



CRC

for

Premium

Quality

Wool

Fibre Effects in Processing (Summary)

Produced for the CRC for Premium Quality Wool undergraduate program by;
Dr. P. Auer and Ms. L. Osborne, The University of New South Wales.



Fibre Effects in Scouring

- **Diameter (decrease)**
 - higher detergent concentration required
 - more surface area
 - more entanglement possible
 - more fibre / fibre contacts
- **Crimp Frequency (increase)**
 - associated with diameter decrease
 - more entanglement
 - more fibre / fibre contacts
- **Crimp Definition (increase)**
 - less entanglement

CRC

for

Premium

Quality

Wool



Fibre Effects in Worsted Carding

- **Fibre breakage**
 - SCOURED wool properties MOST important
 - finer fibres break more easily
 - longer fibres have more chance to break
 - weathered fibres usually break
- **Card Waste (fibre loss)**
 - finer, longer fibres break more
 - weathered fibres contribute to card waste
- **Nep Formation**
 - finer fibres are more flexible
 - crimp may be secondary effect

CRC

for

Premium

Quality

Wool



Fibre Effects in Gilling

- **Fibre length**
 - ratch settings
 - maximum draft
- **Fibre diameter**
 - loadings
 - maximum draft

CRC

for

Premium

Quality

Wool



Fibre Effects in Combing

- **Fibre diameter**
 - comb speed
 - feed loading
 - front comb pin densities
 - nep formation
- **Fibre length**
 - short fibres
- **Vegetable Matter**
 - more in, more out

CRC

for

Premium

Quality

Wool



Fibre Effects in Spinning

- **Fibre diameter**
 - spinning limit (~35 fibres)
 - number of fibres in yarn X-section
 - ends-down during spinning
 - yarn evenness
- **Fibre diameter distribution**
 - 5 - to - 1 rule
- **Fibre crimp (lower)**
 - more even yarns
 - yarn bulk is lower
- **Fibre length**
 - yarn tenacity
 - yarn elongation
 - yarn evenness
- **Fibre length distribution**
 - conflict
- **Fibre Strength**
 - ends-down

CRC

for

Premium

Quality

Wool



Bibliography

- Hunter, L. (1980), The Effects of Wool Fibre Properties on Processing Performance and Yarn and Fabric Properties, Proc. 6th Quinquennial International Wool Textile Research Conf., Pretoria, Vol III
- Various papers from the proceedings of a Symposium “Wool Scouring and Worsted Carding: New Approaches”, CSIRO Division of Textile Industry, Geelong, 1986.
- Lamb, P.R. & Yang, S. (1994), “The Effect of Wool Properties on Spinning Performance and Yarn Properties”, in seminar proceedings of Woolspec 94.
- von Bergen, W. (1969), “Wool Handbook”, vol. II, part 1.
- Various papers from “Top-Tech ‘96”, CSIRO seminar, 1996.

CRC

for

Premium

Quality

Wool