# Textile quality management

Mr Dale Carroll
CSIRO, Textile and Fibre Technology

# Textile testing

Why do you need to test?

# What does testing involve?

- Sampling.
- Selecting the correct test.
- Selecting the most appropriate test method.
- Carrying out the test according to the method.
- Analysing the results.

# Sampling

Sampling is the most important step in the testing process.

If you don’t get this right, the results mean nothing!

# Textile testing laboratories
# Testing at standard conditions

- Consistency in testing.
- 20 +/- 2 Deg C
- 65 +/- 3 % R. H.
- Preconditioning from the dry side.
- Condition prior to testing.

# Effects of moisture

- Natural fibres take up moisture
- Tensile properties
- Extensibility
- Wear properties

# Types of tests

- Physical
- Chemical
- Performance
- Appearance
- Trouble shooting
- Dispute resolution

# What tests do you use?

Pick the test type that meets your requirements

- Quality assurance
- Quality control
- Conformance
- Process testing

# Specifications

Understanding specifications and testing for compliance

# Reference: 78/6530 X 30 plain dyed sheet fabric specification

| PHYSICAL PROPERTY | TEST METHOD | SPECIFICATION REQUIREMENT |
|---|---|---|
| Fibre Composition | ISO 5088 | 50% Polyester<br>50% Cotton<br>Plain Weave |
| Weave Structure | BS2861 | Warp 20 Tex (30 ECC) |
| Yarn Linear Density | ISO 7211.5 | Weft 20 Tex (30 ECC) |
| Threads/Unit Length | ISO 7211.2 | 31.0 :t 0.5cm ends<br>25.5 :t 0.5cm picks |
| Mass/Unit Area | ISO 3374 | 130:t 6g/m |
| Breaking Force | ISO 13934.1 | 250n/50mm min. (warp and weft) |
| Tear Strength | ASTM 1424 | 5.5n min |
| Pilling Resistance | IWS 196 | 3-4 (min) |
| Dimensional Stability | ISO 6330/5077<br>Prog 2B<br>Line dry | 5.0% max<br>(warp and weft) |
| **Colourfastness** | | |
| - to light ISO 105 - B02 | 5min | |
| - to washing | ISO 105 - C01/5 | Change of Shade 4 Staining 4 |
| - to rubbing | ISO 105 - X12 | Wet 3-4<br>Dry 4 |
| - to perspiration | ISO 105 - E04 | Change of Shade 4<br>Staining 4 |

