



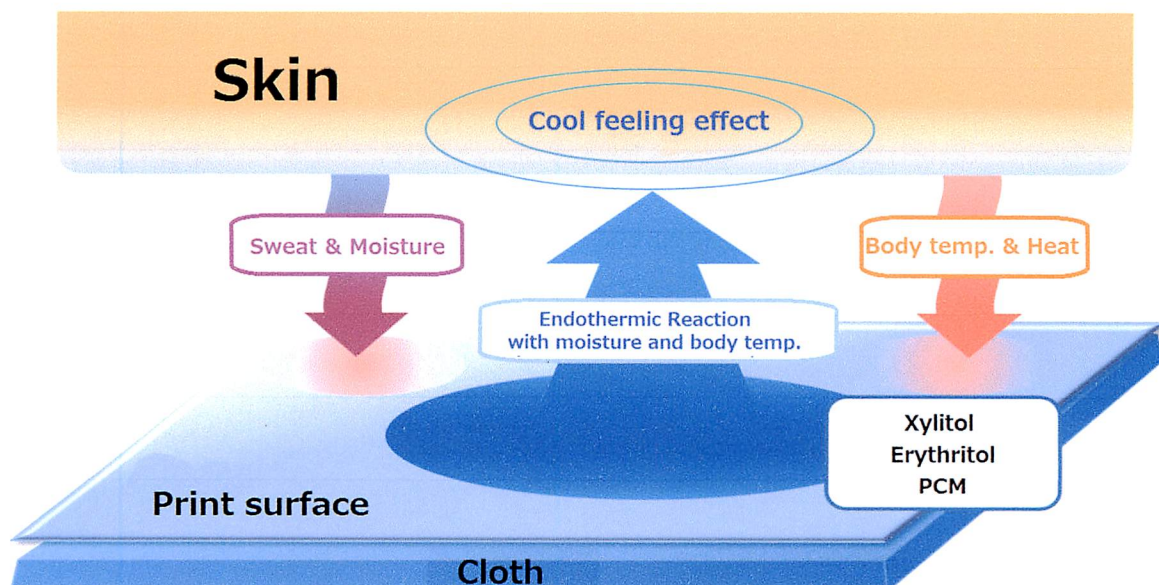
コンフォートクール

Cool feeling effect via printing PARACOOOL IDP

PARACOOOL IDP is a newly developed textile treatment agent to be used via printing, containing such sugar alcohols as erythritol and xylitol, and paraffin microcapsules as a phase change material (PCM). **PARACOOOL IDP** makes use of endothermic reaction of such materials with water and heat. That is, **PARACOOOL IDP** printed cloth may give cooling feeling effect for wearers as it contacts to your insensible perspiration, sweat, and body with temperatures.

PARACOOOL IDP may help you creating so-called "COMFORT COOL" cloth.

Mechanism of "cool feeling effect" by PARACOOOL IDP



Properties

Appearance : Milky white liquid

pH range : 5.0 ± 1.0



<Recipe and conditions>

PARACOOOL IDP	100
PARACAT PF-5	2
PARASOL V-20	2.4
Total (parts)	104.4

Cloth: 100% cotton broad

Conditions: printing → drying $110^{\circ}\text{C} \times 3 \text{ min.}$ → Curing $130^{\circ}\text{C}^* \times 2 \text{ min.}$

※ Curing should be carried out with temperatures below 130°C , otherwise the main component might be sublimated.

<Cool feeling effect by contact: q-max> [$\text{J}/\text{cm}^2 \cdot \text{sec}$]

	Blank	PARACOOOL IDP printed cloth	
		Initial	HL-10
q-max*	0.16	0.374	0.238

*Normally cool feeling effect by contact is achieved by 0.2 or more q-max

[Test method]

