



RETEST 16-231829 to 16-231830 Clima Down Temperature Regulation Report

27 December 2016

Company: Hangzhou Samsung Down Products Co., Ltd
IDFL # 16-231829 to 16-231830

Sample ID:

16-231829: 90% Regular White Duck Down
16-231830: Blended Clima Fiber with Duck Down
60% Regular White Duck Down (90% Duck Down)
40% Clima Fiber

BRIEF DESCRIPTION OF PROCESS:

The samples were conditioned overnight in standard laboratory conditions.

- A 30 gram representative sample of both the regular down and the blended Clima Fiber down were placed in a 24 cm by 14 cm cloth bag.
- Temperature probes were secured in the middle of each of the samples inside the cloth bag.
- The samples were placed in a 19°C environment until the temperature inside the sample reached 19 °C.
- The samples were then immediately placed into a 35°C environment and a temperature reading was conducted every minute until the sample reached 35°C.
- The samples were then brought back into the 19°C environment where a temperature reading was conducted every minute until the sample reached 19°C.

RESULTS:

See Page 2-7 for temperature readings at each minute interval. See Page 8 for a chart representation of data.

CONCLUSIONS:

This experiment shows that there is a difference in the ability of the 16-231830 (Clima Down) versus the 16-231829 (regular down) to regulate temperature. The highlighted regions on the chart on Page 8 illustrate a steadier change in temperature going from 19°C environment to a 35°C environment and vice versa versus the 16-23129 (Regular Down). This result is what one would expect with the presence of PCM in the Clima Down since PCM has the ability to absorb excessive heat as the temperature rises and dispense that heat when the temperature drops.

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Time (min)	Temperature (Celsius)	
	16-231829 (Regular Down)	16-231830 (Clima Down)
0	19	19
1	20.1	19.9
2	21.3	20.7
3	22.5	21.3
4	23.6	21.8
5	24.5	22.2
6	25.2	22.5
7	25.7	22.8
8	26.1	23.1
9	26.5	23.3
10	26.8	23.5
11	27	23.7
12	27.2	23.8
13	27.4	24
14	27.5	24.1
15	27.6	24.2
16	27.7	24.3
17	27.8	24.5
18	27.9	24.7
19	28	24.9
20	28.1	25
21	28.2	25.2
22	28.2	25.4
23	28.3	25.5
24	28.4	25.7
25	28.6	25.8
26	28.8	25.9
27	28.9	26.1
28	29.1	26.2

Time (min)	Temperature (Celsius)	
	16-231829 (Regular Down)	16-231830 (Clima Down)
29	29.2	26.3
30	29.3	26.4
31	29.4	26.5
32	29.5	26.6
33	29.6	26.7
34	29.6	26.8
35	29.7	26.8
36	29.8	26.9
37	29.8	27
38	29.9	27.1
39	30.1	27.3
40	30.4	27.4
41	30.5	27.5
42	30.7	27.7
43	30.8	27.8
44	30.9	27.9
45	31	27.9
46	31.1	28
47	31.2	28.1
48	31.3	28.2
49	31.3	28.2
50	31.4	28.3
51	31.4	28.4
52	31.5	28.4
53	31.5	28.5
54	31.6	28.6
55	31.7	28.8
56	31.7	28.9
57	31.8	29.1

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Time (min)	Temperature (Celsius)	
	16-231829 (Regular Down)	16-231830 (Clima Down)
58	31.8	29.3
59	31.9	29.4
60	31.9	29.5
61	32	29.6
62	32.1	29.7
63	32.2	29.8
64	32.2	29.9
65	32.3	30
66	32.3	30
67	32.4	30.1
68	32.4	30.1
69	32.5	30.2
70	32.6	30.2
71	32.6	30.3
72	32.7	30.2
73	32.8	30.3
74	32.9	30.4
75	32.9	30.4
76	32.9	30.5
77	33	30.7
78	33.2	30.8
79	33.2	31
80	33.3	31.1
81	33.3	31.2
82	33.4	31.3
83	33.4	31.4
84	33.5	31.5
85	33.5	31.6
86	33.6	31.6

Time (min)	Temperature (Celsius)	
	16-231829 (Regular Down)	16-231830 (Clima Down)
87	33.6	31.7
88	33.7	31.7
89	33.8	31.8
90	33.9	31.8
91	33.9	31.9
92	33.9	31.9
93	34	32
94	34	32.1
95	34.1	32.2
96	34.1	32.2
97	34.1	32.3
98	34.2	32.4
99	34.2	32.5
100	34.3	32.6
101	34.3	32.7
102	34.3	32.7
103	34.4	32.8
104	34.5	32.8
105	34.5	32.9
106	34.6	33
107	34.6	33
108	34.6	33.1
109	34.7	33.2
110	34.7	33.3
111	34.8	33.4
112	34.8	33.4
113	34.8	33.4
114	34.9	33.5
115	34.9	33.5