# Australian Standards Garment Mark

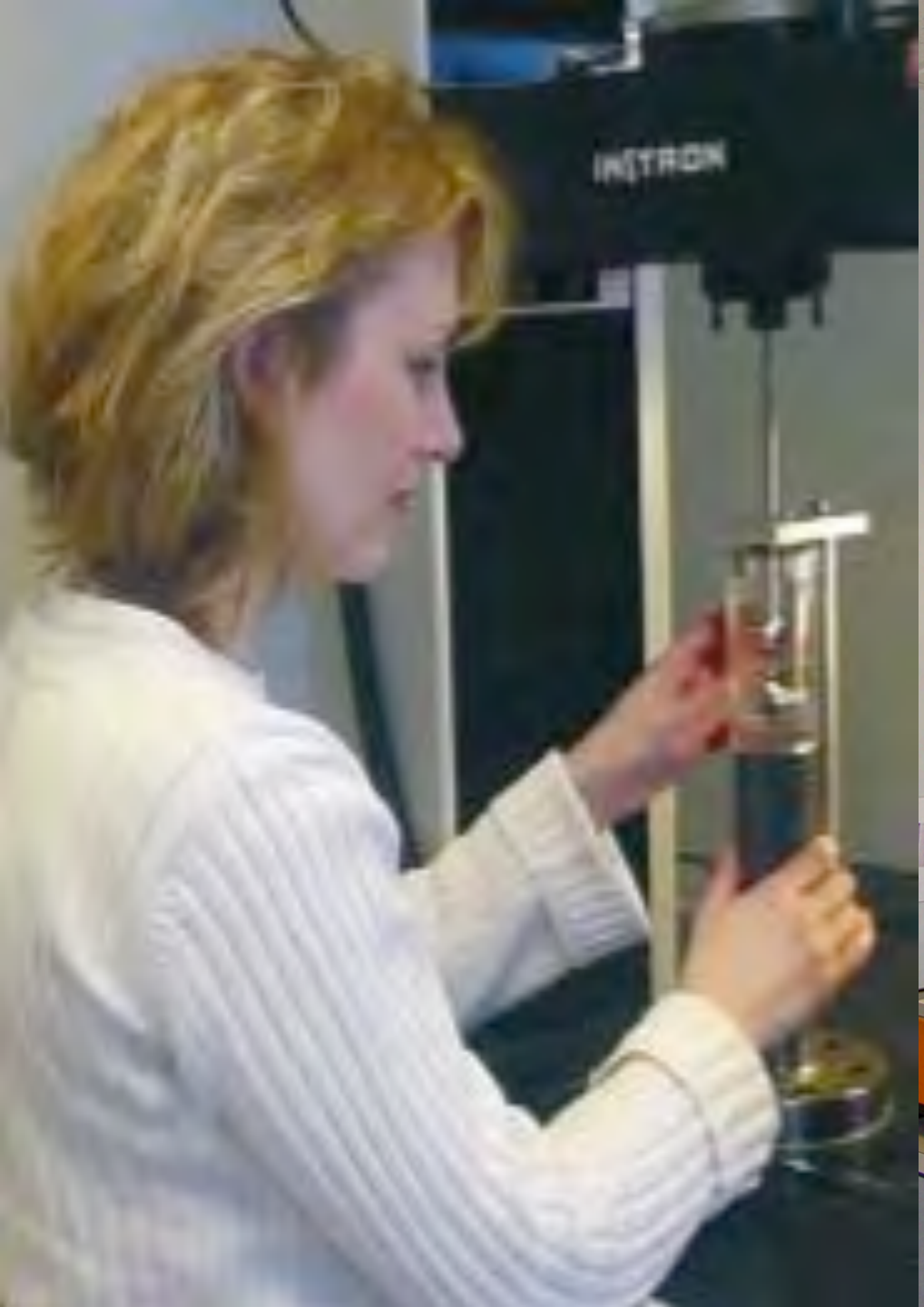
**CONTENTS**

# Who produces test methods?

- AS - Australian Standards
- ISO – International Standards
- ASTM/ AATCC – American Standards
- BS – British Standards
- EN – European Standards
- TWC – The Woolmark Company
- IWTO – International Wool Standards
- Retailers – e.g. Target, Marks & Spencer
- Automotive companies – e.g. Ford, GMH

# When do you test?

As soon as possible in the production pipeline


INSTRON


INSTRON 1122
Instron
TFT 2236
TFT 0305

# Types of testing

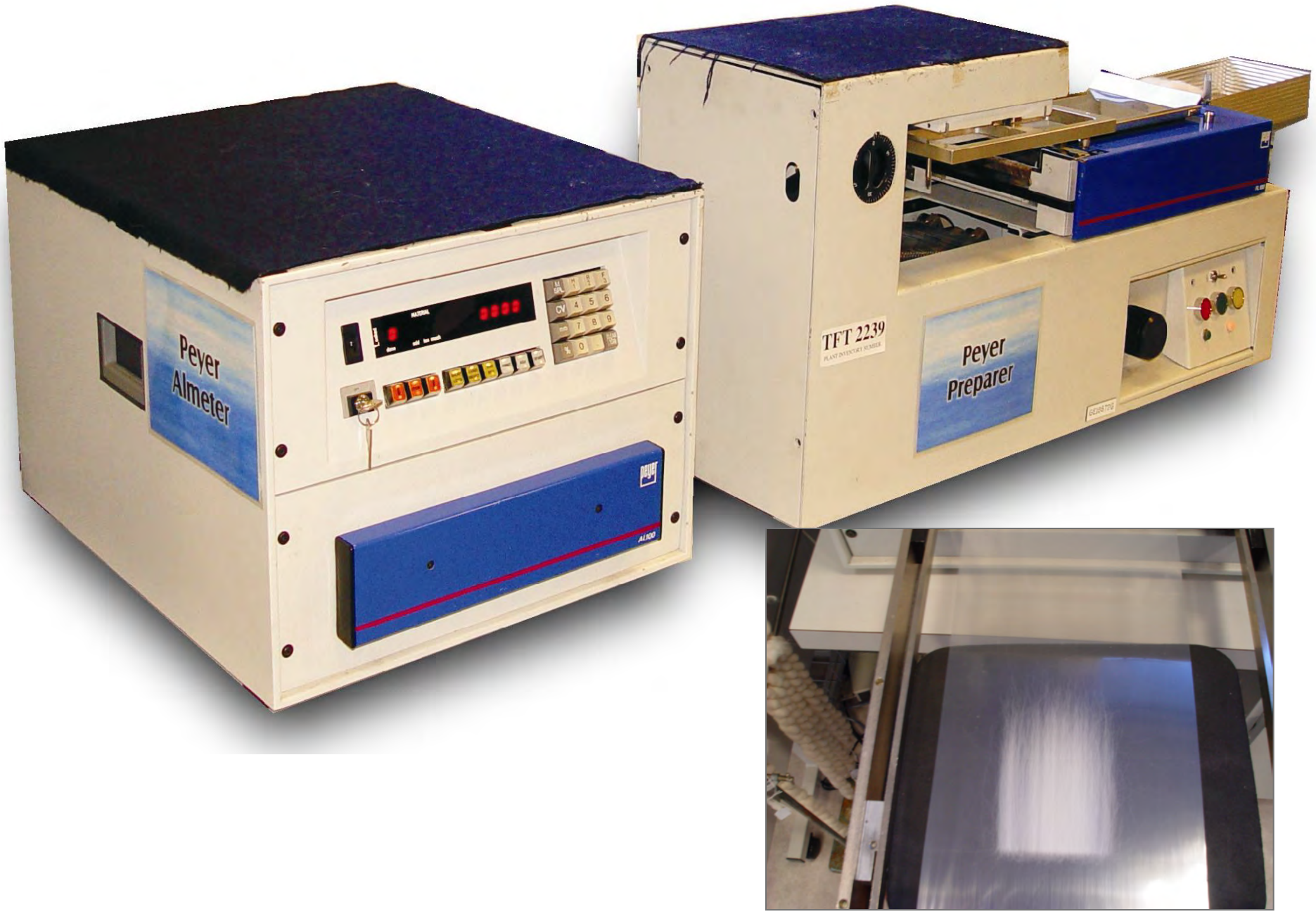
- Quality assurance
  - Raw material testing
  - Process testing
  - On-the-run improvement
  - In-house tests
- Quality control
  - Appraisal testing
  - Conformance testing

# Reasons for testing

- To verify processing conditions
- To verify output
- To ensure compliance with specifications
- For peace of mind
- For research – experimental
- For development – improvement

