

Value Comparison

Dyneema[®] vs **Polyester** in composite yarns

Cut level 5 gloves



Products compared:

Composite yarn with:

- 1) 100 dtex glass fiber + 220 dtex Polyester cover
- 2) 100 dtex glass fiber + 110 dtex Dyneema[®] + 110 dtex Nylon
- 3) 100 dtex glass fiber, double covered 2dpf 220 dtex Polyester
- 4) 100 dtex glass fiber, double covered 2dpf 220 dtex Dyneema[®]

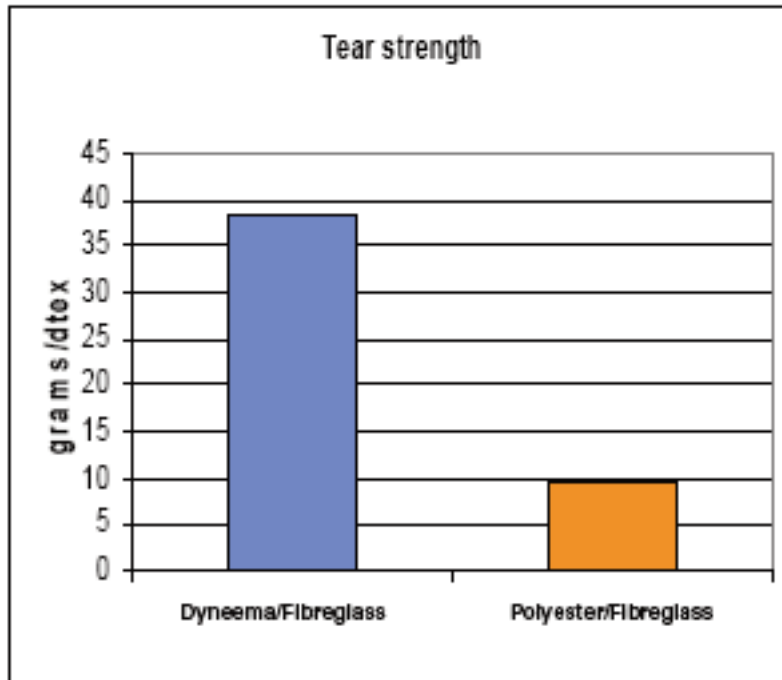
Note: DTEX: stands for Decitex: The measurement of yarn. The weight in grams of 10,000 metres of yarn.



Properties evaluated

- Tear resistance
- Standard Abrasion resistance
- Longitudinal abrasion (along the fiber)
- Cut Resistance of Polyester vs Dyneema®
- Snagging
- Heat dispersion (Kawabata test)



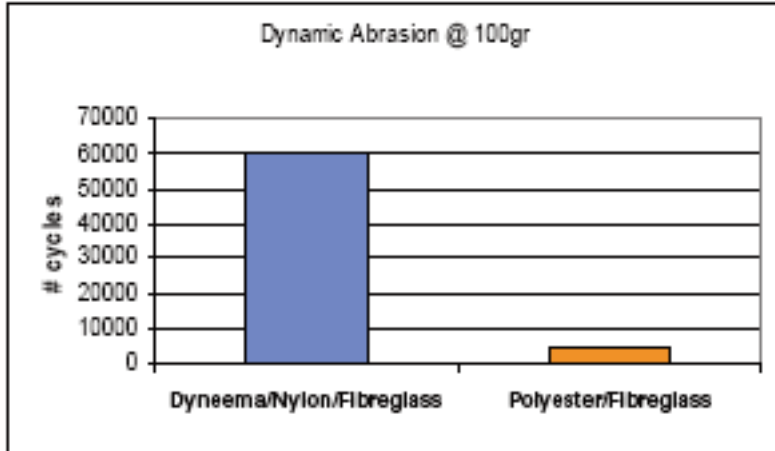
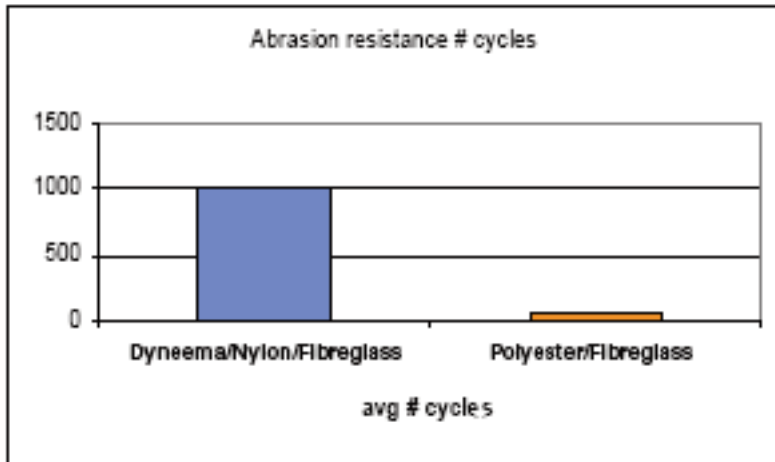


