



## Sheep CRC Practical Wisdom Notes

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## Wools of 18 microns and finer provide next-to-skin comfort

By David Tester, Sheep CRC

### Key points

- Fibre diameter is the single most important wool characteristic affecting comfort in knitted fabrics.
- Wool with a mean fibre diameter under 18 microns guarantees comfort.
- A move away from commonly used 18–19 micron wools is required.

### Introduction

Some consumers still perceive wool as too itchy and uncomfortable for next-to-skin wear because many garments are made from raw wool not ideal for this purpose.

Unfortunately, spinners and knitters have had no direct measure of next-to-skin comfort and have relied on older research suggesting wool up to 19 microns would provide comfort, however, negative consumer feedback continues to cast doubt on the accuracy of this specification.

Providing objectively measured incentive to use finer wools in next-to-skin applications should improve both the performance of wool as well as increase demand for finer wools in this growing product category.

### How can comfort be measured?

The Sheep CRC has developed a measurement device, the Wool ComfortMeter, which provides the most accurate prediction of the prickle propensity of knitted wool fabric. The Wool ComfortMeter results were validated with a series of wearer trials with garments worn under controlled conditions to determine their comfort.

An average wearer prickle rating of 2 was found to be the threshold under which garments were considered comfortable for next-to-skin wear. An average wearer prickle rating of 4 was associated with extreme discomfort by many wearers. While a number of factors were found to influence comfort, fibre diameter was, by far, the most important.

All knitted fabrics in the trial made from wools finer than 18 microns were rated less than 2. Most, but not all, garments made from wool above 18 microns were above 2, which meant that on average a level of prickle could be detected.

Wool above 18 microns provides variable results and the likelihood of greater levels of prickle increases as the average fibre diameter increases, however, some fabrics in this category are suitable for next-to-skin wear and can be identified by testing with the Wool ComfortMeter. The Wool ComfortMeter is now for sale through AWTA and their global distributors with a commercial service being offered by test houses in China, England and Australia.

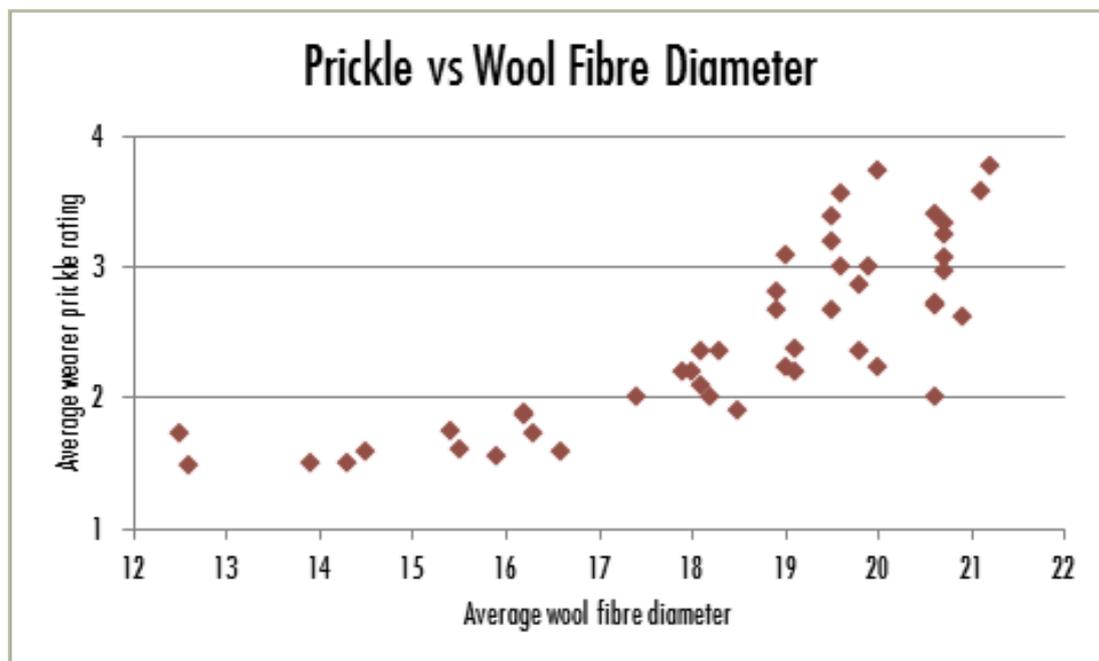


Figure 1. The relationship between fibre diameter and wearer prickle rating. Wools finer than 18 microns are considered comfortable.

### What other factors affect comfort?

For wools above 18 microns the effects of spinning, knitting and finishing have a significant influence on the final fabric performance, with some of these wools able to achieve a desirable comfort level.

Raw wool specifications or processing that reduces the average fibre length in the yarn is likely to make the prickle performance worse; with shorter fibres there are more fibre ends in the yarn. Processing that reduces the average fibre length of the fibres protruding from the fabric is also likely to make prickle worse because shorter fibres prick more as they do not bend as easily as longer fibres.

The second most important factor for predicting the average wearer prickle rating of lightweight knitted fabrics is the count of the yarn. Fabrics with finer yarns produced more comfortable garments but the effect is only 5% of that of mean fibre diameter.

### Take home messages

- Spinners and knitters aiming to guarantee next-to-skin comfort in knitted fabrics should use raw wool of 18 microns or finer.
- Knitters can use the Wool ComfortMeter to test fabrics made from wools to see whether they will provide suitable wearer comfort.
- Wool producers should be prepared for higher demand for wools of 18 microns or finer in the future, although current production is likely to meet short-term demand.

### Further information

- The Wool ComfortMeter: [www.woolcomfortmeter.com.au](http://www.woolcomfortmeter.com.au)
- Australian Wool Testing Authority: <http://www.awtawooltesting.com.au/index.php/en/contact>

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