CRC for Premium Quality Wool

An Introduction to Scouring

Produced for the CRC for Premium Quality Wool undergraduate program by;
Dr. Peter Auer, The University of New South Wales.

CRC for Premium Quality Wool

Scouring in ESP

Scouring

CLEANING PROCESS

Scouring

Carbonising

Carding

INTERMEDIATE PROCESS

Carding

Gilling

Combing

TOP

slubbing

Condensing

Drawing

YARN MANUFACTURE

Spinning

Spinning

Twisting

YARN

Twisting

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Scouring Science

- **BALANCE**
  - cleanliness
  - fibre entanglement (felting)
- **ACHIEVE**
  - contaminant removal
  - efficiency (later processes)
- **WATCH**
  - costs
  - pollution

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Effect on Later Processing

- **Wax & other residuals**
  - inadequate lubricating properties
  - deposits
  - effect on processing additives
  - effect on drafting in spinning
  - effect on dye uptake
- **Fibre entanglement**
  - fibre breakage

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Wool Damage

- pH
  - peptide bonds attacked at pH > 7
  - yellowing > pH 9.5
  - affected by suint content
- Temperature
  - prolonged exposure, mild conditions
- Mechanical damage negligible
- Properly controlled scouring should eliminate these problems

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Wool Contaminants

- **Water soluble**
  - suint (sweat)
  - stains (partly)
  - Proteinaceous Contaminant Layer (PCL)
    - soluble peptides
- **Water insoluble**
  - wax (grease)
    - oxidised
    - unoxidised
  - VM
  - mineral matter
  - PCL
    - skin flakes

The removal of ALL contaminants is not possible with any current scouring technology.

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Wool Contaminants

- **Easy to remove**
  - unoxidised wax
  - most oxidised wax
  - readily soluble suint
  - loose dirt
- **Hard to remove**
  - fraction of oxidised wax
  - slowly soluble suint
  - sub-micron dirt
  - adhering skin flakes

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Contaminant Removal Sequence

– Aqueous Process

- Penetration of wax
- Swelling of wax
- Formation of Globules
- Removal of easy-to-remove complexes
- Partial removal of hard-to-remove complexes

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