

Aluminum fluoride

Other names:	Aluminum trifluoride aluminium fluoride
Inchi:	InChI=1S/Al.3FH/h;3*1H/q+3;;;/p-3
InchiKey:	KLZUFWVZNOTSEM-UHFFFAOYSA-K
Formula:	AlF3
SMILES:	F[AlH3](F)F
Mol. weight [g/mol]:	83.98
CAS:	7784-18-1

Physical Properties

Property code	Value	Unit	Source
hfs	-1510.40 ± 1.30	kJ/mol	NIST Webbook
ie	15.45 ± 0.02	eV	NIST Webbook
ss	66.50 ± 0.50	J/molxK	NIST Webbook

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
psub	1.05e-04	kPa	956.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	1.32e-04	kPa	960.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride

psub	1.32e-04	kPa	960.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	2.09e-04	kPa	968.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	2.09e-04	kPa	970.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	2.09e-04	kPa	974.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	2.09e-04	kPa	975.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	2.63e-04	kPa	977.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	3.16e-04	kPa	982.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride

psub	3.16e-04	kPa	982.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	3.63e-04	kPa	985.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	3.63e-04	kPa	987.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	4.17e-04	kPa	991.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	4.68e-04	kPa	991.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	4.68e-04	kPa	994.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	5.75e-04	kPa	998.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride

psub	6.31e-04	kPa	1001.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	6.76e-04	kPa	1002.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	7.24e-04	kPa	1007.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	8.13e-04	kPa	1010.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	9.33e-04	kPa	1013.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	9.33e-04	kPa	1014.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	1.12e-03	kPa	1018.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride

psub	1.26e-03	kPa	1022.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	1.26e-03	kPa	1023.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	1.41e-03	kPa	1026.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	1.55e-03	kPa	1029.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	1.82e-03	kPa	1033.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	1.86e-03	kPa	1036.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	2.19e-03	kPa	1040.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride

psub	2.19e-03	kPa	1040.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	2.51e-03	kPa	1043.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	2.75e-03	kPa	1048.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	3.16e-03	kPa	1052.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	3.24e-03	kPa	1052.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	3.24e-03	kPa	1053.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	3.89e-03	kPa	1059.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride

psub	4.47e-03	kPa	1062.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	4.36e-03	kPa	1063.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	5.01e-03	kPa	1066.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	5.37e-03	kPa	1070.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	5.75e-03	kPa	1071.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	6.31e-03	kPa	1074.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	6.92e-03	kPa	1078.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride

psub	8.13e-03	kPa	1083.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	8.32e-03	kPa	1083.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	8.91e-03	kPa	1086.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	9.33e-03	kPa	1089.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	0.01	kPa	1093.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	0.01	kPa	1097.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	0.01	kPa	1098.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride

psub	0.01	kPa	1100.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	0.01	kPa	1104.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	0.02	kPa	1107.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	0.02	kPa	1109.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	0.02	kPa	1112.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride
psub	0.02	kPa	1113.00	Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride

Correlations

Information	Value
Property code	pvap
Equation	$\ln(P_{vp}) = A + B/(T + C)$
Coeff. A	2.67960e+01

Coeff. B	-3.45002e+04
Coeff. C	6.48000e+00
Temperature range (K), min.	1017.15
Temperature range (K), max.	1549.15

Sources

Surface Tension of the NaF + AlF ₃ + AlPO ₄ and NaF + AlF ₃ + NaVO ₃ Molten Systems	https://www.doi.org/10.1021/je901079k
NIST Webbook:	http://webbook.nist.gov/cgi/cbook.cgi?ID=C7784181&Units=SI
The Yaws Handbook of Vapor Pressure:	https://www.sciencedirect.com/book/9780128029992/the-yaws-handbook-of-vapor-pressure
Temperatures of Primary Crystallization and Density of the KF + NaF-AlF ₃ -Based Electrolyte:	https://www.doi.org/10.1021/acs.jced.8b00157
Surface Tension and Density in the KF + NaF-AlF ₃ -Based Electrolyte:	https://www.doi.org/10.1021/je2005825
Torsion Vapor Pressures and Sublimation Enthalpies of Aluminum Trifluoride and Aluminum Trichloride:	https://www.doi.org/10.1021/je8007167

Legend

hfs:	Solid phase enthalpy of formation at standard conditions
ie:	Ionization energy
psub:	Sublimation pressure
pvap:	Vapor pressure
ss:	Solid phase molar entropy at standard conditions

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