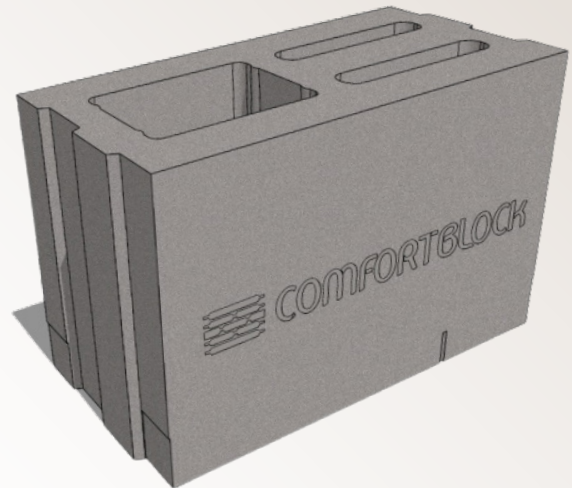




**1- to 2-HOUR FIRE
RESISTANCE RATING**

Comfort Block is assembled with adhesive, rather than mortar. Comfort Block with approved adhesive has been tested in accordance with ASTM Standards by NCMA (National Concrete and Masonry Association) and is an approved alternate to mortar joint CMU assemblies.*

The fire resistance rating for CB-6 is determined in accordance with TMS 1430-21, Design and Construction Guidelines for Dry-Stack Concrete Masonry and NCMA TEK 07-01D, Fire Resistance Ratings of Concrete Masonry Assemblies based on an equivalent thickness conforming to ASTM C-140 Standard Methods of Sampling and Testing Concrete Masonry Units.



*See Evaluation of Comfort Block CB-8 CMU and illbruck PU700 Masonry Adhesive Under ICC-ES AC308

With an Equivalent Thickness Value of 3.90", CB-6 mix designs meet the minimum equivalent thickness requirements for a 1-hour (normal weight mix) to 2-hour (lightweight mix) fire resistance rating.

Extensive testing has established a relationship between fire resistance and the equivalent solid thickness of concrete masonry walls, as shown in Table 1. Equivalent thickness is essentially the solid thickness that would be obtained if the volume of concrete contained in a hollow unit were recast without core holes (see Figure 1).

Table 1- Fire Resistance Rating Period of Concrete Masonry Assemblies (refs. 1, 2, 3)

Aggregate type in the concrete masonry unit ^c	Minimum required equivalent thickness, in. (mm), for fire resistance rating, hours ^{A,B}														
	4	3 3/4	3 1/2	3 1/4	3	2 3/4	2 1/2	2 1/4	2	1 3/4	1 1/2	1 1/4	1	3/4	1/2
Calcareous or siliceous gravel	6.2	6.0	5.8	5.5	5.3	5.0	4.8	4.5	4.2	3.9	3.6	3.2	2.8	2.4	2.0
Limestone, cinders or unexpanded slag	5.9	5.7	5.5	5.2	5.0	4.8	4.5	4.3	4.0	3.7	3.4	3.1	2.7	2.3	1.9
Expanded clay, shale, or slate	5.1	4.9	4.8	4.6	4.4	4.2	4.0	3.8	3.6	3.4	3.3	2.9	2.6	2.2	1.8
Expanded slag or pumice	4.7	4.5	4.4	4.2	4.0	3.8	3.6	3.4	3.2	3.0	2.7	2.5	2.1	1.9	1.5

^A Fire resistance rating between the hourly fire resistance rating periods listed may be determined by linear interpolation based on the equivalent thickness value of the concrete masonry unit. The requirements of ASTM C55, ASTM C73, ASTM C90 or ASTM C744 (refs. 13, 14, 6, 15) shall apply. Include equivalent thickness of finishes where applicable: see section "Effects of Finishes on Fire Resistance Ratings."

^B Where combustible members are framed into the wall, the thickness of solid material between the end of each member and opposite wall face, or between members set in from opposite sides, must be at least 93% of thickness shown.

^C Minimum required equivalent thickness corresponding to the hourly fire resistance rating for units made with a combination of aggregates shall be determined by linear interpolation based on the percent by volume of each aggregate used in the manufacture.



COMFORT BLOCK WALL ASSEMBLIES MUST BE ENTIRELY COATED ON BOTH SIDES TO:

- + Weatherize the wall system.
- + Achieve the desired aesthetic.
- + Achieve the appropriate fire rating based on TMS 1430-21 and NCMA TEK 07-01D.

Effects of Finish Materials on Fire Resistance Ratings

In many cases, drywall, plaster or stucco finishes are used on concrete masonry walls. While finishes are normally applied for architectural reasons, they can also provide additional fire resistance. The IBC and ACI/TMS 216.1 make provision for calculating the additional fire resistance provided by these finishes.

Note that when finishes are used to achieve the required fire rating, the masonry alone must provide at least one-half of the total required rating and the contribution of the finish on the non-fire-exposed side can not be more than one-half of the contribution of the masonry alone. This is to assure structural integrity during a fire. The finish material must also be continuous over the entire wall.

—NCMA TEK 07-01D

References:

Design and Construction Guidelines for Dry-Stack Concrete Masonry, TMS 1430-21. The Masonry Society, 2021.

Fire Resistance Ratings of Concrete Masonry Assemblies, NCMA TEK 07-01D. National Concrete Masonry Association, 2018.

Standard Methods of Sampling and Testing Concrete Masonry Units, ASTM C140. ASTM International, 2022.

Evaluation of Comfort Block CB-8 CMU and illbruck PU700 Masonry Adhesive Under ICC-ES AC308. National Concrete Masonry Association Research and Development Laboratory, 2023.