Tear Strength

Importance of Tear Strength:

- Puncture resistance of knitted gloves typically is low and therefore the importance of Tear strength of the used fibers used becomes very important for the lifetime of the glove.
- The higher the tear strength of the fibers used in the glove the longer the glove will last

Composite yarns with Dyneema® have up to 4 times higher breaking strength

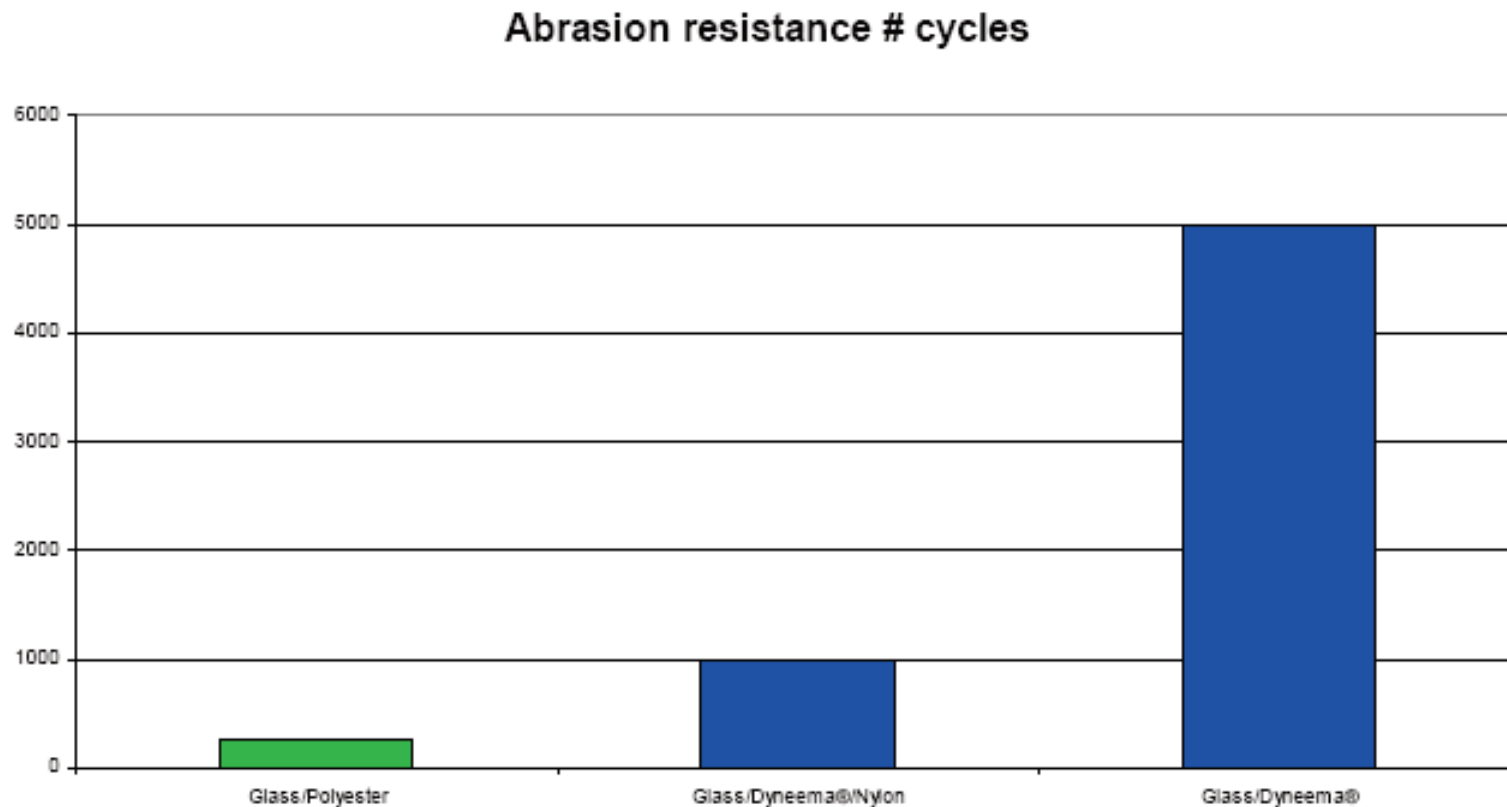


Abrasion Resistance

- On standard Martindale* test Composite with Dyneema® withstands at least 10x more cycles than Polyester
- ‘Dynamic longitudinal abrasion’ at constant load, Dyneema® outperforms Polyester significantly
 - Repeat abrasive action in length direction of the fiber
- This will definitely result in significantly longer lifetime

