

Flame Spread & Smoke Development



FLAME SPREAD INDEX (FSI) and SMOKE DEVELOPMENT INDEX (SDI)

Fox Blocks ICFs are manufactured with expanded polystyrene (EPS), which is classified in the building code as foam plastic insulation. Both American (IBC and IRC) and Canadian (NBCC) Building Codes require specific testing to evaluate acceptability limits for the surface burning and smoke development characteristics of foam plastic insulation.

Fox Blocks ICF products utilize Type II EPS bead and all have a flame-retardant additive that reduces the flammability of the foam, increasing the ignition temperature and reducing the ability of the insulation to sustain a flame.

Test reports conducted by the National Research Council of Canada state: "The maximum toxicity index obtained from the combustion of polystyrene was of the same order as that of wood."

Fox Blocks EPS insulation and ICF blocks have been tested to meet building code requirements for the Flame Spread Index (FSI), Smoke Development Index (SDI) and toxicity by an independent certified third-party testing laboratory per the ASTM E84 and CAN/ULC-S102.2M test standards.

IBC and IRC Code Requirements - USA

IBC Section 2603.3 and IRC Section 318.1.1 specify an FSI of not more than 75 and an SDI of not more than 450 in accordance with ASTM E84 standard testing.

Fox Blocks ICFs test results as per ASTM E84 reflect an FSI of less than 25 and an SDI of 450 or less, thereby meeting the IBC and IRC code requirements.

NBCC Requirements - Canada

NBCC Section 3.1.5.12.(3) specifies an FSI of more than 25 but not more than 500 for foam plastic insulation in accordance with CAN/ULC-S102.2M, in a building required to be of noncombustible construction, provided the insulation is protected by a thermal barrier of ½" (12.7mm) gypsum board or an equivalent material in accordance with CAN/ULC-S102.2M.

Fox Blocks ICF test results as per CAN/ULC-S102.2M reflect an FSI of 140, thereby meeting the NBCC requirements.

In both building codes, IRC and NBCC, the code requires that plastic insulation, in habitable spaces, be protected with a 15-minute thermal barrier (fire protection layer). This is typically regular ½" gypsum board (drywall). In its normal end uses EPS is covered by a thermal barrier which protects the EPS during the initial phase of a fire.

Note: Both tests – ASTM E84 and CAN/ULC-S102.2M are similar, but the resultant index or ratings numbers are calibrated differently.

Refer to the following Technical Bulletins –

1.11.01 Fire Resistance Ratings

1.11.03 Fire Protection - 15 Min. Thermal Barrier