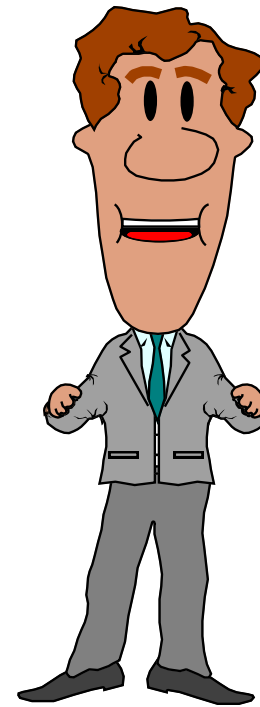


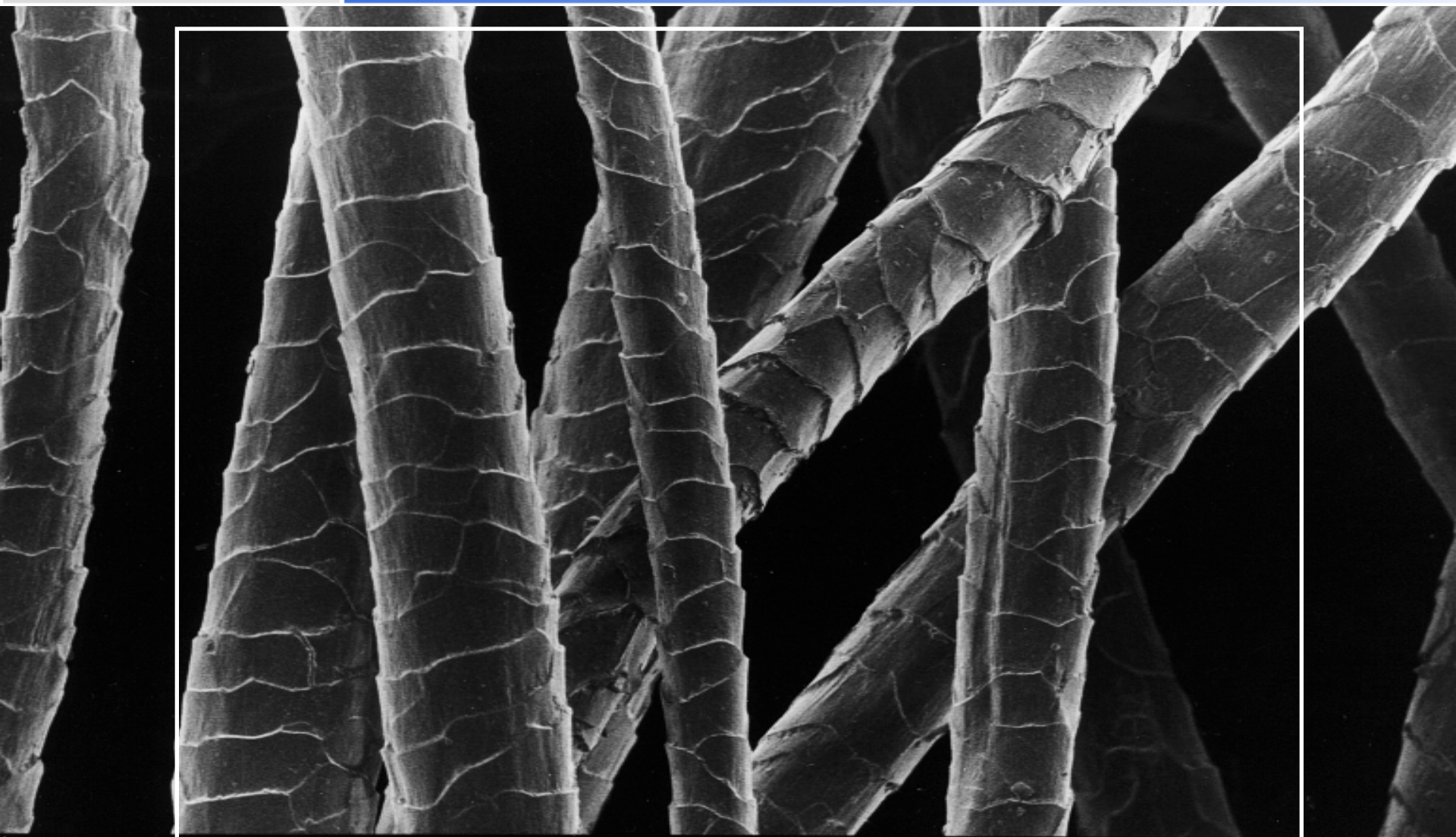
Comfortable next-to-skin wool

Dr Geoff Naylor
CSIRO

Skin comfort

