

ANSI/RESNET/ ICC 380-2016

Standard for Testing
Airtightness of Building
Enclosures, Airtightness
of Heating and Cooling
Air Distribution Systems,
and Airflow of Mechanical
Ventilation Systems

American National Standard



RESNET
RESIDENTIAL ENERGY SERVICES NETWORK



ANSI/RESNET/ ICC 380-2016

Standard for Testing Airtightness of Building Enclosures, Airtightness of Heating and Cooling Air Distribution Systems, and Airflow of Mechanical Ventilation Systems

American National Standard

Residential Energy Services Network, Inc.
P.O. Box 4561
Oceanside, CA 92052-4561

International Code Council
500 New Jersey Avenue, NW, 6th Floor
Washington, D.C. 20001

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American National Standards Institute
1899 L Street, NW, 11th Floor
Washington, D.C. 20036

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Standard for Testing Airtightness of Building Enclosures, Airtightness of Heating and Cooling Air
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SPECIAL NOTE

This ANSI/RESNET/ICC Standard is a voluntary consensus standard developed under the auspices of the Residential Energy Services Network (RESNET) in accordance with RESNET's *Standards Development Policy and Procedures Manual*, Version 1.1, January 2, 2012. RESNET is an American National Standards Institute (ANSI) Accredited Standards Developer. Consensus is defined by ANSI as "substantial agreement reached by directly and materially affected interest categories." This signifies the concurrence of more than a simple majority but not necessarily unanimity. Consensus requires that all views and objections be considered, and that an effort be made toward their resolution. Compliance with this Standard is voluntary until and unless a legal jurisdiction makes compliance mandatory.

RESNET obtains consensus through participation of its national members, associated societies, and public review.

This Standard is under continuous maintenance. In accordance with Section 10.9 of the *RESNET Standards Development Policy and Procedures Manual*, continuous maintenance proposals should be submitted to the Manager of Standards.

The Manager of Standards should be contacted for:

- a. Interpretation of the contents of this Standard
- b. Participation in the next review of the Standard
- c. Offering constructive criticism for improving the Standard
- d. Permission to reprint portions of the Standard

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ANSI/RESNET/ICC 380-2016

Standard for Testing Airtightness of Building Enclosures, Airtightness of Heating and Cooling Air Distribution Systems, and Airflow of Mechanical Ventilation Systems

Forward (Informative)

Standard 380 has been developed to provide a consensus national standard for consistent measurement of several airflow-related residential building metrics. It builds on existing American National Standards to provide standard procedures essential to the evaluation of the energy performance of residential buildings.

This Standard provides a consistent, uniform methodology for evaluating the airtightness of building envelopes and heating and cooling air ducts and the airflows of mechanical ventilation systems. These test procedures can be used as building diagnostics, in quality assurance and control, for determining compliance with codes and standards and to determine input to energy simulations and ratings. The Standard recognizes that some test procedures are easier to perform depending on house and HVAC system characteristics and that different codes and standards have specific testing requirements. Therefore, the Standard presents several alternative approaches for each measurement to allow flexibility in application of the Standard.

This Standard is under continuous maintenance pursuant to RESNET's ANSI-accredited *Standards Development Policy and Procedures Manual* (<http://www.resnet.us/professional/standards/consensus>). Users are encouraged to propose changes. Forms and procedures for submitting change proposals may be found on RESNET's Website at http://www.resnet.us/professional/standards/submitting_amendments. When proposed addenda are available for public review and when approved addenda are published, notices will be published on RESNET's Website.

This Standard contains both normative and informative material. Normative materials make up the body of the Standard and must be complied with to conform to the Standard. Informative materials are clearly marked as such, are not mandatory, and are limited to this forward, footnotes, references and annexes.

1. Purpose

1.1. The provisions of this document are intended to establish national standards for testing the airtightness of enclosures and heating and cooling air distribution systems, and the airflow of mechanical ventilation systems. This Standard is intended for use by parties evaluating the performance of residential buildings including home energy raters, energy auditors, or code officials.

2. Scope

2.1. This Standard defines procedures for measuring the airtightness of building enclosures, the airtightness of heating and cooling air distribution systems, and the airflow of mechanical ventilation systems.

This Standard is applicable to all single-family dwelling units.

The procedure for measuring the airtightness of building enclosures is also applicable to dwelling units in multifamily buildings.

The procedure for measuring the airtightness of heating and cooling air distribution systems is also applicable to dwelling units in multifamily buildings, where each dwelling unit has its own duct system separate from other dwelling units.

The procedure for measuring the airflow of mechanical ventilation systems is also applicable to dwelling units in multifamily buildings, where each dwelling unit has its own ventilation system separate from other dwelling units.

3. Procedure for Measuring Airtightness of Building Enclosure

3.1. Equipment

The Equipment listed in this section shall have their calibrations checked at the manufacturer's recommended interval, and at least annually if no time is specified.

3.1.1. Air-Moving Fan. A fan that is capable of moving air into or out of the building to achieve one or more target pressure differences between the house and the exterior.

3.1.2. Manometer. A device that is capable of measuring pressure difference with a maximum error of 1% of reading, or 0.25 Pa (0.001 in. H₂O), whichever is greater.

3.1.3. Airflow Meter. A device to measure volumetric airflow with a maximum error of 5% of the measured flow.

3.1.4. Thermometer. An instrument to measure air temperature with an accuracy of $\pm 1^{\circ}\text{C}$ (2°F).

3.1.5. Blower Door. A device that combines an Air-Moving Fan as defined in Section 3.1.1, an Airflow Meter as defined in Section 3.1.3, and a covering to integrate the Air-Moving Fan into the building opening.