



Technical Performance Data - Fox Blocks ICF Wall Systems

Concrete Wall Construction: (4", 6", 8" & 12" poured or pumped monolithic reinforced structural concrete core)

* Design criteria for the structural concrete wall system.....	ACI 318 design standards for straight wall concrete construction
* Recommended concrete consolidation & formwork design.....	Reference Installation Manual, ACI 309 & ACI 347
* Fox Blocks Installation Manual.....	Second Edition (2010)
* Prescriptive Design of Exterior Concrete Walls.....	PCA 100-2007
* Average weight of the reinforced structural concrete.....	150 lbs. / cu. ft. (including steel reinforcement)
* Thermal Mass (form & 4" reinforced concrete core).....	50 lbs. / sq. ft.
* Thermal Mass (form & 6" reinforced concrete core).....	75 lbs. / sq. ft.
* Thermal Mass (form & 8" reinforced concrete core).....	100 lbs. / sq. ft.
* Thermal Mass (form & 12" reinforced concrete core).....	150 lbs. / sq. ft.
* Recommended concrete core compressive strength.....	Minimum 3000 psi for the walls (minimum 2500 psi for footings)
* Recommended concrete core slump flow for pump mix design.....	4" ICF - 6" to 7", 6" ICF - 5.5" to 6.5" & 8" or 12" ICFs - 5" to 6"
* Recommended aggregate size for the concrete mix design.....	4" ICF - 3/8" max., 6" ICF - 3/8" to 1/2" max. & 8" or 12" ICFs - 1/2" to 3/4" max.

Third Party Testing & Performance:

Expanded Polystyrene (EPS) Testing:

* EPS Foam Resin.....	Modified low pentane, B/C bead size (resin is self-extinguishing, but when burning, emits less than half the toxins of burning wood)
(BASF, Flint Hills & Samsung EPS Materials)	
* EPS Average Manufacturing Density / Type.....	1.5 lbs. / cu. ft. (Type II, Rigid Cellular EPS Foam Plastic)

- * ASTM C578, EPS Thermal Insulation Properties
 - Density, ASTM C303
 - Thermal Resistance, ASTM C518
 - Compressive Resistance, ASTM C165, Proc. A
 - Flexural Strength, ASTM C203
 - Water Vapor Permeability, ASTM E96
 - Water Absorption, ASTM C272
 - Dimensional Stability, ASTM D2126
 - Oxygen Index, ASTM D2863
- * CAN / ULC S701, EPS Thermal Insulation Properties

Fire Safety & Testing:

- * Surface Burning Characteristics of Foam Plastics, ASTM E84 & ANSI / UL 723
 - Flame Spread of the EPS Foam..... less than 25
 - Smoke Development of the EPS Foam..... less than 450
 - Toxicity of the EPS Foam resin..... 24

* Surface Burning Characteristics of Foam Plastics, CAN / ULC S102

- * Fire Burning Characteristics of Plastic Ties
 - ASTM D1929, Flash Ignition Temp..... 350 (C) 662 (F)
 - ASTM D1929, Spontaneous Ignition Temp... 400 (C) 752 (F)
 - ASTM D635, Burn Rating Average Time..... 17.7 mm / min
 - ASTM D2843, Smoke Density Rating..... 7.3

Plastic Tie Strength Testing:

- * Fastener Withdrawal, ASTM D1761..... Passed
- * Fastener Lateral (Shear), ASTM D1761..... Passed
- * Fastener Tensile, ASTM D638..... Passed

* Fire Resistance Rating, ASTM E119 (equivalent Standard Test Methods)

- 4" Concrete Core..... 2 hrs. +
- 6" Concrete Core..... 3 hrs. +
- 8" Concrete Core..... 4 hrs. +
- 12" Concrete Core..... (Pending)
- Fire Endurance Test of Building Construction Materials, CAN / ULC S101
- Fire Tests of Building Construction Materials, NFPA 251
- Fire Tests of Building Construction Materials, UL 263
- Uniform Building Code Standard, UBC 7-1-94

Performance Testing:

- * Sound Transmission Class (STC), ASTM E90
- 4" - 8" ICF @ STC 45-50 + and 12" ICF (Pending)

- * Room Fire Test, UL 1715 / UBC 26-3..... Passed (with 1/2" gypsum board)

Environmental, Safety & Energy Performance:

- * No HCFC's or CFC's emitted during the manufacturing process
- * No toxins or formaldehydes produced
- * Plastic ties are recycled and the EPS Foam forms are recyclable
- * EPA Energy Star® Manufacturing Partner

Energy Efficiency Data & Performance:

- * Thickness of the EPS..... 2.625" / wall panel (5.25" total EPS thickness)
- * EPS Steady State R-Value (thermal resistance of the material).... R - 23 (R - 4.55 / inch @ 40 degrees Fahrenheit)
- * CTL Group Thermal Resistance R-Value Calculation Report..... R - 23+ calculated in accordance with ASHRAE 90.1
- * EPS K-Factor (thermal conductivity of the material)..... K - 0.22 / inch @ 40 degrees Fahrenheit
- * Air Leakage (infiltration rate)..... 0.05 to 0.10 ACH (average air changes / hour)
- * ORNL Thermal Mass Calculator Dynamic R-Value Equivalent..... Greater than R - 32

Storm Safety:

- * Wind Capacity..... Fox Blocks ICF Walls can be designed to meet code requirements
- * Seismic Zones..... Fox Blocks ICF Walls can be designed to meet code requirements

Building Code References:

- * ICC ES ESR-2270
- * ICC ES Acceptance Criteria AC12 & AC15
- * 2009 International Codes, IRC & IBC
- * 1997 UBC, 1999 SBC, 1999 NBNC
- * ASHRAE Handbook - 2009 Fundamentals, Chapter 25 & 26, Standard 90.1
- * Intertek Warnock Hersey Manufacturing Product Certification USA & CAN
- * 2005 NBC of Canada
- * Miami-Dade County Product Division NOA # 07-0919.10
- * Florida Product Approval - FL7497
- * City of New York - MEA 201-08-M
- * City of Los Angeles - RR25689
- * State of Wisconsin - 200718-I
- * CCMC - 13472R