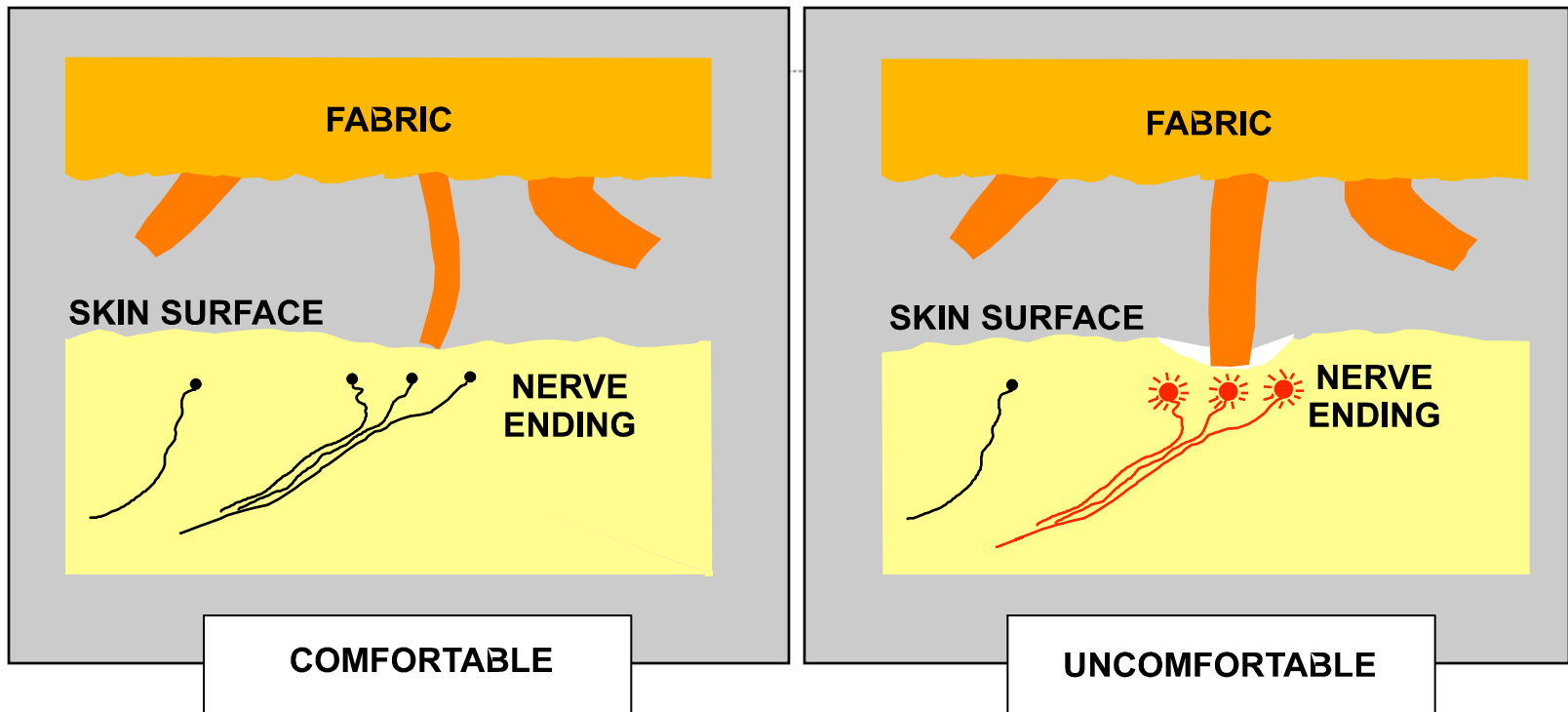
- *I'm allergic to wool.*
- *I can't wear wool next to my skin.*
- *Wool is prickly, itchy and scratchy.*





