

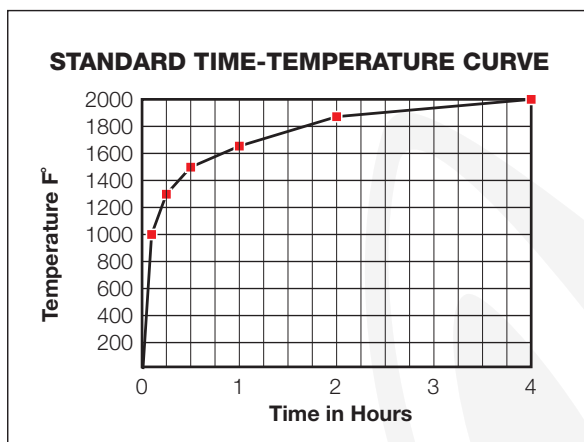
Fire Resistance Ratings (FRR)

OVERVIEW

Building codes define Fire Resistance Rating as – ‘the time in minutes or hours that a material or assembly of materials will withstand the passage of flame and the transmission of heat when exposed to fire under specific conditions of test and performance criteria.’

The specific conditions and test criteria have been established as fire endurance testing per ASTM E119 or CAN/ULC-S101.

Testing involves a wall assembly being subjected to a sustained fire with increasing temperatures per this Standard Time-Temperature Curve:



As the temperature increases, the point in time where the wall fails, by allowing flame and heat to penetrate, establishes the fire resistance rating, in hours, for that wall assembly

Building and Fire Codes specify that certain walls, exterior and/or interior, for various building types are required to meet and be constructed as fire separations and/or firewalls to stop fire. These walls must meet a specific hourly FRR and be constructed per the testing criteria

FOX BLOCKS FIRE RESISTANCE RATING (FRR)

The third-party certified testing laboratory – INTERTEK has registered FRR designs for Fox Blocks, Fox Blocks Compact and Fox Blocks Reveal insulated concrete forms. The attached reports FXB/ICF 240-01 and FXB/ICF 240-02 specify the materials and assemblies that meet a maximum 4-hour FRR.

intertek
Total Quality. Assured.

Refer to Fox Blocks FRR listing on Intertek website – <http://bpdirectory.intertek.com>

Fire Resistance Ratings (FRR)



TECHNICAL BULLETIN . RESILIENCY & FIRE

1.11.01

Fox Blocks FRR designs specify the concrete and rebar design for a load bearing walls. The sheathing is an approved thermal barrier, which for interior walls may be regular ½" gypsum board or other approved products.

For exterior finishes the Fox Blocks Intertek FXB/ICF designs have a full list of exterior materials. Plus Section 4.9 of the CCRR-1010 lists interior and exterior finishes criteria.

BUILDING CODE COMPLIANCE

The Fox Blocks – Code Compliance Research Report CCRR-1010 specifically refer to the Intertek Design Listings and state: *'The forms may be used in fire-resistant-rated construction, provided installation is in accordance with Section 4.8 (FRR wall assemblies). The forms may be used in Types I, II, III or IV (noncombustible) construction, provided installation is in accordance with Section 4.9 of the CCRR-1010.'*

FOX BLOCKS ADVANTAGE

In comparison, for a load bearing, one or two-hour FRR, wood or steel stud assemblies require one or two layers ½" or ⅝" Fire Type X gypsum board:

- 1 Hour FRR - 2x4 Wood studs, one layer of ½" Fire X gypsum board each side
3½" Steel stud, one layer of ⅝" fire X gypsum board each side
- 2 Hour FRR - 2x4 Wood studs, two layers ⅝" Fire X gypsum board each side
3½" Steel studs, two layers ⅝" Fire X gypsum board each side

Fox Blocks assemblies only require regular ½" gypsum board as an approved thermal barrier.

Fire partitions, firewalls, party walls, shaft walls and other wall assemblies that require fire resistance ratings are easily constructed with Fox Blocks.

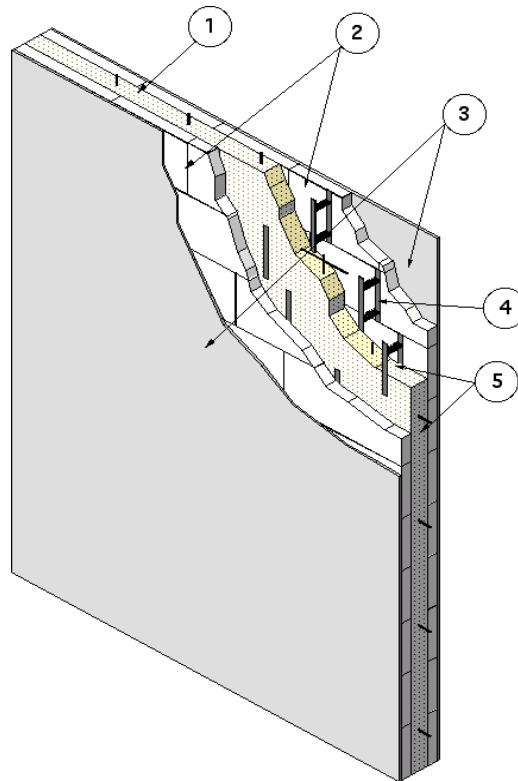
Refer to Technical Bulletin 1.11.02 Flame Spread and Smoke Development

Refer to CCRR-1010 Report on Fox Blocks website.

