STANDARD

ANSI/ASHRAE Standard 16-2016
(Supersedes ANSI/ASHRAE Standard 16-1983 [RA2014])

Method of Testing for Rating Room Air Conditioners, Packaged Terminal Air Conditioners, and Packaged Terminal Heat Pumps for Cooling and Heating Capacity

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NOTE

Approved addenda, errata, or interpretations for this standard can be downloaded free of charge from the ASHRAE website at www.ashrae.org/technology.

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FOREWORD

This standard prescribes methods of test for obtaining cooling capacity, heating capacity, and airflow quantity for rating room air conditioners and heat pumps and packaged terminal air conditioners and heat pumps.

ASHRAE Standard 16-2016 is the latest revision of one of ASHRAE's oldest standards. A short publishing history of this standard traces the origins of its provisions. The standard, originally evolved from the American Society of Refrigerating Engineers' (ASRE) Circular 13-42, Standard Methods of Rating and Testing Air-Conditioning Equipment, and ASRE Standard 16-56, was first issued as ASHRAE Standard 16-1961, Method of Testing for Rating Room Air Conditioners, with revisions in 1969 and 1983.

The 1983 standard was approved by the ASHRAE Standards Committee on September 16, 1983; by the ASHRAE Board of Directors on December 1, 1983; and by the American National Standards Institute on February 24, 1984.

The 1983 standard was submitted for reaffirmation with minor editorial changes by the Standards Committee on January 31, 1988. Because the ASHRAE Journal intent-to-reaffirm notice elicited no negative comments, the Board of Directors approved the reaffirmation with minor editorial changes on June 30, 1988. The reaffirmed standard was recognized as an American National Standard by ANSI on December 14, 1988.

In 2015, the standard was revised to incorporate the method of test for obtaining heating capacity for rating room air-conditioner and packaged terminal air-conditioner heating capacity prescribed in ASHRAE Standard 58, Method of Testing for Rating Room Air Conditioner and Packaged Terminal Air-Conditioner Heating Capacity. ASHRAE Standard 58 was originally issued in 1965, revised in 1974, and last reaffirmed in 1999. ASHRAE Standard 16 was last reaffirmed in 2014. This standard also includes heating capacity testing of these products with a hydronic or a steam coil.

1. PURPOSE

The purpose of this standard is to prescribe test methods for determining the cooling and heating capacity of room air conditioners, packaged terminal air conditioners, and packaged terminal heat pumps.

2. SCOPE

This standard

a. establishes uniform methods of testing to obtain rating data,
b. specifies test equipment for performing such tests,
c. specifies data required and calculations to be used, and
d. lists and defines the terms used in testing.

3. DEFINITIONS

air conditioner: the room air conditioner, packaged terminal air conditioner, or packaged terminal heat pump being tested.

apparatus: refers exclusively to test room facilities and associated instrumentation.

capacity, latent cooling: the rate, expressed in watts (British thermal units), that the equipment removes moisture from the air passing through it under specified conditions of operation.

capacity, sensible cooling: the rate, expressed in watts (British thermal units), that the equipment removes sensible heat from the air passing through it under specified conditions of operation.

capacity, total cooling: the rate, expressed in watts (British thermal units), that the equipment removes heat from the air passing through it under specified condition of operation.

capacity, latent heating: the rate, expressed in watts (British thermal units), that the equipment adds latent heat to the air passing through it under specific conditions of operation.

capacity, sensible heating: the rate, expressed in watts (British thermal units), that the equipment adds sensible heat to the air passing through it under specific conditions of operation.

capacity, total heating: the rate, expressed in watts (British thermal units), that the equipment adds heat to the air passing through it under specific conditions of operation.

electric resistance heater: the electric resistance element located in the indoor airstream of the equipment under test.

equilibrium conditions: UUT inlet conditions that fall within allowable variations as stated in Table 1 of this standard.

heat leakage factor: the amount of energy (Btu/h·°F) transfer across a surface or surfaces for a given temperature difference.

heating coil: a hydronic or steam coil located in the indoor airstream of the equipment under test.

hybrid calorimeter: a test facility consisting of a fully functional balanced ambient or calibrated calorimeter with additional psychrometric test apparatus included within the indoor-side compartment and possibly in the outdoor-side compartment.

indoor air enthalpy test method: a procedure for determining indoor cooling or heating capacity that involves measurement of the enthalpy of air entering and leaving the equipment and the mass airflow rate leaving the equipment.

indoor coil: the heat exchanger that removes heat from or adds heat to the conditioned space by the vapor compression cycle.

leakage airflow: the amount of air interchanged between the room side and outdoor side through the air conditioner as a result of construction features or sealing techniques.

outdoor coil: the heat exchanger that rejects heat to or absorbs heat from a source external to the conditioned space by the vapor compression cycle.

packaged terminal air conditioner: a wall sleeve and a separate unencased combination of heating and cooling assem-