

T1

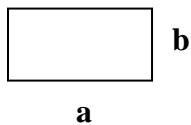
Draw repeat of given pattern of 100% cotton woven fabric and calculate always for warp, weft and whole woven fabric: crossing factor [-], covering [%], cover factor [$\text{tex}^{1/2}\text{mm}^{-1}$], areal mass [gm^{-2}] and thickness t [mm]

It is given: $D_o=278$ [threads/10cm], $D_u=278$ [threads/10cm], $d_o=0.160$ [mm], $d_u=0.160$ [mm], $h_u=0.05$ [mm], $T_o=16.5$ [tex], $T_u=16.5$ [tex], $s_o=12$ [%], $s_u=15.1$ [%].

$$T_{\text{will}} K \frac{1}{3} Z$$

T2

Derive shape factor q of ideal fiber with rectangle profile: rectangle with sides equal to a and b . See the scheme. Calculate shape factor in case $a=4b$.

**T3**

Calculate number of fibers n in cross section of 100% polypropylene yarn. The parameters are given:

$$T = 45 \text{ tex} \quad t = 0,19 \text{ tex} \quad Z = 489 \text{ m}^{-1} \quad \mu = 0,489 \quad \rho = 910 \text{ kg/m}^3$$

T4

Calculate relative breaking strength of blended yarn 70POP/30CO, yarn count is 29.5tex, if you know properties of each component:

First component: tenacity = 0.243N/tex, breaking strain = 5.6%

Second component: tenacity = 0.168N/tex, breaking strain = 25%

T5

For blended yarn 30wool/70PES calculate mean value of fiber density ρ , mean value of fiber fineness t , if it is given:

$$t_{\text{vl}}=3,5 \text{ dtex} \quad t_{\text{PES}}=4.8 \text{ dtex} \quad \rho_{\text{vl}}=1310 \text{ kg/m}^3 \quad \rho_{\text{PES}}=1360 \text{ kg/m}^3$$