Refer to Technical Bulletin 1.11.03 Thermal Barrier

Refer to Technical Bulletin 1.11.04 Optimizing Fire Partitions

Airlite Plastics Co.
Design No. FXB/ICF 240-01
Fox Blocks and Fox Reveal Insulating Concrete Forms
ASTM E119 and CAN/ULC-S101
Fire Rating Only - Load Rating Not Within The Scope Of This Listing
Assembly Rating – 2 and 4 Hour



FORMED WALL THICKNESS	MAX FIRE RATING
4 in. (102 mm)	2 Hour
6 in. (152 mm)	4 Hour
8 in. (203 mm)	4 Hour
10 in. (254 mm)	4 Hour
12 in. (305 mm)	4 Hour

- 1. CONCRETE:** Pour normal weight concrete (density typically between 145-155 pcf) having a min. 21 MPa (3,000 psi) nominal compressive strength into the forming system (Item 2).

- 2. CERTIFIED MANUFACTURER:** Airlite Plastics Co.

CERTIFIED PRODUCT: Fox Blocks Insulating Concrete Forms (ICF)

CERTIFIED PRODUCT: Fox Reveal Insulating Concrete Forms (ICF)



FORMING SYSTEM: The Fox Blocks ICF and Fox Reveal ICF forming system consists of Type 2 (CAN/ULC-S701) or Type II (ASTM C578) molded expanded polystyrene (EPS) foam panels with embedded polypropylene ties that come preassembled to form nominal concrete core thicknesses of 4 in. (102 mm), 6 in. (152 mm), 8 in. (203 mm), 10 in. (254 mm), and 12 in. (305 mm). The Fox Blocks and Fox Reveal ICFs are produced in 48 in. length x 16 in. height (1220 mm x 410 mm) for all core thicknesses. The EPS panels have a nominal thickness of 2-5/8 in. (66.7 mm). The top and bottom of the EPS panels have an interlocking system which aligns the forms together as they are stacked.

Fox Blocks ICF systems have polypropylene ties spaced at 8 in. (203 mm) on center (oc) in the cavity of the ICF that include flanges acting as furring strips for mechanical fastening.

Fox Reveal ICFs have one EPS panel of the above-mentioned type and thickness on one side, and one plywood panel on the opposing side, forming nominal concrete core thicknesses of 6-5/8 in. (168 mm), 8-5/8 in. (219 mm), 10-5/8 in. (270 mm), 12-5/8 in. (321 mm), and 14-5/8 in. (371 mm). The plywood panel is to be removed after the concrete is cured. The concrete is either left exposed or is covered as described in Item 3.

3. SHEATHING AND EXTERIOR FINISHES (Optional): Not required for the fire resistance ratings described in this listing.

An approved thermal barrier may be installed subject to the requirements of the applicable Building Code.

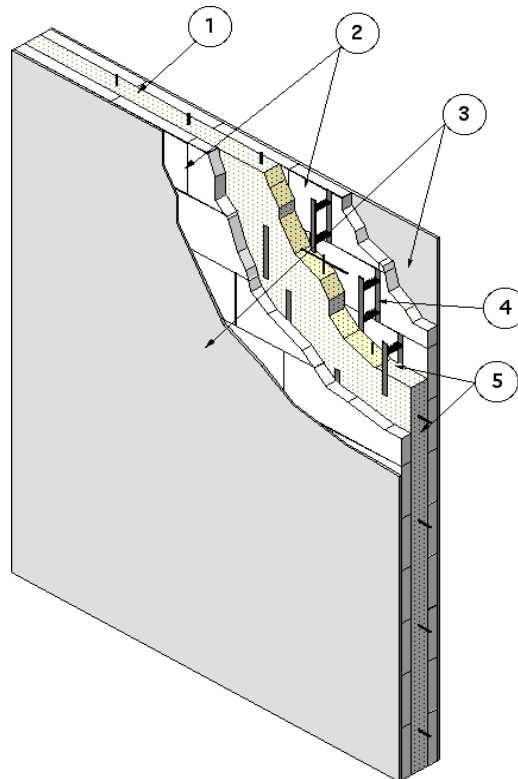
When desired, exterior finishes may be applied to the exterior side of the forming system (Item 2) wall assembly without diminishing the assembly rating. Exterior Insulation Finish System (EIFS), any exterior stucco, brick or brick veneer, stone or stone veneer, cultured stone, and siding made from vinyl, aluminum, wood, or steel may be used. Apply exterior finishes in accordance with the manufacturer's instructions.