# Fibre

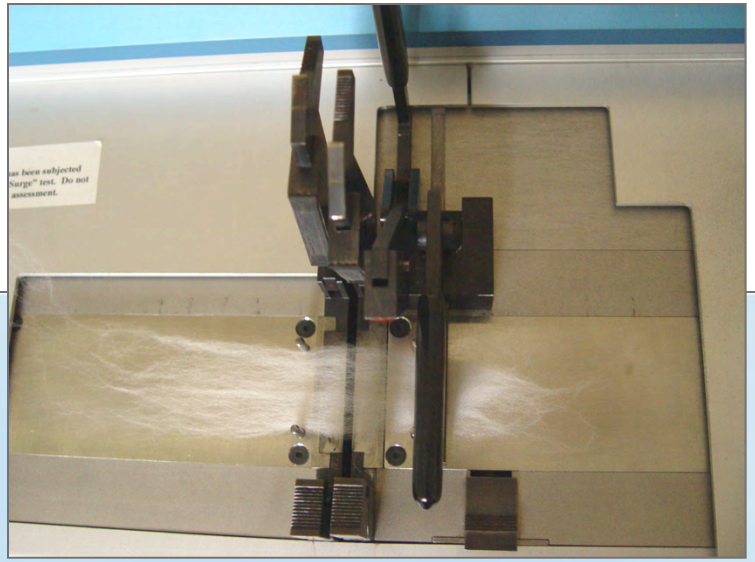
- Diameter
- Length
- Strength
- Extractable matter
- Colour

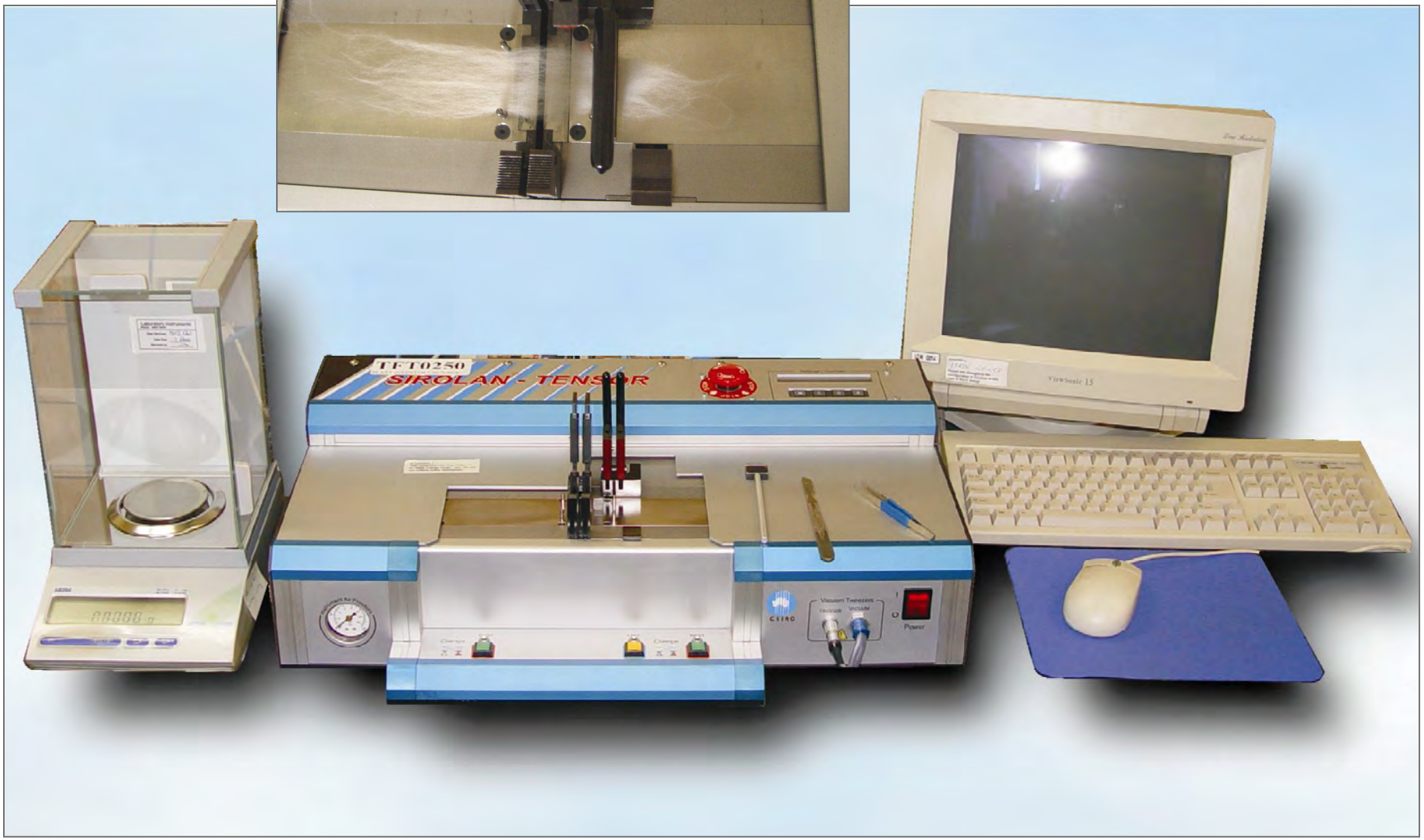

Peyer
Almeter
Peyer
Preparer
TFT 2239
PLANT INVENTORY NUMBER
AL100


BOILING
BOILING
BOILING
BOILING
BOILING
SAMPLE
EXTRACTION
MODE
RINSING
RINSING
RINSING
RINSING
RINSING
EVAPORATION
TIMER
TFT 0337
PLANT INVENTORY NUMBER
SOXTEC SYSTEM HT
1043 Extraction Unit
tecator

