Appendix 3A

S. No.	PCM	Melting point (°C)	Latent heat of fusion (kJ/kg)	Group[a]
1	Docasyl bromide	40	201	II
2	Caprylone	40	259	II
3	Phenol	41	120	III
4	Heptadecanone	41	201	II
5	1-Cyclohexylooctadecane	41	218	II
6	4-Heptadacanone	41	197	II
7	p-Joluidine	43.3	167	–
8	Cyanamide	44	209	II
9	Methyl eicosanate	45	230	II
10	3-Heptadecanone	48	218	II
11	2-Heptadecanone	48	218	II
12	Hydrocinnamic acid	48.0	118	–
13	Cetyl alcohol	49.3	141	–
14	a-Nepthylamine	50.0	93	–
15	Camphene	50	238	III
16	O-Nitroaniline	50.0	93	–
17	9-Heptadecanone	51	213	II
18	Thymol	51.5	115	–
19	Methyl behenate	52	234	II
20	Diphenyl amine	52.9	107	–
21	p-Dichlorobenzene	53.1	121	–
22	Oxolate	54.3	178	–
23	Hypophosphoric acid	55	213	II
24	O-Xylene dichloride	55.0	121	–
25	b-Chloroacetic acid	56.0	147	III
26	Chloroacetic acid	56	130	III
27	Nitro naphthalene	56.7	103	–
28	Trimyristin	33–57	201–213	I
29	Heptaudecanoic acid	60.6	189	II
30	a-Chloroacetic acid	61.2	130	–
31	Bee wax	61.8	177	II
32	Glycolic acid	63.0	109	–
33	p-Bromophenol	63.5	86	–
34	Azobenzene	67.1	121	–
35	Acrylic acid	68.0	115	–
36	Dinto toluent (2,4)	70.0	111	–
37	Phenylacetic acid	76.7	102	–

S. No.	PCM	Melting point (ºC)	Latent heat of fusion (kJ/kg)	Group[a]
38	Thiosinamine	77.0	140	–
39	Bromcamphor	77	174	–
40	Durene	79.3	156	–
41	Benzylamine	78.0	174	–
42	Methyl brombrenzoate	81	126	–
43	Eladic acid	47	218	I
44	Lauric acid	49	178	II
45	Pentadecanoic acid	52.5	178	–
46	Tristearin	56	191	I
47	Myristic acid	58	199	I
48	Palmatic acid	55	163	I
49	Stearic acid	69.4	199	I
50	Acetamide	81	241	I
51	Paraffin wax with 21 no. carbon atoms	40.2	200	II
52	Paraffin wax with 22 no. carbon atoms	44.0	249	II
53	Paraffin wax with 23 no. carbon atoms	47.5	232	II
54	Paraffin wax with 24 no. carbon atoms	50.6	255	II
55	Paraffin wax with 25 no. carbon atoms	49.4	238	II
56	Paraffin wax with 26 no. carbon atoms	56.3	256	II
57	Paraffin wax with 27 no. carbon atoms	58.8	236	II
58	Paraffin wax with 28 no. carbon atoms	61.6	253	II
59	Paraffin wax with 29 no. carbon atoms	63.4	240	II
60	Paraffin wax with 30 no. carbon atoms	65.4	251	II
61	Paraffin wax with 31 no. carbon atoms	68.0	242	II
62	Paraffin wax with 32 no. carbon atoms	69.5	170	II
63	Paraffin wax with 33 no. carbon atoms	73.9	268	II
64	Paraffin wax with 34 no. carbon atoms	75.9	269	II
65	Polyglycol E6000	66	190.0	–
66	Biphenyl	71	119.2	–
67	Propionamide	79	168.2	–
68	Naphthalene	80	147.7	–
69	67.1 % Naphthalene + 32.9 % benzoic acid	67	123.4	–
70	Methyl-12 hydroxy-stearate	42–43	120–126	–
71	Glycerol tripalmitate	58.5	185.9	–
72	Glycerol tristearate	63.5	149.4	–
73	Ethyleneglycol distearate	64.5	212.7	–
74	Galactitol hexapalmitate	47.8	251.1	–
75	Tetradecyl tridecanoate	40.0	207.9	–

S. No.	PCM	Melting point (ºC)	Latent heat of fusion (kJ/kg)	Group[a]
76	Tetradecyl pentadecanoate	45.4	214.8	–
77	Tetradecyl heptadecanoate	46.7	217.2	–
78	Tetradecyl nonadecanoate	50.2	203.2	–
79	Tetradecyl tetradecanoate (myristyl myristate)	41.6	210.4	–
80	Tetradecyl hexadecanoate (myrsityl palmitate)	48.0	213.9	–
81	Tetradecyl octadecanoate (myristyl stearate)	49.6	221.8	–
82	Tetradecyl eicosanoate (myristyl arcihidate)	52.8	201.3	–
83	Tridecylic acid	41.4	154	–
84	Margaric acid	60	172.2	–
85	Nonadecylic acid	67	192	–
86	Heneicosylic acid	73–74	193	–
87	Tricosylic acid	79	212	–

***** Group I: most promising; group II: promising; group III: less promising; –: insufficient data.

Appendix 4A

$$e1 = \frac{I\alpha_g}{M1}, e2 = \frac{h_{con,ga}}{M1}$$

$$e3 = \frac{h_{rad,gs}}{M1}, e4 = \frac{h_{rad,pg}}{M1}$$

$$e5 = \frac{h_{con,fg}}{M1},$$

$$M1 = h_{rad,pg} + h_{con,fg} + h_{con,ga} + h_{rad,gs}$$

$$M2 = M1\left(h_{rad,pg} + h_{con,pf} + k_p/z_p\right) - \left(h_{rad,pg}\right)^2$$

$$c1 = (M1I\tau_g\alpha_g + h_{rad,pg}I\alpha_g)/M2$$

$$c2 = (M1h_{\ con,pf} + h_{rad,pg}h_{con,fg})/M2$$

$$c3 = h_{rad,pg}h_{con,ga}/M2$$

$$c4 = h_{rad,pg}h_{rad,gs}/M2$$

$$c5 = M1k_p/M2z_p$$

$$d1 = c1h_{con,pf} + e1h_{con,fg} + c1e4h_{con,fg}$$

$$d2 = h_{con,pf}c3 + h_{con,fg}e2 + Ue + h_{con,fg}e4c3$$

$$d3 = h_{con,pf}\ c4 + h_{con,fg}e3 + h_{con,fg}e4c4$$

$$d4 = h_{con,pf}c5 + h_{con,fg}e4c5$$

List of Publications

These publications are the outcomes of the present research.

Journals

[1] Brahma, B., Narzary, R., & Baruah, D. C. (2020). Acetamide for latent heat storage: Thermal stability and metal corrosivity with varying thermal cycles. *Renewable Energy*, *145*, 1932-1940. (UGC care listed Journal)

[2] Brahma, B., Shukla, A. K., & Baruah, D. C. (2023). Design and performance analysis of solar air heater with phase change materials. *Journal of Energy Storage*, *61*, 106809. (UGC care listed Journal)

International conference

[1] FAST/2019/PP-21, Barkhang Brahma, Debendra Chandra Baruah. Technology Intervention on Solar Dryer Through Latent Heat Storage. *International Conference on FUTURE ASPECTS OF SUSTAINABLE TECHNOLOGIES*, 11th – 12th March 2019. <http://centrallibrary.cit.ac.in/doc/conference_proceedings/fast2019.pdf>