

**INTERPRETATION IC 90.1-2007-01 OF
ANSI/ASHRAE/IESNA STANDARD 90.1-2007
Energy Standard for Buildings Except Low-Rise Residential Buildings**

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Request from: Edilberto Calixihan (jcalixihan@cladding.com), ALT Cladding Inc., 10F Pryce Center Bldg., Chino Roces Ave. cor. Bagtikan St., Makati, Philippines 1203.

Reference: This request for interpretation refers to the requirements presented in ANSI/ASHRAE/IESNA Standard 90.1-2007, Section 5.4.3.2, regarding exceptions to the mandatory provisions for air leakage for fenestration and doors.

Background: Field-fabricated fenestration and doors are exceptions to the Mandatory Provisions for air leakage testing required by Section 5.4.3.2 of 90.1-2007. Curtain wall façade systems are building envelope systems that "hangs" from building structures and does not carry structural loads except wind loads, self-seismic and self-weight. There are two main construction types based on "building a frame on site". A separate category has no frames but is "sealed on site".

Stick-type curtain walls have factory-cut frame members that are joined together and bolted to the structures on site. Glazing and factory-cut insulation panels are then mounted on the frames and weather sealant applied.

Unitized-type curtain walls have all the glazing, insulation, frames and sealant built in the factory as panels. The framed panels are then delivered to the site and bolted to the structures with some minimal application of sealant on the corner-joint of the panels.

Point-Fixed Structural Glazing have no frames (suspended cables, glass fins or metal structures as support) using bolted connections to the glass then the glazing unit perimeter is sealed on site.

It is not clear from Section 5.4.3.2 of ASHRAE 90.1-2007 which of the curtain wall fenestration construction types fall in the field-fabricated category.

Interpretation No.1: Since "building a frame on site" is only done with stick curtain walls, we may consider them "field-fabricated" and thus exempt from the required air leakage testing under NFRC 400.

Question No.1: Is this interpretation correct?

Answer No.1: No

Comments No.1: Since the materials were fabricated at a factory, or otherwise formed with the specific intention of being used to assemble a fenestration product on site, ASHRAE does not consider them to be field-fabricated. Thus, these products do not qualify for exception (a) of Section 5.4.3.2 and these products are required to be tested for air leakage.

While neither ASHRAE nor NFRC define field fabricated, Standard 90.1 uses the exact same term as California's Title 24. California's Title 24 offers this definition: *FENESTRATION*

PRODUCT, FIELD-FABRICATED is a fenestration product including a glazed exterior door whose frame is made at the construction site of standard dimensional lumber or other materials that were not previously cut, or otherwise formed with the specific intention of being used to fabricate a fenestration product or exterior door. The ASHRAE 90.1 envelope subcommittee considered this definition when formulating its response.

Interpretation No.2: Unitized curtain walls have frames built in the factory so they can be considered "field-assembled" and thus require NFRC 400 testing, although some minor sealing is done on the corners.

Question No.2: Is this interpretation correct?

Answer No.2: Yes

Comments No.2: Pre-fabricated products delivered to the site unassembled and requiring only field assembly do have to be NFRC 400 tested. They are not considered field fabricated.

Interpretation No.3: Point-Fixed Structural Glazing have no frames but "perimeter is sealed on site" thus can be considered "field-assembled" and thus exempt from NFRC 400 testing.

Question No.3: Is this interpretation correct?

Answer No.3: No

Comments No.3: Exception (a) of Section 5.4.3.2 is for "field-fabricated fenestration", not field-assembled fenestration. Point-fixed structural glazing is pre-fabricated at the factory and field assembled on site and not field fabricated. Therefore, the exception (a) in section 5.4.3.2 is not allowed and NFRC 400 testing is required.