KES-F7 Precise and Fast Thermal Property-Measuring Instrument Thermo Lab II

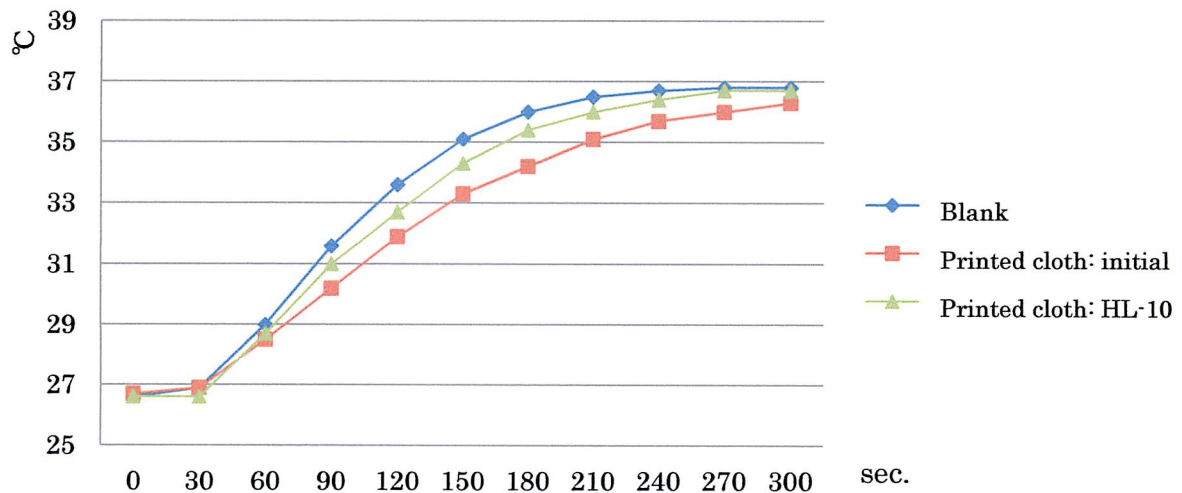
Conditions in test room: $20^{\circ}\text{C} \times 65\% \text{ RH}$

Difference in temperature between sample and detector: 20°C

Laundry condition: JIS L-0217 No. 103 method

<Cool feeling effect performance test: Ohara method>

(Time: sec.)	Temp. (°C)				
	Blank	Printed cloth			
		Initial	Gap to blank	HL-10	Gap to blank
0	26.6	26.7	0.1	26.6	0
30	26.9	26.9	0	26.6	0
60	29.0	28.5	-0.5	26.7	-0.3
90	31.6	30.2	-1.6	31.0	-1.0
120	33.6	31.9	-2.0	32.7	-1.5
150	35.1	33.3	-1.8	34.3	-1.0
180	36.0	34.2	-1.8	35.4	-0.6
210	36.5	35.1	-1.0	36.0	-0.5
240	36.7	35.7	-1.0	36.4	-0.3
270	36.8	36.0	-0.8	36.7	-0.1
300	36.8	36.3	-0.5	36.7	-0.1
Max. difference	—	-2.0		-1.5	



[Test method]

1. Fold 10 cm × 10 cm sample in half to wrap thermo sensor, and place it in specified conditions (25 ~ 27°C × 40% RH) until the temperature is stabilized.
2. Transfer the sample to thermo-hygrostat under the conditions of 35°C × 90% R, and measure the variation of temperatures every 30 seconds.
(The process simulated that a wearer went outside on a hot summer day after stayed in a well air-conditioned room, then sweated)

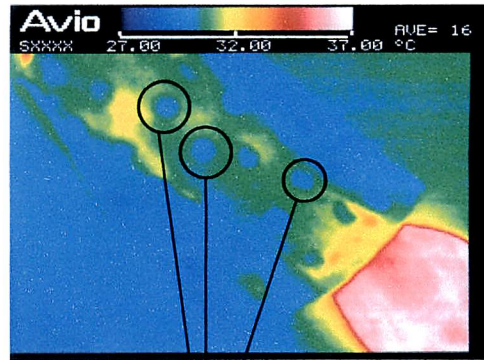
Laundry condition : JIS L-0217 Method No. 103

<Cool feeling effect on printed cloth visible by thermographic image>

After sample left at room temp. (27°C×40%RH) Then sample placed on one's arm



Printed spots



Printed spots

It is visible that printed spots offered lower temperature, and the subject was able to feel coolness as the temperature was kept lower when placing on his/her arm.

<Precautions>

1. Preliminary tests should be carried out to check the effect to handling touch and color fastness as well as compatibility with other chemicals because the result may vary depending on conditions to be adopted.
2. Printed cloth should be packed in dry state. If it is packed in wet state (soon after pressing a steam iron), it might be whitened.
3. The product is stable under normal condition. It is ideal to store it at cool (temperatures between 5°C and 35°C) dark place.

The information herein offered is based on the best of our knowledge at present. However, we are not obliged to guarantee the matter, as the result of application may vary depending on conditions adopted. Preliminary tests are, therefore, recommended in all cases. Please refer to MSDS regarding handling of the products.

Comparison of the infrared image of the short-sleeved shirt

Untreated

Treated

