

D2 Target Density in Run68

2019/06/20

Liquid D₂ density vs temp.

90

Chapter 5

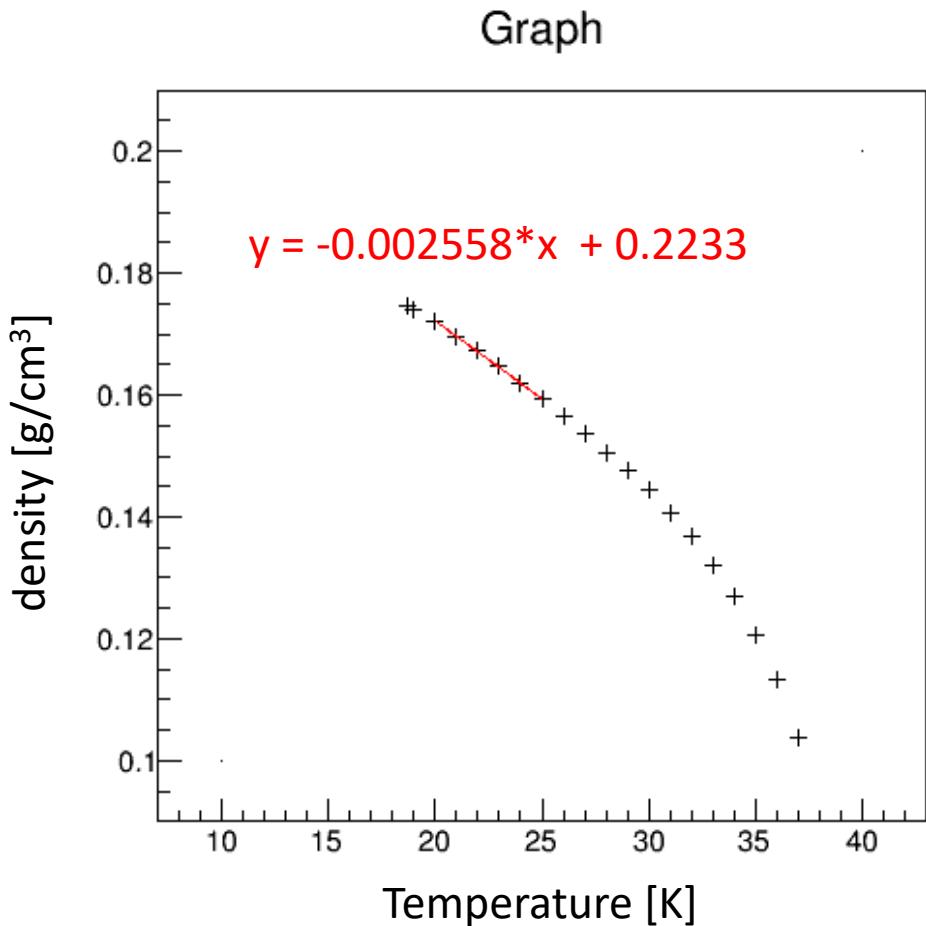


Table 5.24. Thermodynamic Properties of Saturated Deuterium

Temperature (K)	Pressure (MPa)	Density (kg/m ³)	Enthalpy (kJ/kg)	Entropy (kJ/kg-K)	C _v (kJ/kg-K)	C _p (kJ/kg-K)	Velocity of sound (m/s)
18.710	0.019462	174.68	-165.72	1.4187	3.485	5.567	1085.
19.000	0.022087	0.49652	159.43	18.784	2.610	4.337	257.
20.000	0.033264	0.55422	161.18	18.614	2.581	4.295	259.
21.000	0.048254	0.59799	167.20	18.065	2.480	4.154	267.
22.000	0.067757	167.24	-145.87	2.3736	4.136	6.794	919.
23.000	0.092491	164.64	-138.68	2.6861	4.433	7.366	883.
24.000	0.12319	1.9432	184.29	16.725	2.219	3.880	287.
25.000	0.16060	161.96	-130.92	3.0060	4.670	7.847	859.
26.000	0.20548	2.5022	189.37	16.352	2.161	3.871	293.
27.000	0.25864	159.22	-122.72	3.3297	4.839	8.240	843.
28.000	0.32092	3.1693	193.99	16.002	2.125	3.920	298.
29.000	0.39326	156.42	-114.16	3.6546	4.944	8.584	830.
30.000	0.47670	3.9619	198.07	15.667	2.111	4.041	303.
31.000	0.57235	105.26	3.9790	4.993	8.022	818.	
32.000	0.68138	201.48	15.341	2.126	4.253	307.	
33.000	0.80480	-95.990	4.3023	4.997	9.295	802.	
34.000	0.94318	6.0191	204.09	15.018	2.172	4.588	311.
