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LAMPIRAN

Lampiran 1 Tabel Sifat Air dan Uap Jenuh

TABLE A–3

Properties of saturated water

Temp. T, °C	Saturation Pressure P_{sat}, kPa	Density ρ, kg/m³ Liquid	Density ρ, kg/m³ Vapor	Enthalpy of Vaporization h_{fg}, kJ/kg	Specific Heat c_p, J/kg · K Liquid	Specific Heat c_p, J/kg · K Vapor	Thermal Conductivity k, W/m · K Liquid	Thermal Conductivity k, W/m · K Vapor	Dynamic Viscosity μ, kg/m · s Liquid	Dynamic Viscosity μ, kg/m · s Vapor	Prandtl Number Pr Liquid	Prandtl Number Pr Vapor	Volume Expansion Coefficient β, 1/K Liquid
0.01	0.6113	999.8	0.0048	2501	4217	1854	0.561	0.0171	1.792×10^{-3}	0.922×10^{-5}	13.5	1.00	-0.068×10^{-3}
5	0.8721	999.9	0.0068	2490	4205	1857	0.571	0.0173	1.519×10^{-3}	0.934×10^{-5}	11.2	1.00	0.015×10^{-3}
10	1.2276	999.7	0.0094	2478	4194	1862	0.580	0.0176	1.307×10^{-3}	0.946×10^{-5}	9.45	1.00	0.733×10^{-3}
15	1.7051	999.1	0.0128	2466	4186	1863	0.589	0.0179	1.138×10^{-3}	0.959×10^{-5}	8.09	1.00	0.138×10^{-3}
20	2.339	998.0	0.0173	2454	4182	1867	0.598	0.0182	1.002×10^{-3}	0.973×10^{-5}	7.01	1.00	0.195×10^{-3}
25	3.169	997.0	0.0231	2442	4180	1870	0.607	0.0186	0.891×10^{-3}	0.987×10^{-5}	6.14	1.00	0.247×10^{-3}
30	4.246	996.0	0.0304	2431	4178	1875	0.615	0.0189	0.798×10^{-3}	1.001×10^{-5}	5.42	1.00	0.294×10^{-3}
35	5.628	994.0	0.0397	2419	4178	1880	0.623	0.0192	0.720×10^{-3}	1.016×10^{-5}	4.83	1.00	0.337×10^{-3}
40	7.384	992.1	0.0512	2407	4179	1885	0.631	0.0196	0.653×10^{-3}	1.031×10^{-5}	4.32	1.00	0.377×10^{-3}
45	9.593	990.1	0.0655	2395	4180	1892	0.637	0.0200	0.596×10^{-3}	1.046×10^{-5}	3.91	1.00	0.415×10^{-3}
50	12.35	988.1	0.0831	2383	4181	1900	0.644	0.0204	0.547×10^{-3}	1.062×10^{-5}	3.55	1.00	0.451×10^{-3}
55	15.76	985.2	0.1045	2371	4183	1908	0.649	0.0208	0.504×10^{-3}	1.077×10^{-5}	3.25	1.00	0.484×10^{-3}
60	19.94	983.3	0.1304	2359	4185	1916	0.654	0.0212	0.467×10^{-3}	1.093×10^{-5}	2.99	1.00	0.517×10^{-3}
65	25.03	980.4	0.1614	2346	4187	1926	0.659	0.0216	0.433×10^{-3}	1.110×10^{-5}	2.75	1.00	0.548×10^{-3}
70	31.19	977.5	0.1983	2334	4190	1936	0.663	0.0221	0.404×10^{-3}	1.126×10^{-5}	2.55	1.00	0.578×10^{-3}
75	38.58	974.7	0.2421	2321	4193	1948	0.667	0.0225	0.378×10^{-3}	1.142×10^{-5}	2.38	1.00	0.607×10^{-3}
80	47.39	971.8	0.2935	2309	4197	1962	0.670	0.0230	0.355×10^{-3}	1.159×10^{-5}	2.22	1.00	0.653×10^{-3}
