

Fire Resistance - Masonry

Non-combustible Norlite masonry construction mitigates the spread of fires and the dangers of structural collapse. Concrete masonry units manufactured with Norlite aggregates are readily available throughout the Northeast.

Methods for Classification of Fire Resistant Ratings of Concrete Masonry

The fire resistive properties of concrete masonry units are generally classified by hourly fire resistance ratings. These hourly fire resistance ratings can be established by three different methods:

1. Calculation

As a result of numerous fire tests dating back to the 1930's and the resulting enormous amount of data compiled, the high temperature performance of expanded shale concrete masonry has been well established. By drawing on this data, methods of calculation have been developed to determine fire resistive ratings.

2. Underwriters Laboratories Inc.

A commercial listing service which test materials and assemblies to determine if they comply with applicable safety standards. Also publishers of directories that list classified assemblies.

3. Fire testing

Full scale assembly testing may be conducted and the results used to confirm code compliance or for the purpose of gathering new research data.

ACI 216.1-97 Manual of Concrete Practice Table 3.1

Fire resistance rating of concrete masonry assemblies

Aggregate Type	Minimum required equivalent thickness for fire resistance rating, in.				
	1 hr	1.5 hr	2 hr	3 hr	4 hr
Calcareous or siliceous gravel (other than limestone)	2.8	3.6	4.2	5.3	6.2
Limestone, cinders, or air-cooled slag	2.7	3.4	4.0	5.0	5.9
Expanded clay, expanded shale or expanded slate	2.6	3.3	3.6	4.4	5.1
Expanded slag or pumice	2.1	2.7	3.2	4.0	4.7

- A. Fire resistance ratings between the hourly fire resistance rating periods listed shall be determined by linear interpolation based on the equivalent thickness value of the concrete masonry assembly.
- B. Minimum required equivalent thickness corresponding to the 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.