# Sliver/top

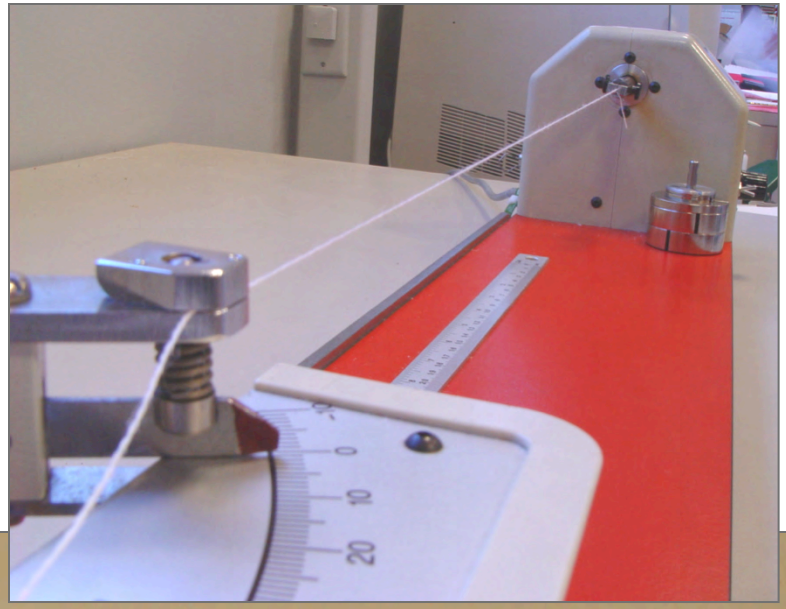
- Mass/unit length
- Evenness
- Extractable matter
- Fibre bundle strength
- Contamination
  - Neps
  - Vegetable matter
  - Coloured fibres




