalpy of Formation of Ln ₂ O ₂ CO ₃ II (Ln = La, Nd, Eu) and Thermodynamics of Decomposition Equilibria:	https://www.doi.org/10.1016/j.tca.2012.09.036
NIST Webbook	http://webbook.nist.gov/cgi/cbook.cgi?ID=C7440008&Units=SI
The Yaws Handbook of Vapor Pressure:	https://www.sciencedirect.com/book/9780128029992/the-yaws-handbook-of-vapor-pressure
Thermodynamic stability of RNi ₂ Laves phases:	https://www.doi.org/10.1016/j.jct.2013.05.044
Thermodynamic study on complex of neodymium with glycine:	https://www.doi.org/10.1016/j.jct.2014.11.012
Investigation in the variation of Gibbs energy of formation of RE ₆ UO ₁₂ (RE = La, Nd, Sm, Eu, Gd, Dy, Ho, Er, Yb, Lu):	https://www.doi.org/10.1016/j.jct.2019.06.030
Thermodynamic Measurement of Nd ₂ F ₃ System by Double Knudsen Cell Mass Spectrometry	https://www.doi.org/10.1016/j.tca.2010.12.023
Study of AlNd ₂ : Heat capacity; Standard Gibbs Energy of Formation:	https://www.doi.org/10.1016/j.tca.2011.08.025

Legend

cps:	Solid phase heat capacity
ie:	Ionization energy
pvap:	Vapor pressure

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