85	57.83	968.1	0.3536	2296	4201	1977	0.673	0.0235	0.333×10^{-3}	1.176×10^{-5}	2.08	1.00	0.670×10^{-3}
90	70.14	965.3	0.4235	2283	4206	1993	0.675	0.0240	0.315×10^{-3}	1.193×10^{-5}	1.96	1.00	0.702×10^{-3}
95	84.55	961.5	0.5045	2270	4212	2010	0.677	0.0246	0.297×10^{-3}	1.210×10^{-5}	1.85	1.00	0.716×10^{-3}
100	101.33	957.9	0.5978	2257	4217	2029	0.679	0.0251	0.282×10^{-3}	1.227×10^{-5}	1.76	1.00	0.750×10^{-3}
110	143.27	950.6	0.8263	2230	4229	2071	0.682	0.0262	0.255×10^{-3}	1.261×10^{-5}	1.58	1.00	0.798×10^{-3}
120	198.53	943.4	1.121	2203	4244	2120	0.683	0.0275	0.232×10^{-3}	1.296×10^{-5}	1.44	1.00	0.858×10^{-3}
130	270.1	934.6	1.496	2174	4263	2177	0.684	0.0288	0.213×10^{-3}	1.330×10^{-5}	1.33	1.01	0.913×10^{-3}
140	361.3	921.7	1.965	2145	4286	2244	0.683	0.0301	0.197×10^{-3}	1.365×10^{-5}	1.24	1.02	0.970×10^{-3}
150	475.8	916.6	2.546	2114	4311	2314	0.682	0.0316	0.183×10^{-3}	1.399×10^{-5}	1.16	1.02	1.025×10^{-3}
160	617.8	907.4	3.256	2083	4340	2420	0.680	0.0331	0.170×10^{-3}	1.434×10^{-5}	1.09	1.05	1.145×10^{-3}
170	791.7	897.7	4.119	2050	4370	2490	0.677	0.0347	0.160×10^{-3}	1.468×10^{-5}	1.03	1.05	1.178×10^{-3}
180	1,002.1	887.3	5.153	2015	4410	2590	0.673	0.0364	0.150×10^{-3}	1.502×10^{-5}	0.983	1.07	1.210×10^{-3}
190	1,254.4	876.4	6.388	1979	4460	2710	0.669	0.0382	0.142×10^{-3}	1.537×10^{-5}	0.947	1.09	1.280×10^{-3}
200	1,553.8	864.3	7.852	1941	4500	2840	0.663	0.0401	0.134×10^{-3}	1.571×10^{-5}	0.910	1.11	1.350×10^{-3}
220	2,318	840.3	11.60	1859	4610	3110	0.650	0.0442	0.122×10^{-3}	1.641×10^{-5}	0.865	1.15	1.520×10^{-3}
240	3,344	813.7	16.73	1767	4760	3520	0.632	0.0487	0.111×10^{-3}	1.712×10^{-5}	0.836	1.24	1.720×10^{-3}
260	4,688	783.7	23.69	1663	4970	4070	0.609	0.0540	0.102×10^{-3}	1.788×10^{-5}	0.832	1.35	2.000×10^{-3}
280	6,412	750.8	33.15	1544	5280	4835	0.581	0.0605	0.094×10^{-3}	1.870×10^{-5}	0.854	1.49	2.380×10^{-3}
300	8,581	713.8	46.15	1405	5750	5980	0.548	0.0695	0.086×10^{-3}	1.965×10^{-5}	0.902	1.69	2.950×10^{-3}
320	11,274	667.1	64.57	1239	6540	7900	0.509	0.0836	0.078×10^{-3}	2.084×10^{-5}	1.00	1.97	
340	14,586	610.5	92.62	1028	8240	11,870	0.469	0.110	0.070×10^{-3}	2.255×10^{-5}	1.23	2.43	
360	18,651	528.3	144.0	720	14,690	25,800	0.427	0.178	0.060×10^{-3}	2.571×10^{-5}	2.06	3.73	
374.14	22,090	317.0	317.0	0	—	—	—	—	0.043×10^{-3}	4.313×10^{-5}			

