

What are Fire Safety Regulations?

Worksheet

Fire safety regulations (found in codes like NFPA 101, IBC Chapter 10 or national fire codes) set minimum requirements for detection, compartmentation, suppression and - critically - the egress width needed to evacuate a building's occupant load safely.

Questions

1. An occupant load of 200 people needs egress width at 5 mm/person. Required width?
 - A) 1000 mm
 - B) 200 mm
 - C) 5 mm
 - D) 1200 mm
2. Which is an example of PASSIVE fire protection?
 - A) Sprinkler system
 - B) Fire-rated wall
 - C) Smoke detector
 - D) Fire alarm
3. Why do codes set a minimum egress width?
 - A) To save construction cost
 - B) To ensure occupants can evacuate within a safe time
 - C) For aesthetic reasons
 - D) It's optional
4. What increases the required egress width for a space?
 - A) Lower occupant load
 - B) Higher occupant load
 - C) Smaller floor area
 - D) Fewer fire doors
5. An office floor has an occupant load of 300 people. Using a width factor of 5 mm/person, find the total required egress width.
6. A theater exit door serves 120 people with a factor of 6.1 mm/person. What door width is required?
7. A corridor must serve 450 people through 2 equal exits ($f = 5$ mm/person). Find the width needed per exit.
8. Define: What is the goal of fire safety regulations?
9. Define: What is 'occupant load'?
10. Define: Difference between passive and active fire protection?

Answer Key

1. A) $1000 \text{ mm} - W = Nf = 2005 = 1000 \text{ mm}$.
2. B) Fire-rated wall - A fire-rated wall physically contains fire without activating.
3. B) To ensure occupants can evacuate within a safe time - Width limits crowd flow time so everyone can exit before conditions become untenable.
4. B) Higher occupant load - More people need more total width to evacuate in the same time.
5. $W = N f = 300 \cdot 5 = 1500 \text{ mm}$ total required egress width.
6. $W = N f = 120 \cdot 6.1 = 732 \text{ mm}$ minimum clear door width.
7. Total width = $450 \cdot 5 = 2250 \text{ mm}$ Per exit = $2250 / 2 = 1125 \text{ mm}$ each.
8. To detect fire early, stop it spreading and give occupants enough time and width to evacuate safely.
9. The maximum number of people a space is designed to hold, used to calculate required exits and egress width.
10. Passive = building elements that contain fire (walls, doors); active = systems that detect/fight fire (sprinklers, alarms).

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