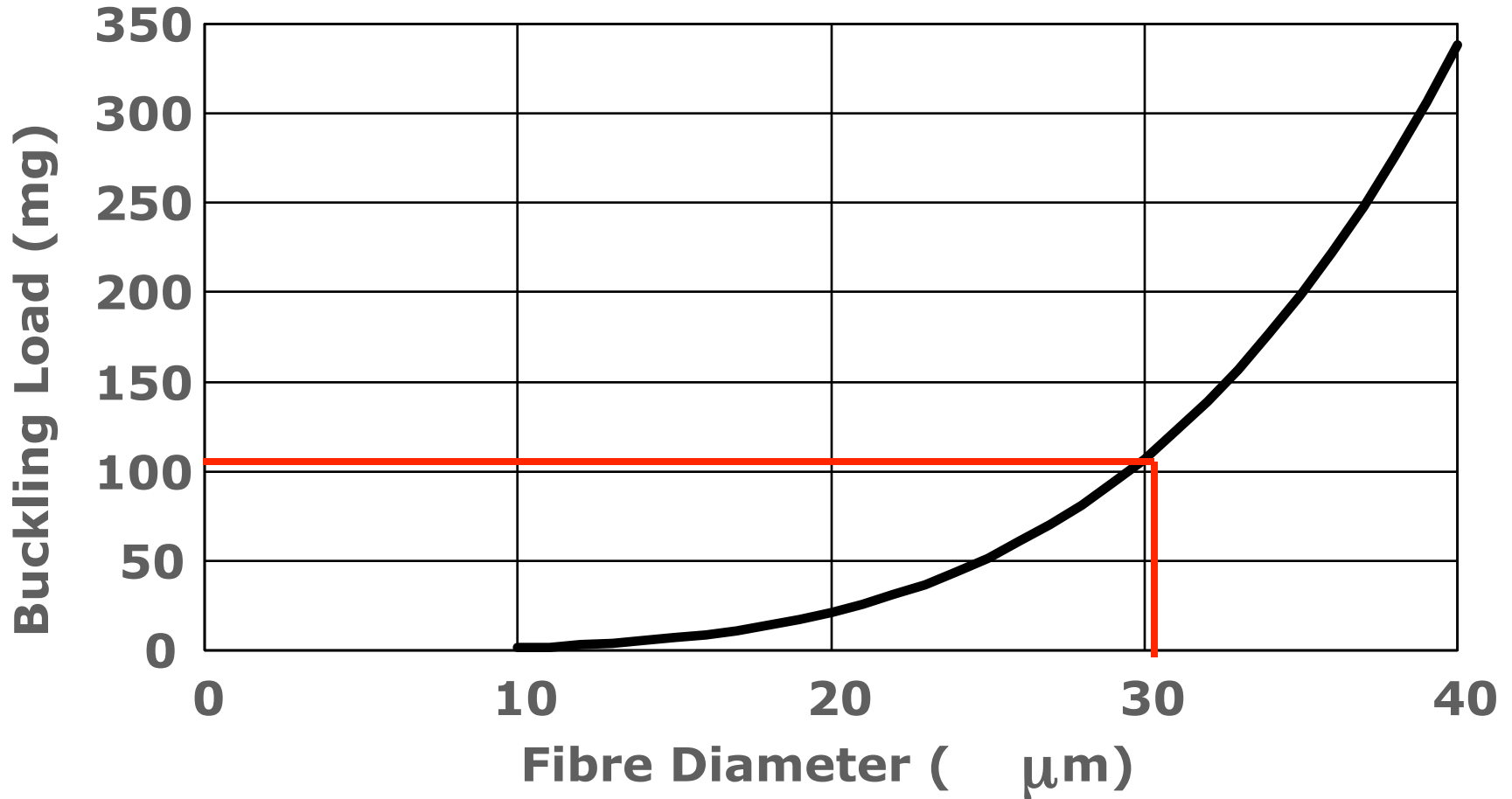
001553 1.0 kV X300 60.0 μm

Skin comfort

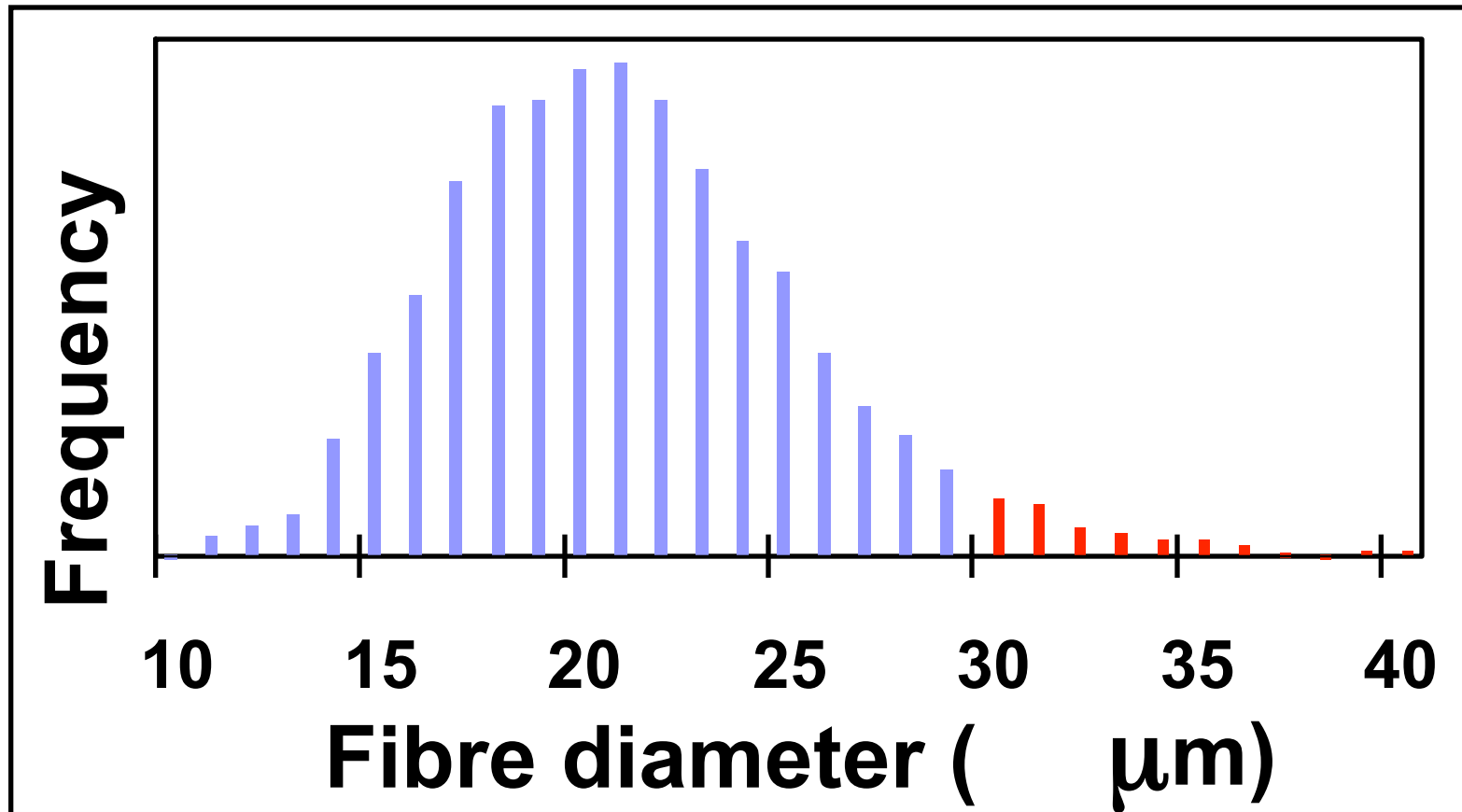


CRITICAL FORCE=100mg

$$\text{Buckling Load} = \frac{(\text{Stiffness}) \cdot (\text{Diameter})^4}{(\text{Length})^2}$$