* Martindale performed according to the EN388 standard

Abrasion Resistance



- Adding 50% Dyneema® to the glove will increase the Abrasion resistance with factor 10
- The higher the Dyneema® content the better the durability



Cost efficient Abrasion Resistance

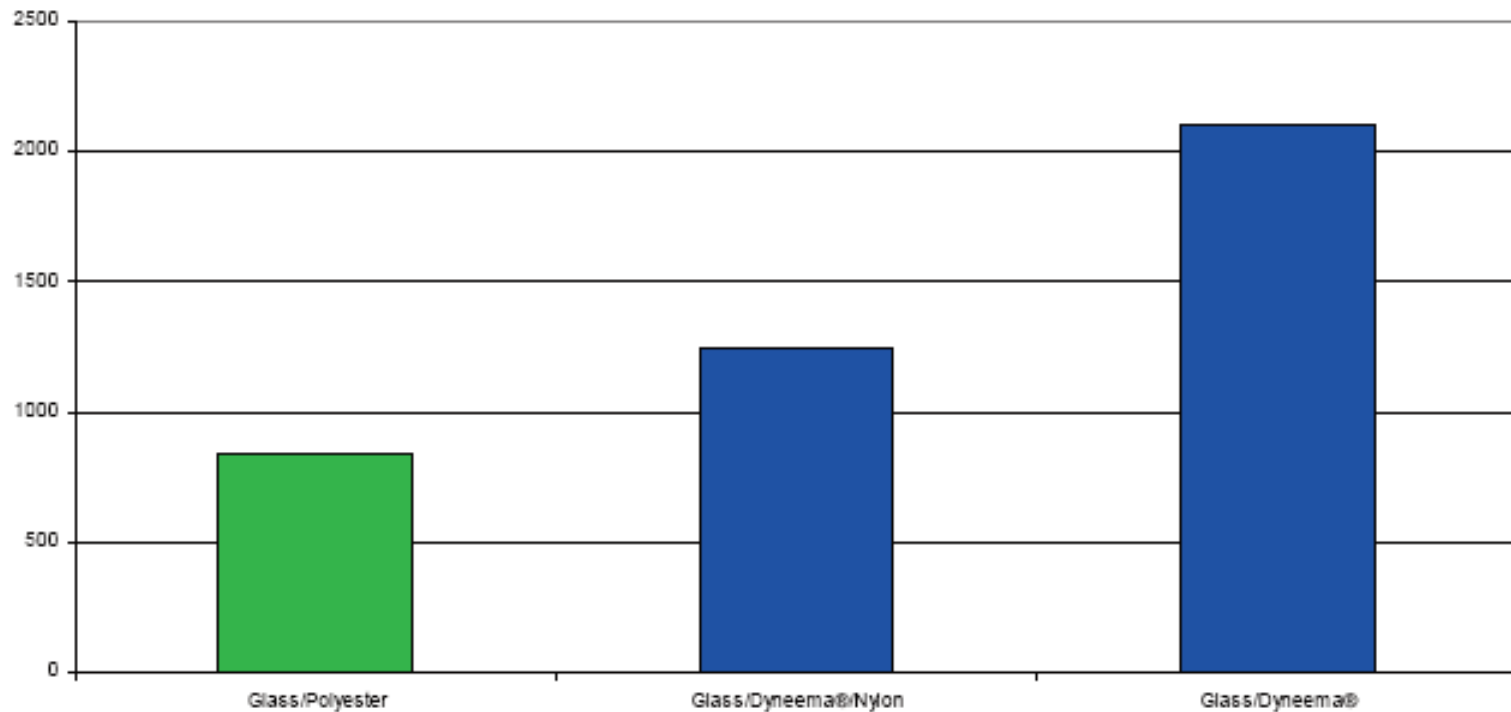
Polyester/Glass
after 300 cycles



Dyneema®/Glass
after 300 Cycles

Cut resistance

CPPT (ASTM'04)



– Adding Dyneema® will enhance the cut resistance significantly

CPPT test according ASTM 1790 '04 method



Pilling/Snagging resistance = Comfort

- Fabrics with Glass/Polyester and Glass/Dyneema® were exposed to a snagging* test in same test set-up and evaluated afterwards on broken glass filaments sticking out of the fabric, that will have a negative effect on wear comfort (skin irritation).
- Glass/PES Polyester fabric: lot's of glass fibers sticking out
- Glass/Dyneema®: hardly any glass fibers sticking out

Without the strength of a fibre like Dyneema® surrounding the glass fibres, they will break down, and cut resistance will be lost.

* Snagging test performed according to DIN and ISO 12945-1, 2001-08, Pilling box method



Snagging: Dyneema®/glass vs Polyester/Glass



Dyneema® / glass



Polyester / glass



Dyneema®