Note 1: Kinematic viscosity ν and thermal diffusivity α can be calculated from their definitions, $\nu = \mu/\rho$ and $\alpha = k/\rho c_p = \nu/\text{Pr}$. The temperatures 0.01°C, 100°C, and 374.14°C are the triple-, boiling-, and critical-point temperatures of water, respectively. The properties listed above (except the vapor density) can be used at any pressure with negligible error except at temperatures near the critical-point value.

Note 2: The unit kJ/kg · °C for specific heat is equivalent to kJ/kg · K, and the unit W/m · °C for thermal conductivity is equivalent to W/m · K.

Source: Viscosity and thermal conductivity data are from J. V. Sengers and J. T. R. Watson, *Journal of Physical and Chemical Reference Data* 15 (1986), pp. 1291–1322. Other data are obtained from various sources or calculated.

Lampiran 2 data tanggal 13 agustus 2020 kapasitas 100%

No	Tanggal & Waktu	RADIASI (W/m^2)	KEC.ANGIN (m/s)	T GLASS IN PCM (degC)	T GLASS OUT PCM (degC)	T RUANG PCM (degC)	T WATER PCM (degC)	T ABSORBER FIN (degC)	T FIN BAWAH PCM (degC)	T PCM (degC)	T WOOD PCM (degC)	T LINGKUNGAN (degC)	VOLUME AIR DISTILASI (ml)
1	8/13/2020 7:00	67	0.7	30.3	30	30	29.2	30.1	30.5	31.8	28.1	25.9	0
2	8/13/2020 8:00	296	0.6	41.6	40.8	37.1	31.6	32.7	31.6	31.4	32.8	28.8	0
3	8/13/2020 9:00	460	1.3	53.2	48.9	43.2	36.8	38.3	35.8	33.7	33.1	30.3	0
4	8/13/2020 10:00	674	0.8	61.8	57.6	48.3	42.9	44.5	40.8	36.8	36.8	31.6	0
5	8/13/2020 11:00	764	0.3	67.4	62.6	53.6	50.5	52.1	47.1	41.7	38.8	34	25
6	8/13/2020 12:00	823	1.2	69	63	58	56	57.3	52	47.1	37.7	31.6	50
7	8/13/2020 13:00	770	1.8	65.5	55.6	57.1	58.6	59.5	55.2	50.6	35.5	34.2	75
8	8/13/2020 14:00	731	1.2	71	66.4	62.2	61.1	61.9	57.3	53.1	41.2	36.3	100
9	8/13/2020 15:00	595	3.8	59.5	52.8	59.1	61.5	61.8	58.3	54.9	34.2	35.2	130
10	8/13/2020 16:00	408	2.1	52.9	50.3	56.5	57.6	58.3	57.2	55.5	33.2	35.2	155
11	8/13/2020 17:00	197	2.1	46.7	44.2	52	54.5	54.9	55.5	55.2	32.1	33.5	153
12	8/13/2020 18:00	5	1.1	42.6	38	47.2	50.8	51.5	53.4	54.8	30.7	30.6	150
13	8/13/2020 19:00	0	0	41	37.6	44.8	48.1	49	51.3	53.7	31	30.1	125
14	8/13/2020 20:00	0	0.5	38.8	35.7	42.5	46.3	46.8	49	51.6	29.6	29.2	120

