



## 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

#### Plastic Tie Strength Testing:

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

#### Performance Testing:

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

#### 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

#### 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

#### \* 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	

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

#### Building Code References:

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