

Fireproof Construction

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Fireproof constructions are construction of buildings that resist fire damage and prevent the spread of fire. Strictly speaking, truly fireproof buildings do not exist, because most noncombustible materials employed in construction suffer some damage under the action of heat and flame. A so-called fireproof building containing only non-burning components, such as steel, terra-cotta, plaster, and concrete, may be completely destroyed by an intense fire in adjacent buildings. It may also be gutted by an interior fire that feeds on fixtures and trim only but that spreads through the building if the building is improperly designed.

The two primary considerations in fire-resistant construction are design and materials. A building should be subdivided by fire-resisting walls, floors, and partitions to limit the spread of fire. Elevator and stair shafts, walls, light wells, and other vertical structures must be isolated for the same reason and because vertical openings act as chimneys, increasing the intensity of a fire. Stairwells or shafts that must be continuous are isolated by heavy, fire-resistant walls that are either solid or, if hollow, are provided with a number of horizontal partitions, or fire stops. All doorways or other wall openings should be provided with doors or covers that are self-closing or that close automatically in the event of fire. Materials used for the primary structure typically should provide 1-3 hours of fire resistance. Materials used for interior finish should be able to resist the spread of fire, and many local codes detail minimum flame-resistance requirements. Consideration must also

be given to the poisonous products formed by materials in a fire;
some are more hazardous than the fire itself.