Lampiran 3 Data tanggal 14 agustus 2020 kapasitas 65%

No	Tanggal & Waktu	RADIASI (W/m^2)	KEC.ANGIN (m/s)	T GLASS IN PCM (degC)	T GLASS OUT PCM (degC)	T RUANG PCM (degC)	T WATER PCM (degC)	T ABSORBER FIN (degC)	T FIN BAWAH PCM (degC)	T PCM (degC)	T WOOD PCM (degC)	T LINGKUNGAN (degC)	VOLUME AIR DISTILASI (ml)
1	8/14/2020 9:00	472	1.3	47.2	50.3	43.1	38.6	37.2	35.6	33.9	32.6	37	0
2	8/14/2020 10:00	642	0.7	55.8	55.5	50	47	45.9	42.4	38.7	33.9	37.9	0
3	8/14/2020 11:00	954	1.9	57.4	53.5	54.7	54.2	53.7	49	44	32.4	39.4	50
4	8/14/2020 12:00	962	0.9	52.7	50.1	51.8	53.1	52.6	50.6	48	32.3	37.9	70
5	8/14/2020 13:00	818	2.5	64.8	60.4	58.8	58.9	57.9	54.1	51.1	35.7	41.6	80
6	8/14/2020 14:00	745	2.6	63.7	57.5	60.3	60.9	60.3	56.9	53.5	35	40.9	110
7	8/14/2020 15:00	641	2.8	60.9	56.1	59.8	61.1	60.4	57.7	55.3	35.2	42.9	130
8	8/14/2020 16:00	163	1.1	49.9	44.9	51.5	55.6	55.2	56	55.6	32	37.8	125
9	8/14/2020 17:00	41	2	44.4	39	46.3	51.2	50.6	53.2	54.5	31.8	34.8	90
10	8/14/2020 17:38	6	0.9	43.3	38.1	45.5	49.5	48.9	51.8	53.8	31.8	35.1	70

Lampiran 4 data tanggal 15 agustus 2020 kapasitas 25%

No	Tanggal & Waktu	RADIASI (W/m^2)	KEC.ANGIN (m/s)	T GLASS IN PCM (degC)	T GLASS OUT PCM (degC)	T RUANG PCM (degC)	T WATER PCM (degC)	T ABSORBER FIN (degC)	T FIN BAWAH PCM (degC)	T PCM (degC)	T WOOD PCM (degC)	T LINGKUNGAN (degC)	VOLUME AIR DISTILASI PCM (ml)
1	8/15/2020 7:00	67	0.7	29.1	27.7	29.2	28.9	30.5	28.9	29.2	26.5	25	0
2	8/15/2020 8:00	296	0.6	30.5	29.2	29.8	29.6	30.6	30.1	30	27.7	25.3	0
3	8/15/2020 9:00	460	1.3	52.8	47.9	43.6	38.2	37.8	34.9	32.8	34.9	31.6	0
4	8/15/2020 10:00	674	0.8	61.7	55.7	51.9	48	48.3	43.2	39	38.3	32.5	50
5	8/15/2020 11:00	764	0.3	70.2	61.2	59.4	55.5	56.4	50	45.1	40.4	33.4	60
6	8/15/2020 12:00	823	1.2	73.2	67.2	63.5	61.4	62.6	55.7	51.4	42.4	36.6	90
7	8/15/2020 13:00	811	1.5	71.9	63.3	64.7	63.7	64.4	58.4	54.9	41.2	34.7	120
8	8/15/2020 14:00	731	1.2	63.4	53.2	61.6	60.6	61.6	58.4	56.3	38	33.6	173
9	8/15/2020 15:00	595	3.8	59.2	51.9	58.9	59.1	60.1	58.1	57.1	39.6	35.1	130
10	8/15/2020 16:00	408	2.1	53.9	49.6	55.8	56.9	57.2	57.1	57	41	34.4	100
11	8/15/2020 17:00	197	2.1	46.8	42.9	50.9	52.6	53.4	55.2	56.3	38.6	33.8	85
12	8/15/2020 18:00	5	1.1	41.5	36.9	45.4	49.2	49.9	52.9	55.4	35.6	31.4	75
13	8/15/2020 19:00	0	0	36.3	32.9	40.4	44.1	45.5	48.8	52.4	32.1	30.1	70
14	8/15/2020 20:00	0	0.5	31.9	28.8	38.1	42.7	43.3	44.7	51.5	31.2	29.2	40

DOKUMENTASI

Gambar 1. Proses pencairan *PCM (paraffin wax)*

Gambar 2. Pengecetan dan Pengaplikasian Silikon pada Pelat *Absorber fin*

Gambar 3. Pemasangan Kabel Termokopel pada Data Logger

Gambar 4. Tampilan Data Logger GL820 saat pengambilan data

Gambar 5. Pengambilan Data

Gambar 6. Proses Pengujian

Gambar 7. Evaporasi Air Laut terjadi di Kaca Penutup Alat Distilasi

Gambar 8. Kaca Penutup Alat Distilasi yang telah dipasangi termokopel

Gambar 9. Pengambilan Data jam 19.00 WITA