



City of Fort Collins Residential Air Tightness Testing Protocol, New Buildings or Attached and Detached Single Family Dwellings

Approved Testers

Test results will only be accepted from individuals that hold any of the following certifications: RESNET Rater or RFI, BPI Building Analyst or BPI IDL, or other building performance professional approved by the Building Official.

Building or dwelling unit air leakage testing code reference

2021 International Energy Conservation Code (IECC) as amended by the City of Fort Collins. Section **R402.4.1.2 Testing**. Testing is required for all residential energy code compliance paths and for all residential buildings and dwelling units.

Testing protocol

- A multi-point air tightness test shall be conducted based on the ANSI/Residential Energy Services Network ([ANSI/RESNET/ICC 380](#)) or [RESNET Standard 800](#), Section 802, Procedures for Building Enclosure Air Tightness Testing.
- The multi-point airtightness test shall be conducted per in section 4.4.2 Multi-Point Airtightness Test of (ANSI/RESNET)/ICC 380 *or* section 802.6 Procedure for Conducting a Multi-Point Airtightness Test of RESNET Standard Chapter 8.

Compliance requirement

The building or dwelling unit air change rate shall not exceed 3.0 ACH50 *or* 0.16 CFM per square foot (sq ft) of *dwelling unit enclosure area* when tested at a 50 Pascal (Pa) test pressure.

Submittal requirement

Output from the blower door testing / analysis software showing, at a minimum, the following information:

- Building address
- Date of test
- Test technician* and company conducting the test
- Building volume (cubic feet) and/or sq ft of dwelling unit enclosure area that encloses the building thermal envelope as defined within the IECC.
- Building leakage rate at 50 Pa test pressure (corrected CFM50)
- Percent uncertainty in the corrected CFM50, at the 95% confidence level (+/- 5%)**
- Building air change rate at 50 Pa test pressure (ACH50 = CFM50 x 60/volume) *or* (CFM50 / sq ft dwelling unit enclosure area)

*The tester must be identified on the software report. This info may be handwritten on the report.

**If uncertainty exceeds this limit, use Section 802.8.1 of RESNET Standard 800 to calculate an adjusted CFM50 and adjust the ACH50 result. This may be handwritten on the report.

Note

An example of measurement software meeting the requirements above is TECTITE, published by 'The Energy Conservatory'. TEC software options are available at www.energyconservatory.com.

Attached garage isolation

Isolation testing of attached garages from adjoining conditioned areas shall be verified in accordance with the following:

Testing protocol

- Set up the building in accordance with the testing protocol for building or dwelling unit air leakage above.
- Garage doors to the exterior shall be closed.
- Place a pressure tap in the garage and close the door between house and garage, without crimping the sensing tube (recommendation: use rigid metal tube where it passes through doorway).
- Adjust the blower door fan speed such that the building interior is depressurized to -50 Pa with respect to the outdoors.
- Measure the house pressure with respect to the garage.

Compliance and submittal requirement

The house pressure with respect to the garage shall be in the range of -45 to -50 Pa. Record the test result on the report using "House pressure WRT garage = X Pa". 'X' being the pressure measurement. This may be recorded within the 'Comments' section of TECTITE. *Example below.*

Rooms containing fuel-burning appliances isolation

Where open combustion air ducts provide combustion air to open combustion fuel-burning appliances, the appliances and combustion air opening shall be located outside the building thermal envelope or enclosed in a room that is isolated from inside the thermal envelope.

Testing protocol

- Set up the building in accordance with the protocol for whole-house air leakage, above.
- Place a pressure tap in the mechanical room and close the door between house and mechanical room, without crimping the sensing tube (recommendation: use rigid metal tube where it passes through doorway).
- Adjust the blower door fan speed to so that the building interior is depressurized to -50 Pascals with respect to the outdoors.
- Measure the house pressure with respect to the mechanical room.

Compliance and submittal requirement

The house pressure with respect to the mechanical room shall be in the range of -45 to -50 Pa. Record the test result on the report using "House pressure WRT mechanical room = X Pa". 'X' being the pressure measurement. This may be recorded within the 'Comments' section of TECTITE. *Example below.* Natural draft appliances must also pass a Combustion Safety Test.

Example:

BUILDING LEAKAGE TEST Page 4 of 4

Date of Test: 4/17/2022 Test File: Untitled

Comments

House pressure WRT garage = -46.7 Pa

House pressure WRT mechanical room = -48.1 Pa
