



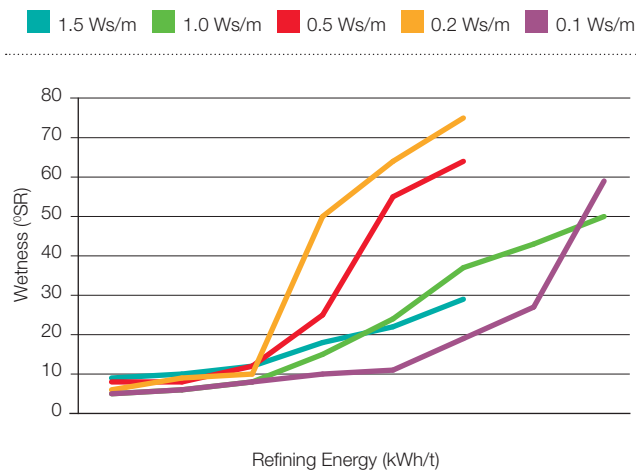
TENCEL® fibrillation and refining

Refined TENCEL® generates fine, circular cross-section fibrils. These facilitate control over sheet macrostructure and optimize formation, mechanical properties and filtration performance.

TENCEL® fibers are fibrillated using standard papermaking equipment. This includes beaters, refiners or vigorous mixing in a hydropulper or high shear mixer. The filling designs of disc refiners should be selected to give low specific edge loads (SEL), typically 0.5Ws/m or lower to minimize fiber cutting.

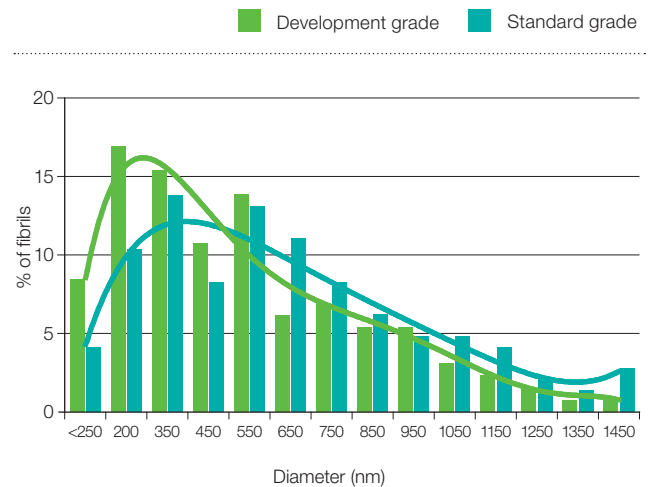
Wet fibrillation of TENCEL® yields a distribution of fibril diameters down to sub-micron levels:

100 % TENCEL® Refining



Effect of refining conditions on the fibrillation rate of TENCEL®.

Fibril Diameter Distribution



Fibril diameter distribution for TENCEL® refined to 50°SR (200mls CSF)

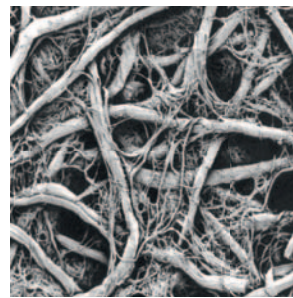




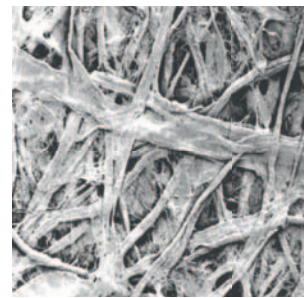
TENCEL® fibrillation and refining

TENCEL® fiber is available in a number of different grades and in cut lengths down to 2 mm. This suits a great variety of processing conditions. Grade selection can also be utilized to enable the control of fibrillation rate, fibril diameter distribution and sheet opacity.

Independent pilot scale refining trials using a 12" Pilao single disc refiner confirmed: Using low SEL values during refining not only gives more efficient processing but also maximises sheet mechanical properties.

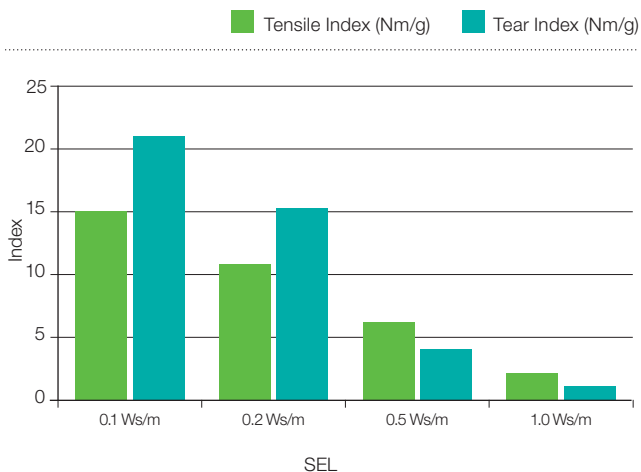


TENCEL®



Woodpulp

100 % TENCEL® Sheet Properties at 50 °SR

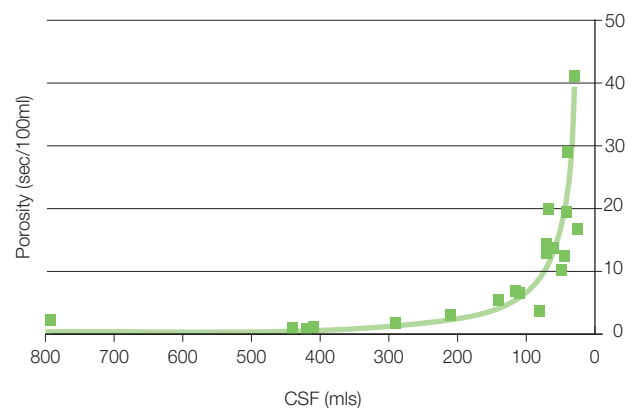


Tensile and tear indices for TENCEL® handsheets

The circular aspect macro-structure exhibited by fibrillated TENCEL® contrasts with the flatter ribbon-like structure of refined woodpulp fibers:

TENCEL®'s open structure results in higher sheet calliper and good porosity, even when the fiber has been extensively fibrillated.

Gurley Porosity 100 % TENCEL® Papers, 0.2 Ws/m, 75gsm



Air porosity of TENCEL® papers as a function of degree of refining





TENCEL® fibrillation and refining

Main application areas

TENCEL® can be used to produce 100% binder-free papers and it is also ideal for use in blend with woodpulp or microglass fibers.

The fibrillar structure of TENCEL® is successfully utilized in a wide range of filtration and specialty paper products. TENCEL® optimizes sheet mechanical properties, opacity, filtration efficiency and permeability.

