

Example 8.

$$F = 320 C \sqrt{A}$$

normal materials $\rightarrow C = 1$

$$A = 2 \times 100 = 200 \text{ m}^2$$

$$F = 320 \times 1 \times \sqrt{200} = 4525.5 \text{ m}^3/\text{day}$$

$$\text{convert to } \frac{\text{m}^3}{\text{min}} : 4525.5 \frac{\text{m}^3}{\text{day}} \times \frac{\text{day}}{(24 \times 60) \text{ min}} = 3.14 \frac{\text{m}^3}{\text{min}}$$

From table 2-2, choose the bigger nearest duration
 \therefore duration = 2 hrs

Example 9:

Consider the two building are constructed from wood:

$$F_1 = 320 C \sqrt{A}$$

$$C = 1.5, A_1 = 4 \times 509 + 5 \times 900 = 6536 \text{ m}^2$$

$$\therefore F_1 = 320 \times 1.5 \times \sqrt{6536} = 38805.9 \frac{\text{m}^3}{\text{day}} = 26.95 \frac{\text{m}^3}{\text{min}}$$

\therefore duration = 8 hrs

Consider the two building are constructed from ordinary materials:

$$F_2 = 320 C \sqrt{A}$$

$$C = 1 \Rightarrow F_2 = 320 \times 1 \times \sqrt{6536} = 25870.6 \frac{\text{m}^3}{\text{day}} = 17.97 \frac{\text{m}^3}{\text{min}}$$

\therefore duration = 5 hrs

For both buildings:

$$F_T = F_1 \times \frac{A_1}{A_T} + F_2 \times \frac{A_2}{A_T}$$
$$= 26.95 \times \frac{4 \times 509}{6536} + 17.97 \times \frac{5 \times 900}{6536} =$$
$$= 8.39 + 12.37 = 20.76 \text{ m}^3/\text{min}$$

\therefore duration = 6 hrs