

Tensile Properties of Fibres

USEFUL DEFINITIONS:

Breaking force	=	The maximum force a material can stand before it breaks.
Tenacity/stress	=	$\frac{\text{Breaking force in N or cN.}}{\text{Linear density in tex, dtex or denier}}$
Count/ Lea Strength Product	=	Breaking force of a hank of yarn [lbs] X linear density in count
Elongation	=	The length by which a material will extend beyond its original length.
% extension/strain	=	$\frac{\text{The extended length} - \text{original length} \times 100}{\text{original length} \times 1}$
Initial modulus	=	Measures resistance to extension under low forces.
Hookean Region or Elastic Region	=	In this region, stress is proportional to strain therefore the material recovers all extension, it is elastic.
Yield point	=	This is the end of the elastic region.
Primary creep	=	Recovery after extension with time.
Secondary creep	=	Non-recoverable extension [permanent deformation].
Relaxation	=	Continued extension without the further application of force.