

FIRE RESISTANCE

Fire Resistance Rating Calculation:

The following illustration shows you how to determine the rating of an 8" hollow wall which is constructed of 53% solid units manufactured with expanded slag aggregate.

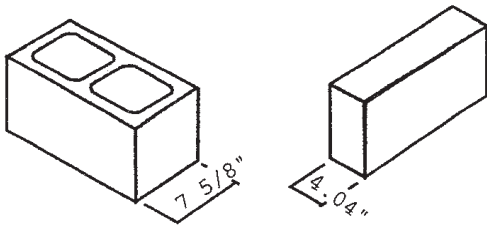
Equivalent thickness:

Equivalent thickness is the solid thickness that would be obtained if the same amount of concrete contained in a hollow unit were recast without core holes.

$$\text{Equivalent Thickness} = 0.53 \times 7\text{-}5/8" = 4.04"$$

If this hollow unit is 53% solid.

Its equivalent thickness is 4.04 inches



Percentage solid is determined in accordance with "Standard Methods of Testing Concrete Masonry Units", ASTM C140 and is based on the average net area or net volume of the unit.

Fire Resistance Rating (example):

Refer to the reprinted tables from the UBC model building code for expanded slag aggregate units. The rating is three (3) hours for walls with an equivalent thickness of at least 4.0".

Note that 4.04 is greater than 4.0"

Percentages of solids for **Masolite's** standard size concrete blocks:

4x8x16	73%
6x8x16	61%
8x8x16	53%
10x8x16	51%
12x8x16	49%
14x8x16	47%

Please see page 21 for a complete Fire Rating list.

Rated Fire-Resistive Periods for Various Walls and Partitions:

Construction	Minimum Finished Thickness face-to-face (in inches)			
	4 hr.	3 hr.	2 hr.	1 hr.
Expanded slag or pumice	4.7	4.0	3.2	2.1
Expanded clay, shale or slate	5.1	4.4	3.6	2.6
Limestone, cinders or air cooled slag	5.9	5.0	4.0	2.7
Calcareous or siliceous gravel	6.2	5.3	4.2	2.8
<i>Material: Concrete Masonry Units</i>				

The fire resistance of concrete masonry is well established by hundreds of tests. Research has shown that the fire resistance rating of concrete masonry is typically governed by the average temperature rise criteria on the non-fire side of the wall. Research has also shown that the fire resistance rating is a function of the units and the equivalent solid thickness of the unit. In accordance with this research, fire rating can be calculated based on equivalent thickness and the aggregate properties of the unit. The calculated fire resistance rating of concrete masonry is recognized in model building codes.

The fire resistive time period for concrete masonry units meeting the equivalent thickness required for a two-hour fire resistive rating and having a thickness of not less than 7-5/8", is four hours when cores which are not grouted are filled with:

- Silicone treated perlite loose-fill insulation
- Vermiculite loose-fill insulation, or expanded clay
- Shale or slated lightweight aggregate
- Sand and slag having a maximum particle size of 3/8"
- Core-Fill 500™ - a thermal and acoustical amino-plast masonry foam insulation.

FIRE RATINGS OF CONCRETE MASONRY UNITS

The information listed below applies only to products manufactured by Masolite.

Block #	Mix	% Solid	Equivalent Thickness	Fire Rating Hours
324NW	Normal Weight	100%	2.62	<1.00
402NW	Normal Weight	73%	2.64	<1.00
402LW	Light Weight	73%	2.64	1.00
424NW	Normal Weight	100%	3.62	1.00
424LW	Light Weight	100%	3.62	2.00
602NW	Normal Weight	61%	3.43	1.00
602LW	Light Weight	61%	3.43	1.00
624NW	Normal Weight	100%	5.62	3.00
624LW	Light Weight	100%	5.62	4.00
800NW	Normal Weight	53%	4.04	2.00
800LW	Light Weight	53%	4.04	2.00
824NW	Normal Weight	100%	7.62	4.00
824LW	Light Weight	100%	7.62	4.00
837NW	Normal Weight	70%	5.33	3.00
837LW	Light Weight	70%	5.33	4.00
1000NW	Normal Weight	51%	4.90	2.00
1000LW	Light Weight	51%	4.90	3.00
1024NW	Normal Weight	100%	9.62	4.00
1024LW	Light Weight	100%	9.62	4.00
1037NW	Normal Weight	63%	6.06	4.00
1037LW	Light Weight	63%	6.06	4.00
1200NW	Normal Weight	49%	5.69	3.00
1200LW	Light Weight	49%	5.69	4.00
1224NW	Normal Weight	100%	11.62	4.00
1224LW	Light Weight	100%	11.62	4.00
1400NW	Normal Weight	47%	6.40	4.00
1400LW	Light Weight	47%	6.40	4.00

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