TFT0250
SIROLAN - TENSOR
CSIRO
Power
ViewSonic 15

# Yarns

- Linear density
- Strength
- Evenness
- Twist
- Extractable matter
- Friction
- Hairiness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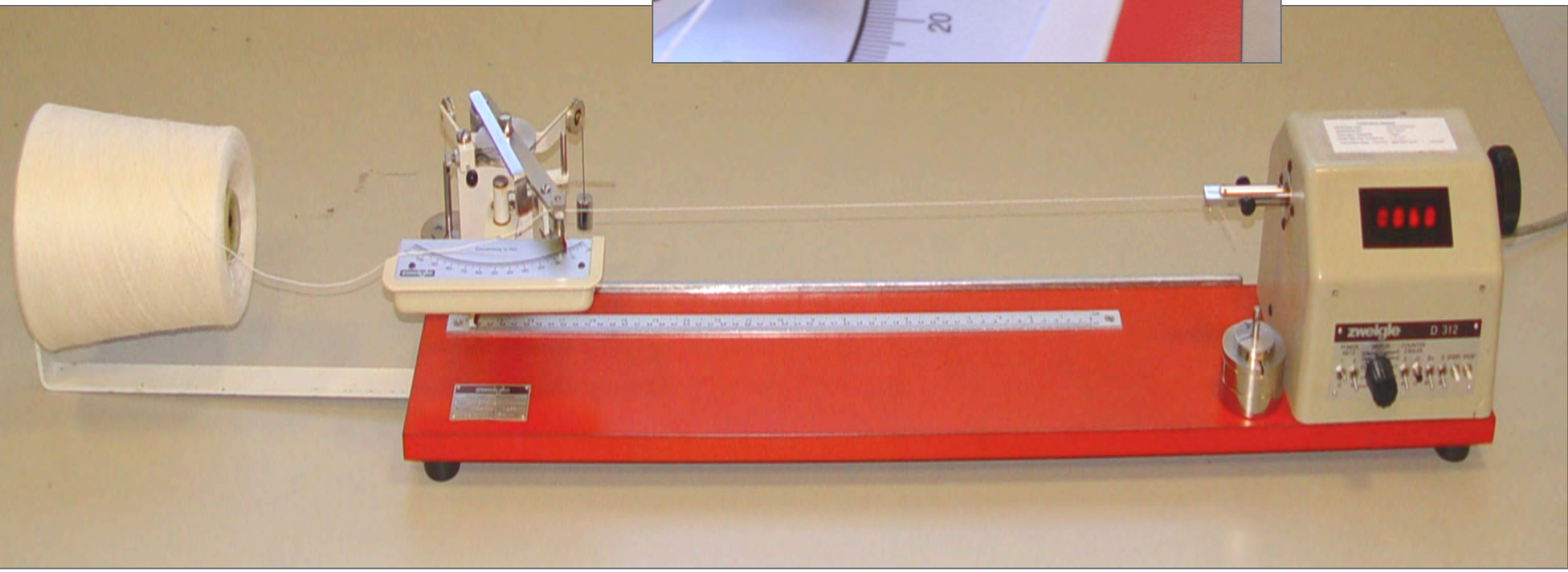
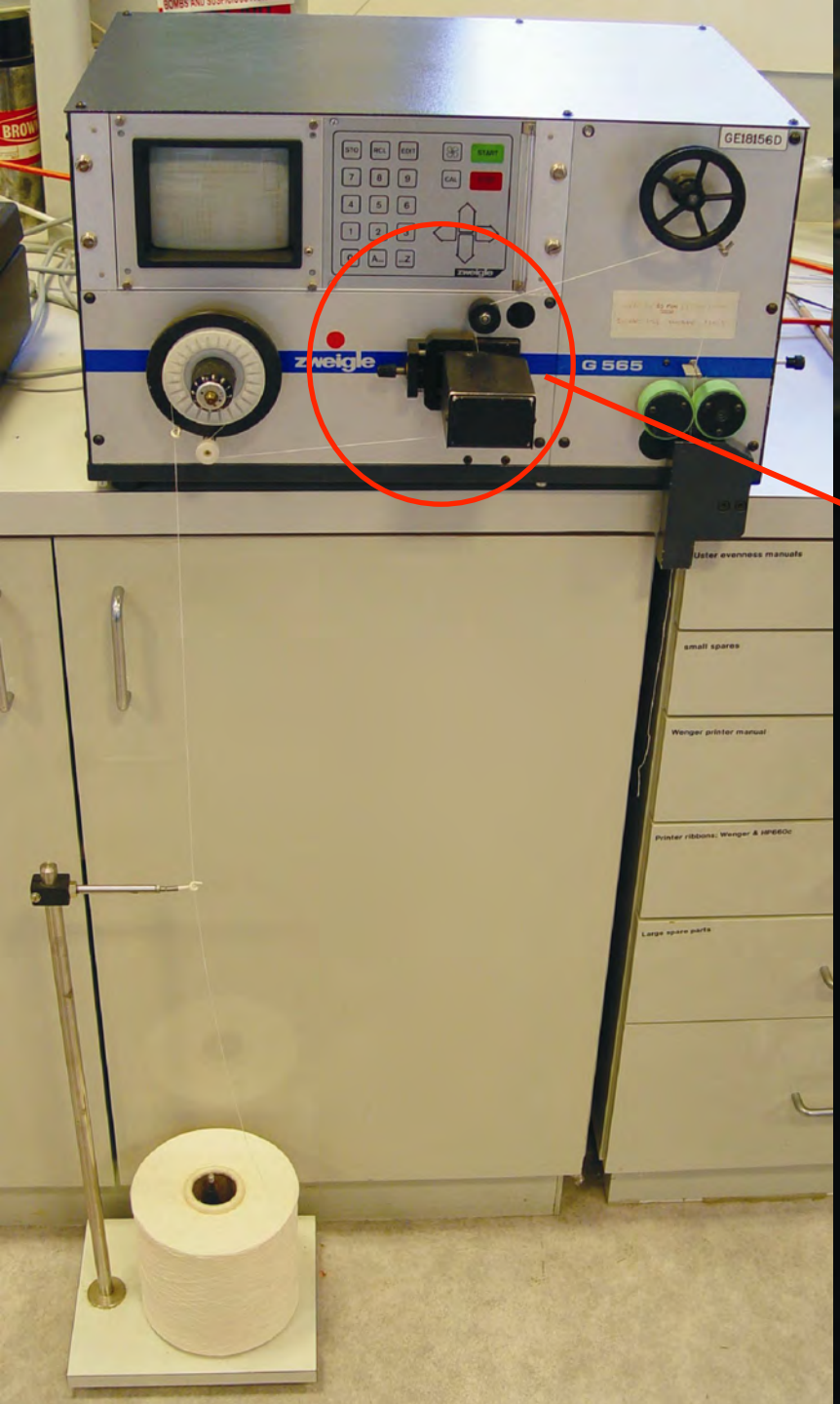
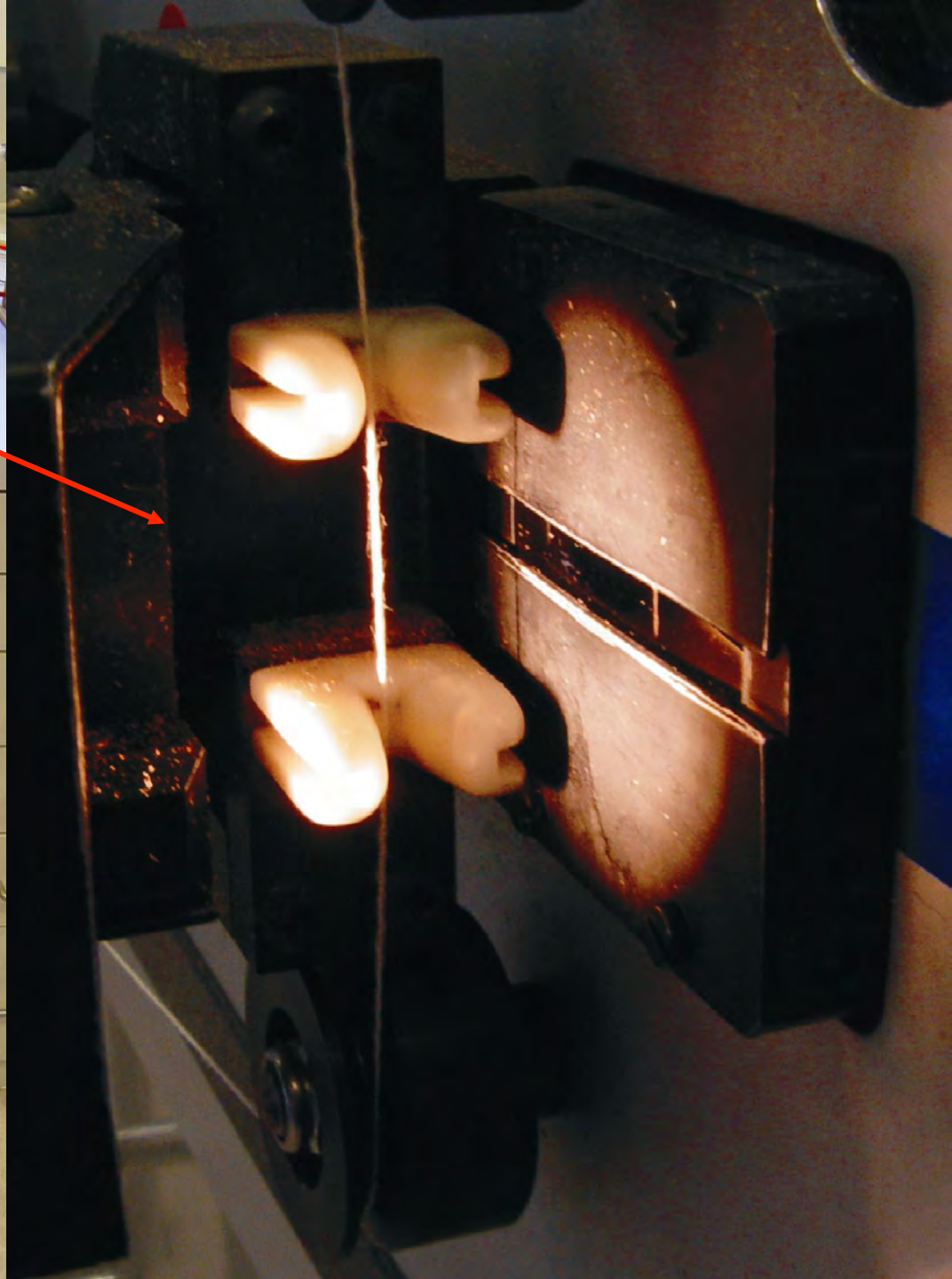
10
20


