PROPERTIES OF LIQUID HELIUM

The following data were obtained by a critical evaluation of all existing experimental measurements on liquid helium, using a fitting procedure described in the reference. All values refer to liquid helium at saturated vapor pressure; temperatures are on the ITS–90 scale. Several properties show a singularity at the lambda point (2.1768 K).

p : vapor pressure
ρ : density
C_s : molar heat capacity
$\Delta_{vap}H$: molar enthalpy of vaporization
ε : relative permittivity (dielectric constant)
σ : surface tension
α : coefficient of linear expansion
η : viscosity
λ : thermal conductivity

Reference

Donnelly, R. J., and Barenghi, C. F., *J. Phys. Chem. Reference Data,* 27, 1217, 1998.

T/K	p/kPa	ρ/g cm^{-3}	C_s/J mol^{-1}K^{-1}	$\Delta_{vap}H$/J mol^{-1}	ε	σ /mN m^{-1}	$10^3\alpha$/K^{-1}	η/μPa s	λ /W cm^{-1}K^{-1}
0.0		0.1451397	0	59.83	1.057255		0.000		
0.5		0.1451377	0.010	70.24	1.057254	0.3530	0.107		
1.0	0.01558	0.1451183	0.415	80.33	1.057246	0.3471	0.309	3.873	
1.5	0.4715	0.1451646	4.468	89.35	1.057265	0.3322	–2.36	1.346	
2.0	3.130	0.1456217	21.28	93.07	1.057449	0.3021	–12.2	1.468	
2.5	10.23	0.1448402	9.083	92.50	1.057135	0.2623	39.4	3.259	0.1497
3.0	24.05	0.1412269	9.944	94.11	1.055683	0.2161	61.5	3.517	0.1717
3.5	47.05	0.1360736	12.37	92.84	1.053615	0.1626	88.7	3.509	0.1868
4.0	81.62	0.1289745	15.96	87.00	1.050770	0.1095	129	3.319	0.1965
4.5	130.3	0.1188552	21.8	75.86	1.046725	0.0609	211		
5.0	196.0		44.7	47.67		0.0157			