

# 7.1.8 – NON-COMBUSTIBLE CONSTRUCTION (I-Codes)

**Intertek** ETL SEMKO

February 2, 2006

Francis Roma  
Logix Insulated Concrete Forms Ltd.  
327 – 801 Klahanie Drive  
Port Moody, BC V3H 5K4

Dear Mr. Roma,

**RE: Installation of Logix ICF in Non-Combustible Construction, Project # 3091401**

## INTRODUCTION

Intertek Testing Services NA Ltd. (Intertek) has reviewed, at the request of Logix Insulated Concrete Forms (ICF) Ltd., the requirements for Non-Combustible Construction as it relates to Insulated Concrete Forms (ICFs) under the 2003 International Building Code (IBC). This evaluation is based on past test reports, and Logix ICF Ltd. current application to ICC-ES to include multi-storey construction.

## STANDARDS AND CRITERIA

- 2003 International Building Code
- ICC-ES AC12 "Acceptance Criteria for Foam Plastic Insulation"

## EVALUATION

Section 3.3 of ICC-ES AC12 states that in some instances foam plastic can be permitted where non-combustible materials are required if conditions of the 2003 IBC, Section 2603.5 are met. This section has been summarized below, and evidence provided to demonstrate how Logix ICF complies for use in non-combustible construction.

**1) 2603.5.1 Fire Resistance rated Walls: Where the wall is required to have a fire-resistance rating, data based on tests conducted in accordance with ASTM E119 shall be provided.**



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The Logix ICFs achieved a 3 hour fire resistance rating when tested by Intertek in Intertek Test Report 3020964(d) dated June 2, 2004. A further study was conducted in which, the Intertek Letter dated November 11, 2003 showed that the presence of plastic ties in the concrete would not affect the ability of the wall to achieve a fire resistance rating of up to 4 hours.

**2) 2603.5.2 Thermal Barrier: Any foam plastic insulation shall be separated from the building interior by a thermal barrier meeting the provisions of Section 2603.4.**

Section 2603.4 requires that the interior of a building be separated from the foam plastic by an approved thermal barrier of ½ inch (12.7 mm) gypsum wallboard or equivalent thermal barrier that will limit the average temperature rise of the unexposed surface to not more than 250°F (120°C) after 15 minutes of fire exposure. The thermal barrier must also be installed in a manner that will remain in place for 15 minutes based on UL1715 (UBC Standard 26-3).

ASTM E119 testing per Intertek Test Report 3020964(d) was conducted using a ½ inch gypsum wallboard, and results showed that the temperature rise after 15 minutes was less than 60°F on the unexposed side.

A standard room fire test per Intertek Test Report 3020964(a) was also conducted in accordance with UBC Standard 26-3, and results showed that the ½ inch gypsum wallboard remained intact.

**3) 2603.5.3 Potential Heat: The potential heat of the foam plastic insulation shall be determined by tests conducted in accordance with NFPA 259.**

One of the polystyrene beads used in Logix ICF are Huntsmen Grade 40 and 54, for which Southwest Research Institute conducted testing per NFPA 259 and have reported in SwRI Project No. 01.03049.01.303. Results showed potential heat ratings of 17,293 Btu/lb and 17,269 Btu/lb for Grade 40 and 54 respectively.

**4) 2603.5.4 Flame Spread and Smoke Developed Indexes: Foam plastic insulation shall have a flame spread index of 25 or less and a smoke-developed index of 450 or less as determined in accordance with ASTM E84.**

Flame Spread and Smoke Developed indexes have been obtained for Huntsmen Grade 40 and 54, one of the main polystyrene beads used in Logix ICF. These results are reported in Underwriters Laboratories Inc. Test Report 96RT6559, which show that various densities of Huntsmen polystyrene beads all achieve flame spread index ratings less than 25 and smoke-developed indices below 450 when tested in accordance to UL 723.

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**5) 2603.5.5 Test Standard: The wall assembly shall be tested in accordance with and comply with the acceptance criteria of NFPA 285.**

Testing to NFPA 285 is done on the finished wall assembly which includes the cladding (ex. Exterior Insulation and Finish System (EIFs)). This is a test that is primarily done by the cladding manufacturers to show conformance to NFPA 285 per the requirements of Section 3.3.2.1 and 3.3.2.2 of ICC-ES AC12. This is beyond the scope for an ICF manufacturer.

**6) 2603.5.6 Label Required: The edge or face of each piece of foam plastic insulation shall bear the label of an approved agency.**

Logix ICFs are manufactured under a third party inspection and listing program by Intertek, and all complying Logix ICF are marked with the Intertek – Warnock Hersey Certification Mark.

Each ICF is labeled with the following information: Company Name & Contact Information, Manufacturer's Location, Product Description, Complying Test Standards, Warnock Hersey Certification Mark, and Traceability Information (operator name, date, time).

**7) 2603.5.7 Ignition: Exterior walls shall not exhibit sustained flaming when tested in accordance with NFPA 268.**

This section lists a few exceptions that result in the foam plastic insulation not requiring testing in accordance to NFPA 268. Logix ICFs meet the exceptions as a thermal barrier (½" gypsum wallboard) complying with Section 2603.4 is used.


### CONCLUSION

It is Intertek's professional opinion after reviewing Section 2603.5 of the 2003 IBC and the evidence shown above, that the Logix ICF meets the requirements for non-combustible construction for exterior walls of buildings of Type I, II, III or IV construction.

If you have any questions, please do not hesitate to contact us at 604-520-3321.

**INTERTEK TESTING SERVICES NA LTD.**  
**Warnock Hersey**

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