



Test report

odor management – sniff test – socks (2/16/2005)

goals

Determine the odor management properties of Cocona® yarn in socks made by Gold Toe Brands using a sniff test.

background

Odor management can be measured by using human judges to determine the level of odor in different products. This method is one of the best ways to determine the effectiveness of odor management fabrics in products worn by humans. The problems with this test are in the ability of the subject to generate odors that could be generated by all in the human population and to have judges who have odor sensitivities representative of the human population. It isn't possible to test enough subjects and have enough judges. With this knowledge we tried to use a manageable set of judges and subjects.

socks

*Sock 1 -Cocona® yarn produced by O'Mara. Athletic women's crew sock with the bottom foot portion being sewn partially with Cocona® yarn.

*Sock 2 – Regular Gold Toe Brand athletic women's crew sock with a gray bottom, same yarns used in Sock 1 without the Cocona® yarn.

experimental

A sniff test was performed using a set of judges. The panel agreed on an odor scale of 0 to 5, (see Table 1). The panel stated an odor level of 1 would be where the garment can be placed up to the nose and no offensive odor was found and an odor level of 5 would be an offensive odor detected at arms length from the nose. An average of the judges' score was reported.

Table 1: Odor Scale

Odor Score	Level of Odor
0	None or negligible
1	Odor present, not offensive, against nose, strong sniff
2	Odor present, unpleasant, against nose, strong sniff
3	Odor present, offensive, close nose, normal breathing
4	Odor present, offensive, arms length from nose, strong sniff
5	Odor present, offensive, arms length from nose, normal breathing

The socks used were Gold Toe Brand white athletic crew sock with a gray foot bed. The wear trial was performed with one foot wearing a Cocona®

(Sock 1) enhanced Gold Toe Brand sock and the other foot wearing the Gold Toe Brand Sock 2. The essential oil used and the sniffing performed



results

1. Socks

The results from the sock trials are shown in Table 7. The wicking of the sock was not tested in this wear trial. In all cases the odor detected in Sock 1 was always less than Sock 2. The highest odor level generated in Sock 1 was 2, whereas the highest odor in Sock 2 was 5. All the wearers loved the socks and requested a pair of Sock 1. This testing was performed after only one machine home wash.

Table 2: Gold Toe Brand Socks

Test	Control Sock 2	Cocona® Sock 1
1	4.25	2.0
2	2.75	0.4
3	2.0	1.3
4	2.3	1.3
5	1.75	0.25
6	5.0	2.0
Average	3.0	1.2

conclusions

The overall conclusion is when using Cocona® yarn in socks the odor detected on the socks was dramatically reduced. Combining all the results together shows the control socks were rated at 3.0 (offensive odor detected close to the nose with normal breathing) and the Cocona® socks were rated at 1.2 (an odor was detected when sock was close to the nose and a strong sniff was used). It should be noted only two of the testers (1 & 6) generated extreme amounts of odor, and in both these cases the judges all agreed the odor was substantially reduced in the Cocona® sock. Averaging the extreme odor testers show a result of 4.6 control sock and 2.0 for the Cocona® sock. This is a substantial difference in the odor detect.