35.000	1.0961	147.57	-86.298	4.6254	4.965	9.746	781.
36.000	1.2619	7.3461	205.75	14.692	2.257	5.087	313.
37.000	1.4374	144.32	-76.107	4.9505	4.906	10.32	755.
38.000	1.6168	8.9251	206.29	14.360	2.386	5.814	315.
38.340	1.6653	140.77	-65.307	5.2817	4.830	11.10	723.
		10.807	205.54	14.018	2.569	6.853	316.
		13.053	-53.717	5.6247	4.743	12.18	683.
		13.053	203.38	13.661	2.813	8.299	316.
		132.18	-41.095	5.9854	4.661	13.68	635.
		15.742	199.72	13.286	3.125	10.24	316.
		126.82	-27.232	6.3676	4.609	15.60	577.
		18.983	194.51	12.890	3.510	12.71	315.
		22.936	187.63	12.467	3.974	15.93	314.
		113.44	4.3179	7.1923	4.762	21.48	437.
		27.897	178.52	12.002	4.527	21.34	309.
		103.80	24.025	7.6874	5.140	40.12	338.
		34.581	165.05	11.451	5.212	41.70	297.
		75.227	70.197	8.8649	6.991	42.80	254.
		46.455	136.27	10.581	6.263	-61.20	268.

Liquid D₂ temperature in Run68

- Temperature

Target cell thermometer

PtCo (CHINO R800-6) ; Tolerance; ± 0.5 K

- Date: 2016/06/05~18

- run#: 49~361

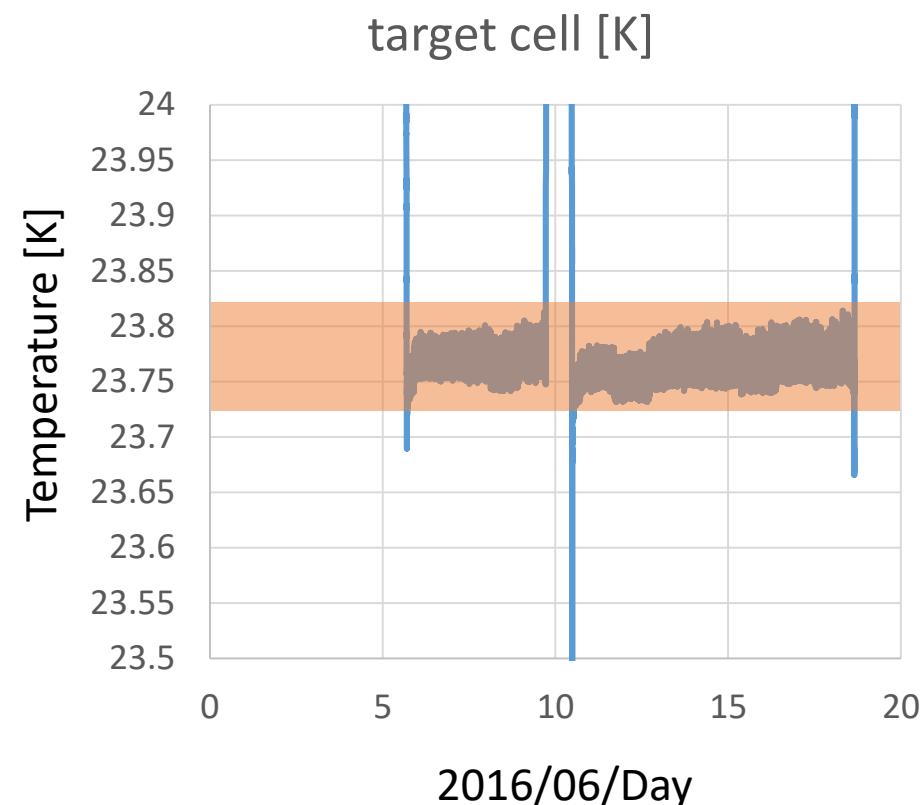
- Temp.: 23.725~23.825 [K]

- Fluctuation $\sim \pm 0.05$ [K]

- fluc + tolerance = $\sim \pm 0.55$ [K]

- Density: 0.1624 [g/cm³]

- ± 0.0014 [g/cm³]



$$4.850 \times 10^{23}$$
$$\pm 4.392 \times 10^{21} \text{ } [\text{cm}^2] \text{ } \sim 1\%$$