

Fire Resistance

Build Bloc Customer Guidance BBCG/01/V1

Fire resistance of concrete blocks is a critical factor in construction, especially in buildings where fire safety is a priority. The fire resistance of a concrete block wall depends on several factors, including the **thickness** of the wall, the **density** of the blocks, the **type of aggregates** used, and the presence of additional layers such as plaster or fireproof coatings.

Due to their fire resistance, our concrete blocks have an A1 fire rating under BS EN 13501-1:2018. This means that they are classed as non-combustible and pay no contribution towards a fire. The A1 rating of concrete blocks was determined by the European Commission.

Factors Affecting Fire Resistance of Concrete Block Walls

1. **Wall Thickness:** Generally, thicker walls provide greater fire resistance.
2. **Type of Concrete Block:** Blocks made with different types of aggregate (such as lightweight or dense aggregate) have different fire-resistant properties.
3. **Density:** Higher-density blocks tend to offer better fire resistance.
4. **Surface Finishes:** Fire-resistance ratings can be increased with the addition of finishes like plaster or fire-resistant boards.

General Fire Resistance Ratings for Concrete Block Walls

Below is a **table** that gives approximate fire-resistance ratings for walls of varying thicknesses, based on their construction and type of aggregate:

Block Type	Wall Thickness (mm)					
	100	100	140	140	215	215
	Bare	F1/F2	Bare	F1/F2	Bare	F1/F2
Ultra/Lightweight (Hours)	1.5	2.5	2	3	4	4
Medium-Dense (Hours)	2	3	3	4	4	4
Dense (Hours)	3	4	4	4	4	4

Finishing

F1 - Plaster or Render: Applying a **12 mm (1/2 inch)** thick plaster or render can increase the fire resistance rating of the wall by **up to 1 hour**.

F2 - Gypsum Plasterboard: Installing fire-rated gypsum board on the interior face can also enhance fire resistance by **1-2 hours** depending on the board type.

Notes:

- **Lightweight aggregate** concrete blocks (e.g., pumice, expanded clay) tend to provide lower fire resistance compared to **medium-weight** or **dense aggregate** blocks.
- The above table assumes a **non-load-bearing wall**. For load-bearing walls, fire resistance may be slightly reduced due to the additional structural demands during a fire.
- Fire resistance ratings can be improved with **plastering** or applying **fire-resistant boards** to the wall surface.

Codes and Standards

In many countries, building codes specify minimum fire resistance ratings for different types of buildings and wall constructions. For example:

- **BS EN 1996-1-2** (Eurocode 6): Offers guidance on masonry structures, including fire resistance.

How to Improve Fire Resistance

1. **Increase Wall Thickness:** The simplest way to enhance fire resistance.
2. **Add Surface Finishes:** Use fire-resistant plaster, intumescent coatings, or fire-rated boards.
3. **Choose Higher Density Blocks:** Dense aggregate blocks typically offer higher fire resistance.
4. **Use Reinforced or Cavity Walls:** Adding reinforcements or creating cavity walls improves structural integrity during a fire.