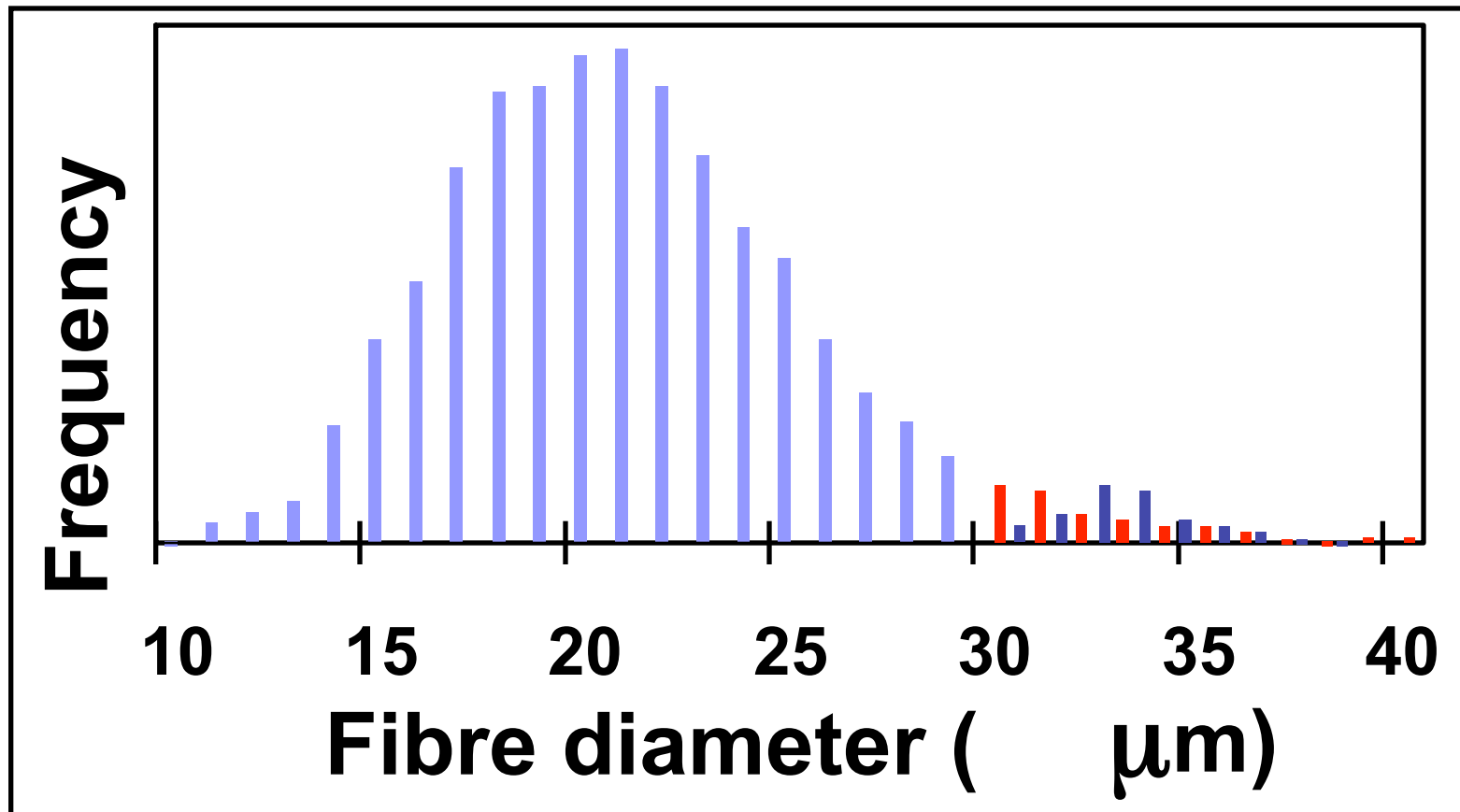
Skin comfort: Coarse fibre component



Skin discomfort is not wool specific

- Sensations present with blended acrylic samples.

Skin comfort: Coarse fibre component



Wool and acrylic samples

- Skin comfort related to diameter characteristics, e.g. percentage of fibre ends greater than 32 μ m for 14-gauge knitted samples.
- Skin comfort is not chemical or allergy-related.