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Time (min)	Temperature (Celsius)	
	16-231829 (Regular Down)	16-231830 (Clima Down)
116	34.9	33.6
117	34.9	33.6
118	35	33.7
119	35	33.7
120	35	33.8
121	35	33.8
122	35	33.9
123	35	33.9
124	35	33.9
125	35	34
126	35	34
127	35	34.1
128	35	34.1
129	35	34.1
130	35	34.2
131	35	34.2
132	35	34.2
133	35	34.3
134	35	34.3
135	35	34.4
136	35	34.4
137	35	34.4
138	35	34.5
139	35	34.5
140	35	34.5
141	35	34.5
142	35.1	34.6
143	35.1	34.6
144	35.1	34.6

Time (min)	Temperature (Celsius)	
	16-231829 (Regular Down)	16-231830 (Clima Down)
145	35.1	34.7
146	35.1	34.7
147	35.1	34.7
148	35.1	34.8
149	35.1	34.8
150	35.1	34.8
151	35.1	34.8
152	35.1	34.9
153	35.1	34.9
154	35.1	34.9
155	35.1	35
156	35.1	35
157	35.1	35
158	35.1	35
159	35.1	35
160	35.1	35
161	33.8	33.5
162	32.1	32.3
163	30.5	31
164	29.5	30
165	28.5	29.2
166	27.7	28.4
167	26.9	27.9
168	26.2	27.5
169	25.7	27.1
170	25	26.8
171	24.5	26.5
172	24	26.2
173	23.6	26

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Time (min)	Temperature (Celsius)	
	16-231829 (Regular Down)	16-231830 (Clima Down)
174	23.2	25.8
175	22.9	25.6
176	22.6	25.3
177	22.4	25.1
178	22.2	24.9
179	22.1	24.7
180	22	24.6
181	21.9	24.4
182	21.8	24.3
183	21.7	24.2
184	21.6	24.1
185	21.5	24
186	21.5	23.9
187	21.4	23.8
188	21.4	23.7
189	21.3	23.6
190	21.3	23.5
191	21.3	23.4
192	21.2	23.3
193	21.2	23.2
194	21.1	23.1
195	21.1	23
196	21	22.9
197	21	22.8
198	21	22.8
199	20.9	22.7
200	20.9	22.7
201	20.8	22.6
202	20.8	22.6

Time (min)	Temperature (Celsius)	
	16-231829 (Regular Down)	16-231830 (Clima Down)
203	20.8	22.5
204	20.7	22.5
205	20.7	22.4
206	20.7	22.4
207	20.6	22.3
208	20.6	22.3
209	20.5	22.2
210	20.5	22.2
211	20.4	22.1
212	20.4	22
213	20.4	22
214	20.3	21.9
215	20.3	21.9
216	20.3	21.8
217	20.2	21.8
218	20.2	21.7
219	20.2	21.7
220	20.1	21.6
221	20.1	21.5
222	20	21.4
223	20	21.4
224	19.9	21.3
225	19.9	21.3
226	19.9	21.3
227	19.9	21.2
228	19.8	21.2
229	19.8	21.1
230	19.8	21.1
231	19.7	21

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Time (min)	Temperature (Celsius)	
	16-231829 (Regular Down)	16-231830 (Clima Down)
232	19.7	20.9
233	19.7	20.8
234	19.7	20.8
235	19.7	20.7
236	19.6	20.7
237	19.6	20.6
238	19.6	20.6
239	19.6	20.6
240	19.5	20.5
241	19.5	20.5
242	19.5	20.4
243	19.5	20.4
244	19.5	20.4
245	19.4	20.3
246	19.4	20.3
247	19.4	20.3
248	19.3	20.2
249	19.3	20.2
250	19.3	20.1
251	19.3	20.1
252	19.2	20.1
253	19.2	20.1
254	19.2	20
255	19.2	20
256	19.2	20
257	19.1	20
258	19.1	19.9
259	19.1	19.9
260	19.1	19.9