zwolgie
D 312


zweigle
G 565
GE18156D
Uster evenness manuals
small spares
Wenger printer manual
Printer ribbons: Wenger & MP660c
Large spare parts

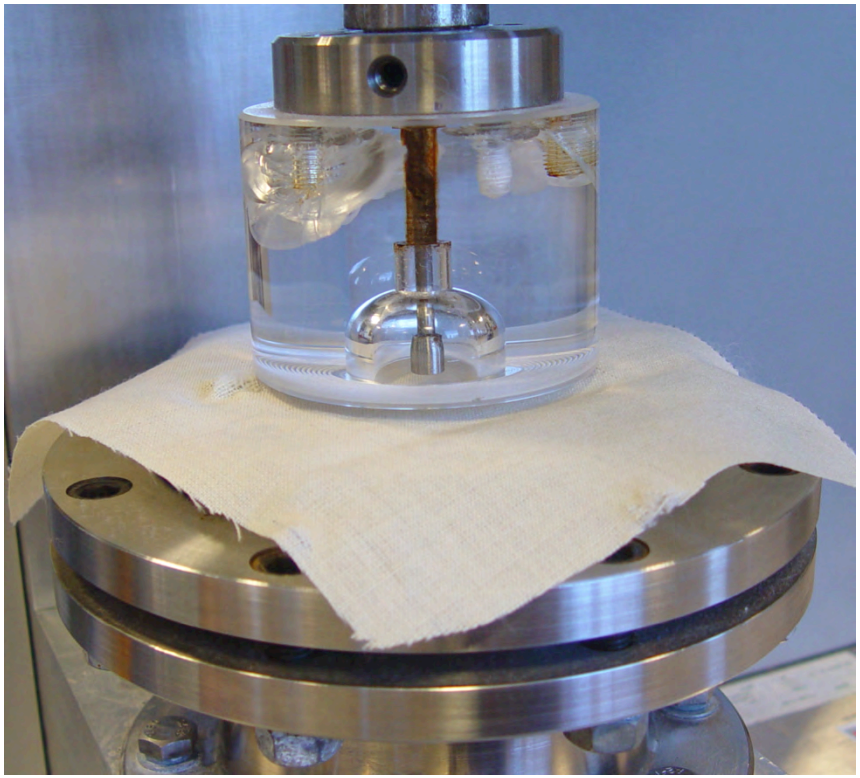


# Woven fabrics

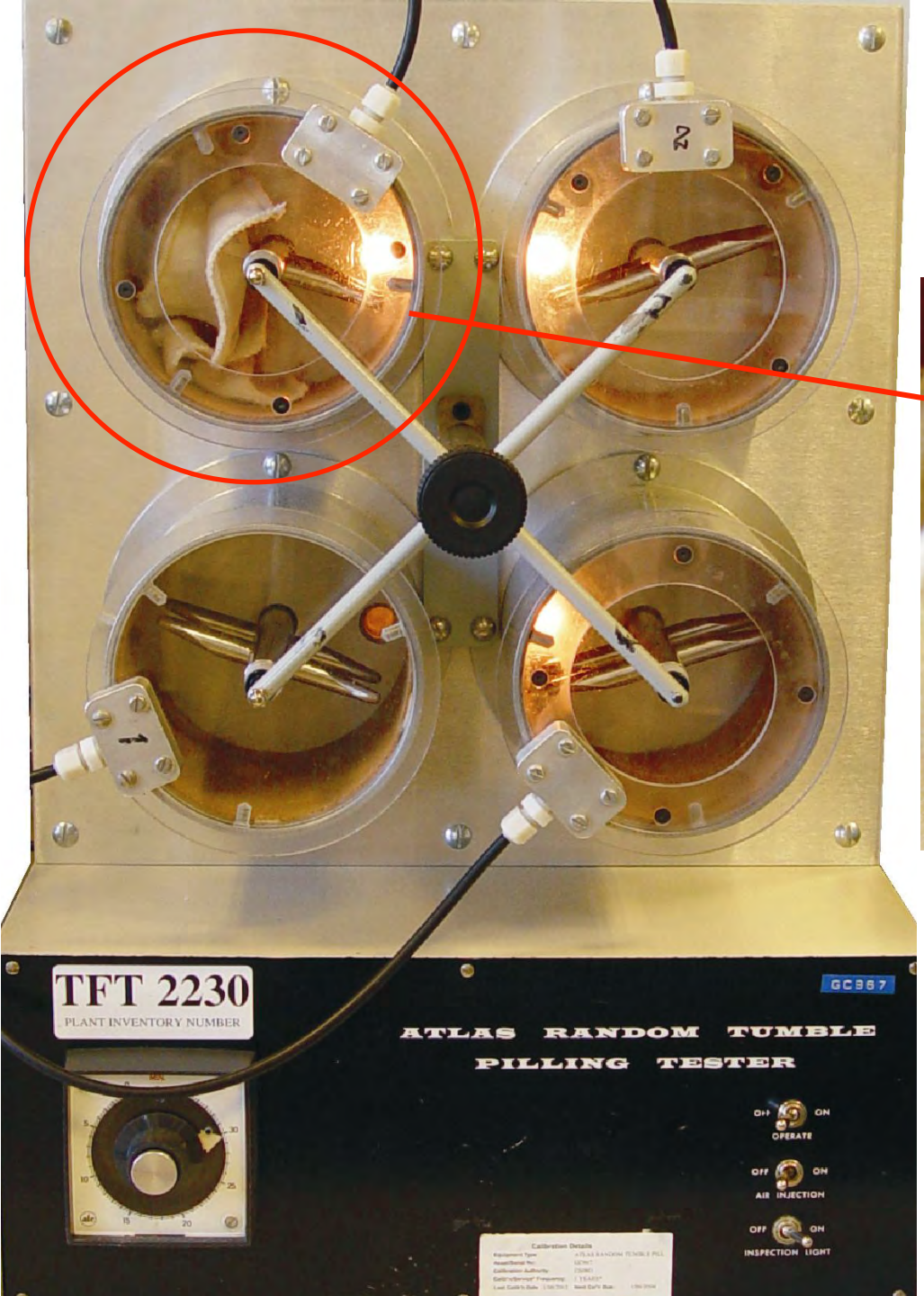
- Construction
- Tensile strength
- Tear strength
- Seam strength
- Abrasion resistance
- Pilling
- Stiffness
- Tailorability – CSIRO FAST

# Knitted fabrics

- Construction
- Bursting pressure
- Pilling
- Drape
- Air permeability




Shirley
Bursting
Pressure
TFT 0302
GE18842J
CLAMP
PRESSURE CONTROL
PUSH-LOCK


TFT 2230
PLANT INVENTORY NUMBER
GC387
ATLAS RANDOM TUMBLE
PILLING TESTER
OFF ON
OPERATE
OFF ON
AIR INJECTION
OFF ON
INSPECTION LIGHT

# Fabric testing

Dimensional change

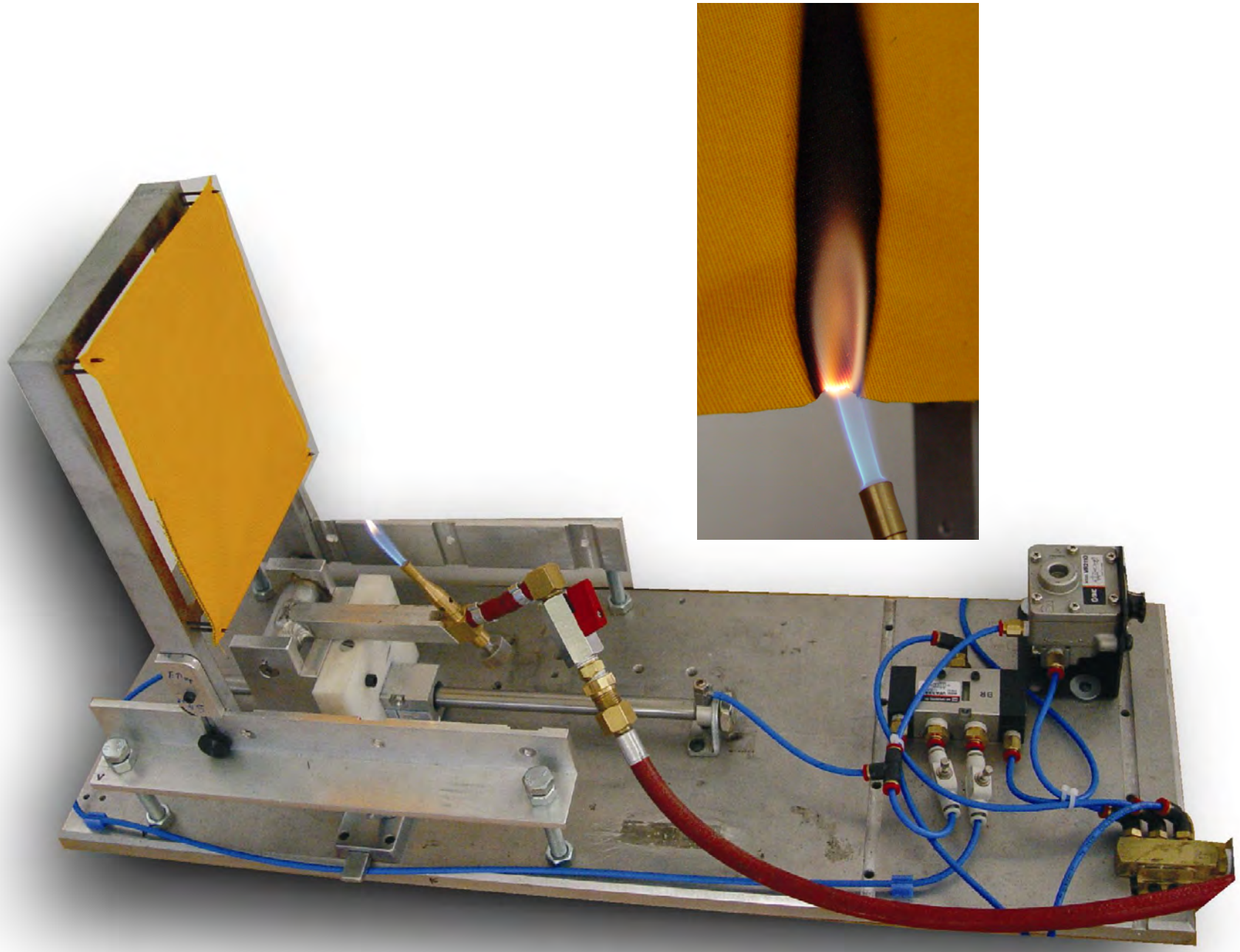
- Washing – dynamic action
- Water – static
- Dry cleaning
- Steam