Knitwear skin comfort

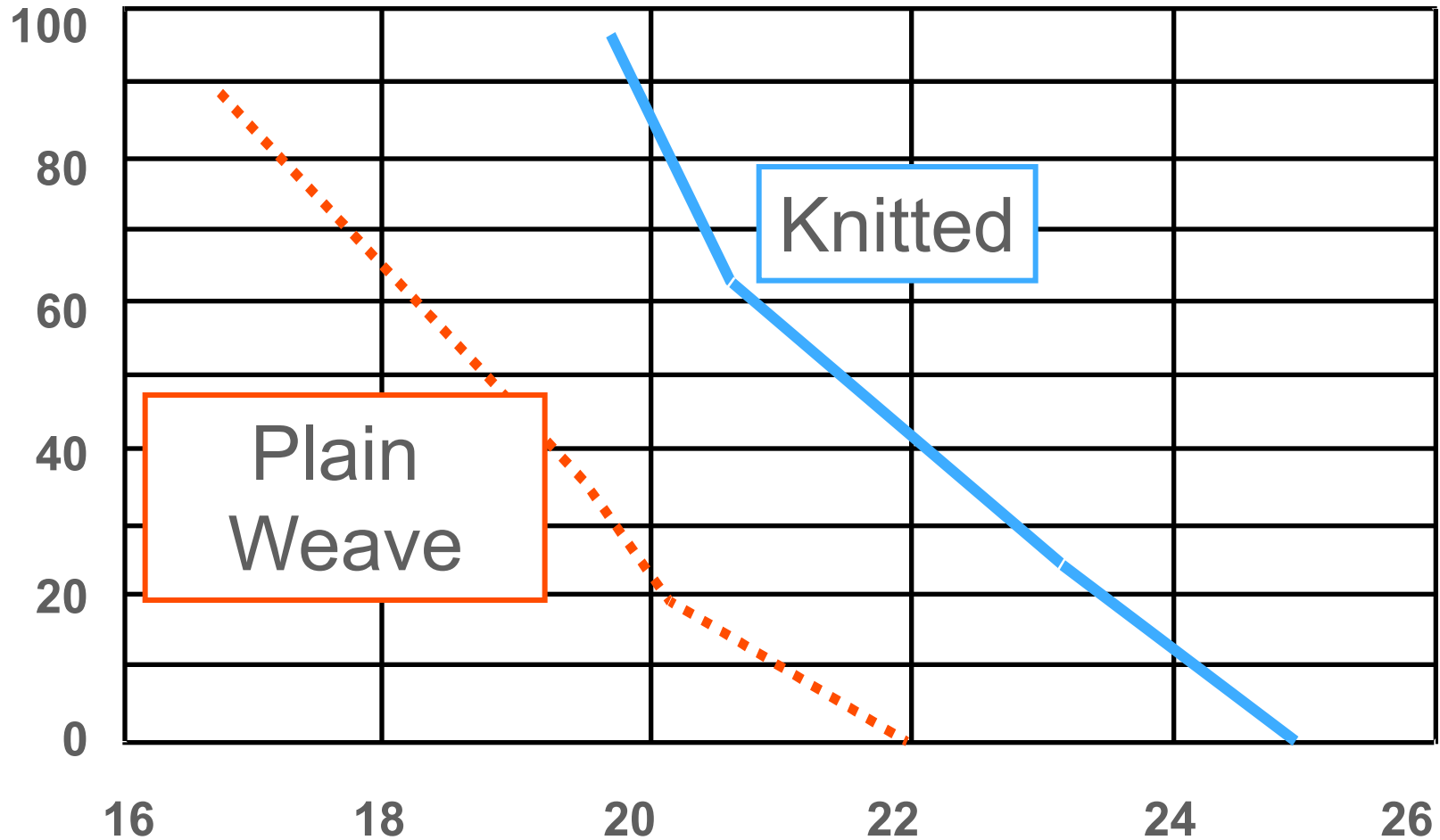
Parameter	Relative importance
Fibre Diameter 1 μ m 1% CV	10 3
Cover Factor 0.15 units	4
Fibre Length 5 mm	-2
Yarn Count 60-100 tex	0

Wear trial

- Sleeves.
- Adult judges.
- Is this comfortable?
Would you want to wear it?



Effective Mean Fibre Diameter (mm)



Conclusions

- Not an allergy or fibre-specific.
- Discomfort due to coarse fibre ends pressing against the skin.
- Fine Australian wool is comfortable.
- Fibre diameter is the most important property.
- Also depends on fabric type.