

Product Technical Datasheet

Cellulose Fibre by Aalto University

Product Description

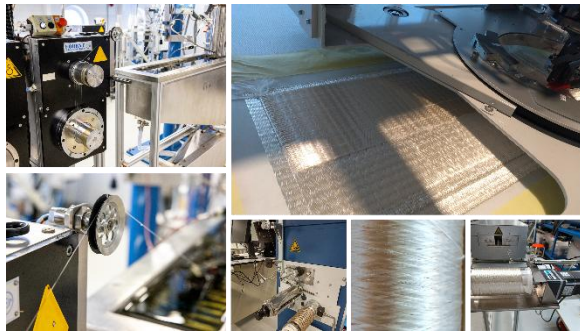


Figure 1: Illustration of the cellulose fiber process.

Lyocell-type continuous filaments have been produced through the Ioncell® process utilizing cotton textile waste. Lindström Oy provided white post-consumer cotton roll towel waste, and the recycling of these garments into new continuous fibres was pursued successfully by the team of Aalto University. 1 km of fibres was delivered to WP3 in May 2024 and another km in December 2025 for the production of composite materials. Sixty individual specimens

were tested, exhibiting an elongation of $9 \pm 1 \%$, tenacities of 795 ± 60 MPa, a Young's modulus of 24 GPa, and a toughness of 45 MPa (Figure 1). These values are close to the requirements for fibers used in composite manufacturing for automotive and boat industries, which specify tenacity of 800–1000 MPa and Young's modulus of 25–31 GPa.

Physical Properties

Density [g/cm ³]	1.5
Sizing Type	no
Linear Weight [dtex]	1.3 ± 0.1
Filament diameter [μm]	11.4 ± 0.8
Filament count	1200

Mechanical properties (Monofilament)

Young's Modulus [GPa]	24
Tensile strength [MPa]	795

Mechanical properties (Tow)

Young's Modulus [GPa]	24
Tensile strength [MPa]	360