

**1.12 Calculating the Weights of Warp and Weft Required to Weave a Cloth**

**Cloth particulars**

Cloth length	= 1000 metres
Cloth width	= 1.4 metres (excluding selvedge)
Selvedge width	= 1 cm on each side
Warp count	= 60 <sup>s</sup>
Weft count	= 56 <sup>s</sup>
Ends per inch	= 64
Picks per inch	= 60
Warp crimp	= 8%
Weft crimp	= 7%
Warp waste	= 3%
Weft waste	= 1%
Selvedge yarn count	= 60 <sup>s</sup>
Selvedge ends per inch	= 128

**Weight of body warp required**

$$\begin{aligned}
 &= \text{Total no. of body warp threads} \times \text{Length of each body warp thread in hanks} \times \frac{1}{\text{Count Ne}} \times \frac{1}{2.205} \times \text{Waste factor} \\
 &= 1.4 \times 1.09 \times 36 \times 64 \times 1000 \times 1.09 \times \frac{1}{840} \times \frac{108}{100} \times \frac{1}{60} \times \frac{1}{2.205} \times \frac{103}{100} \\
 &= 38.7436 \text{ kg}
 \end{aligned}$$

Note: Length of warp = Cloth length x Warp crimp factor

**Weight of selvedge warp required:**

$$\begin{aligned}
 &= \text{Total no. of selvedge warp threads} \times \text{Length of each selvedge warp thread in hanks} \times \frac{1}{\text{Count Ne}} \times \frac{1}{2.205} \times \text{Waste factor} \\
 &= \frac{128}{2.54} \times 2 \times 1000 \times 1.09 \times \frac{1}{840} \times \frac{108}{100} \times \frac{1}{60} \times \frac{1}{2.205} \times \frac{103}{100}
 \end{aligned}$$

$$= 1.11 \text{ kg}$$

Weight of weft required:

$$\begin{aligned}
 &= \text{Total no. of weft threads} \times \text{Length of each weft thread in yards} \times \frac{1}{840} \times \frac{1}{\text{Count Ne}} \times \frac{1}{2.205} \times \text{Waste factor} \\
 &= 1000 \times 1.09 \times 36 \times 60 \times 1.42 \times 1.09 \times \frac{107}{100} \times \frac{1}{840} \times \frac{1}{56} \times \frac{1}{2.205} \times \frac{101}{100} \\
 &= 37.718 \text{ kg}
 \end{aligned}$$

## 2. Calculation of weight per square meter of cloth

Cloth particulars

Ends per cm	= 24
Picks per cm	= 20
Warp count	= 15 tex
Weft count	= 16 tex
Warp crimp	= 6%
Weft crimp	= 4%

Weight of warp in one square metre of the cloth:

$$\begin{aligned}
 &= \text{Total no. of warp threads} \times \text{Length of each warp thread in metres} \times \frac{1}{1000} \times \text{Tex (of warp)} \\
 &= 1 \times 100 \times 24 \times 1 \times \frac{106}{100} \times \frac{1}{1000} \times 15 \\
 &= 38.16 \text{ g.}
 \end{aligned}$$

Weight of weft in one square metre of the cloth:

$$= \text{Total no. of weft threads} \times \text{Length of each weft thread in metres} \times \frac{1}{1000} \times \text{Tex (of weft)}$$

$$= 1 \times 100 \times 20 \times 1 \times \frac{104}{100} \times \frac{1}{1000} \times 16$$

$$= 33.28 \text{ g}$$

Weight per square metre of the fabric = Weight of warp + Weight of weft

$$= 38.16 + 33.28$$

$$= 71.44 \text{ g}$$

### 3. Calculation of weight per square yard of the fabric

Cloth particulars

Ends per inch = 70

Picks per inch = 58

Warp count = 56's

Weft count = 54's

Warp crimp = 9%

Weft count = 7%

Weight of warp in the cloth:

$$= \frac{\text{Total no. of warp threads}}{\text{Length of each warp thread in hanks}} \times \frac{1}{\text{Count Ne}} \times \frac{1}{2.205} \times 1000 \text{ g}$$

$$= 1 \times 36 \times 70 \times 1 \times \frac{109}{100} \times \frac{1}{840} \times \frac{1}{56} \times \frac{1}{2.205} \times 1000 \text{ g}$$

$$= 26.48 \text{ g}$$

Weight of weft in the cloth:

$$= \frac{\text{Total no. of weft threads}}{\text{Length of each weft thread in hanks}} \times \frac{1}{\text{Count Ne}} \times \frac{1}{2.205} \times 1000 \text{ g}$$

$$= 1 \times 36 \times 58 \times 1 \times \frac{107}{100} \times \frac{1}{840} \times \frac{1}{54} \times \frac{1}{2.205} \times 1000 \text{ g}$$

$$= 22.33 \text{ g}$$

Weight per square yard of the fabric = Weight of warp + Weight of weft

$$= 26.48 + 22.33$$

$$= 48.81 \text{ g}$$