Time (min)	Temperature (Celsius)	
	16-231829 (Regular Down)	16-231830 (Clima Down)
261	19.1	19.8
262	19.1	19.8
263	19	19.8
264	19	19.8
265	19	19.7
266	19	19.7
267	19	19.7
268	19	19.7
269	19	19.6
270	19	19.6
271	19	19.6
272	19	19.5
273	19	19.5
274	19	19.5
275	19	19.5
276	19	19.4
277	19	19.4
278	19	19.3
279	19	19.3
280	19	19.3
281	19	19.2
282	19	19.2
283	19	19.2
284	19	19.1
285	19	19.1
286	19	19.1
287	19	19.1
288	19	19
289	19	19

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Time (min)	Temperature (Celsius)	
	16-231829 (Regular Down)	16-231830 (Clima Down)
290	19	19
291	19	19
292	19	19
293	19	19
294	19	19
295	19	19
296	19	19
297	19	19
298	19	19
299	19	19
300	19	19

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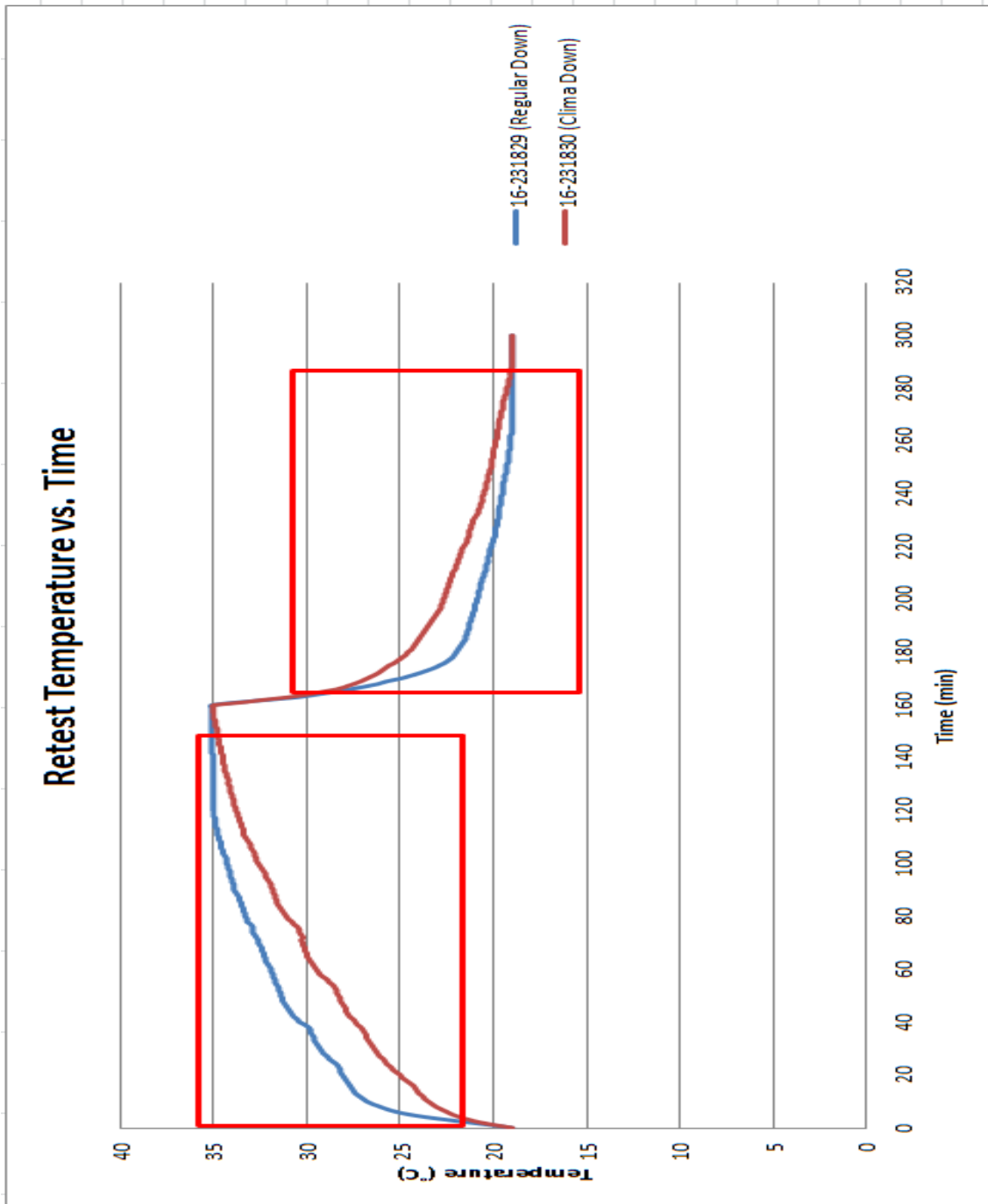
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