4. POLYPROPYLENE FORM TIES: Each 48 in. (1220 mm) length of ICF has six polypropylene ties. The polypropylene ties are spaced nominally 8 in. (203 mm) oc. The polypropylene ties are open to allow concrete to flow easily, and to allow seating for the placement of horizontal and vertical rebar placement.

5. STEEL REINFORCEMENT: Place the steel reinforcement before filling the forming system with concrete (Item 1). The rebar used is to be designed and placed per the applicable Code requirements and approved by a registered design professional with the appropriate license for the Authority Having Jurisdiction.

6. WALL ASSEMBLY: The ICF wall assembly may be used as either an interior or exterior wall. ICFs exposed to the interior of a building shall have a thermal barrier (Item 3) attached. Exterior walls are only required to have a thermal barrier on the side facing the interior of the building. The fire resistance rating is applicable to the ICF wall assembly from either side.

Airlite Plastics Co.
Design No. FXB/ICF 240-02
Fox Blocks Compact Insulating Concrete Forms
ASTM E119 and CAN/ULC-S101
Fire Rating Only - Load Rating Not Within The Scope Of This Listing
Assembly Rating – 2 and 4 Hour



FORMED WALL THICKNESS	MAX FIRE RATING
4 in. (102 mm)	2 Hour
6 in. (152 mm)	4 Hour
8 in. (203 mm)	4 Hour
10 in. (254 mm)	4 Hour
12 in. (305 mm)	4 Hour

1. CONCRETE: Pour normal weight concrete (density typically between 145-155 pcf) having a min. 21 MPa (3,000 psi) nominal compressive strength into the forming system (Item 2).

2. CERTIFIED MANUFACTURER: Airlite Plastics Co.

CERTIFIED PRODUCT: Fox Blocks Compact Insulating Concrete Forms (ICF)

FORMING SYSTEM: The Fox Blocks Compact ICF forming system consists of Type 2 (CAN/ULC-S701) or Type II (ASTM C578) molded expanded polystyrene (EPS) foam



panels with embedded polypropylene ties that come preassembled to form nominal concrete core thicknesses of 4 in. (102 mm), 6 in. (152 mm), 8 in. (203 mm), 10 in. (254 mm), and 12 in. (305 mm). The Fox Blocks Compact ICFs are produced in 48 in. length x 16 in. height (1220 mm x 410 mm) for all core thicknesses. Fox Blocks Compact ICFs have an EPS panel thickness of 2-5/8 in. (63.5 mm). The top and bottom of the EPS panels have an interlocking system which aligns the forms together as they are stacked. The Fox Blocks Compact ICF system has polypropylene ties spaced at 8 in. (203 mm) on center (oc) in the cavity of the ICF that include flanges acting as furring strips for mechanical fastening.

- 3. SHEATHING AND EXTERIOR FINISHES:** An approved thermal barrier must be installed in accordance with the applicable Building Code.

When desired, exterior finishes may be applied to the exterior side of the forming system (Item 2) wall assembly without diminishing the assembly rating. Exterior Insulation Finish System (EIFS), any exterior stucco, brick or brick veneer, stone or stone veneer, cultured stone, and siding made from vinyl, aluminum, wood, or steel may be used. Apply exterior finishes in accordance with the manufacturer's instructions.

- 4. POLYPROPYLENE FORM TIES:** Each 48 in. (1220 mm) of length of Fox Blocks Compact ICFs have six polypropylene ties. The polypropylene ties are spaced nominally 8 in. (203 mm) oc. The polypropylene ties are open to allow the flow around of concrete, and to allow seating for the placement of horizontal and vertical rebar placement.
- 5. STEEL REINFORCEMENT:** Place the steel reinforcement before filling the forming system with concrete (Item 1). The rebar used is to be designed and placed per the applicable Code requirements and approved by a registered design professional with the appropriate Authority Having Jurisdiction.
- 6. WALL ASSEMBLY:** The ICF (Item 2) wall assembly may be used as either an interior or exterior wall. ICFs exposed to the interior of a building shall have a barrier (Item 3) attached. Exterior walls are only required to have a thermal barrier on the side facing the interior of the building. The fire resistance rating is applicable to the ICF (Item 2) wall assembly from either side.