ISOLATION PROCEDURE
Electrolux Wascator FOM 71P
TFT 0752
PLANT INVENTORY NUMBER
TFT 0753
Equipment is to
used only by
IRO staff
Research
poses.

# Fabric properties

- Thermal properties
- Moisture vapour resistance
- Wicking
- Electrostatic propensity
- Flammability
- Cleanability


Climate Control Chamber
Data Aquisition
Control System

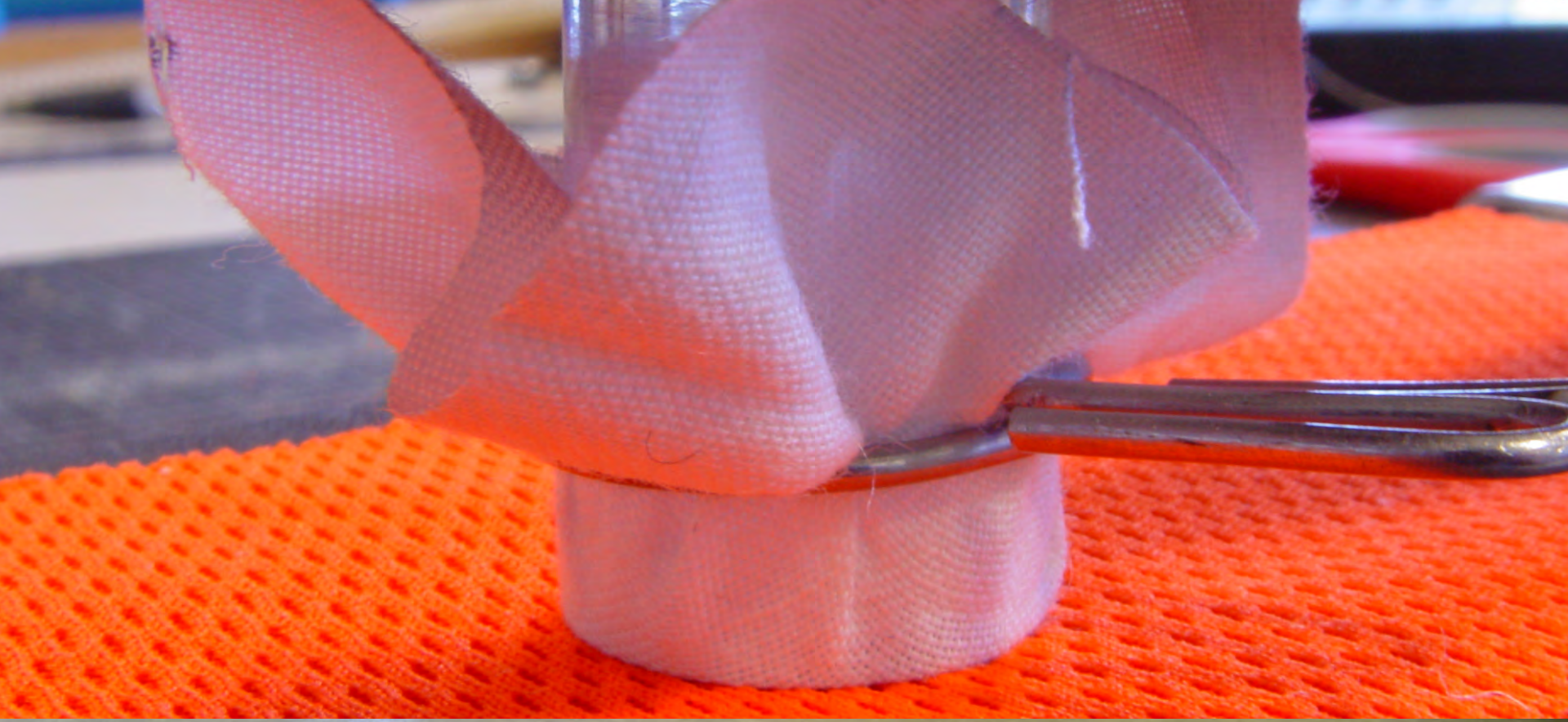


# Fabric testing

Colourfastness testing

- Light
- Washing
- Dry cleaning
- Water
- Perspiration
- Chlorine
- Rubbing


ATLAS
Ci4000
Xenon Weather-Ometer
TFT 0342
TFT 0756



# Interpreting the results

- What the numbers mean
- Objective tests
- Subjective tests

# Confidence limits

Does the test result really comply?