STANDARD

ANSI/ASHRAE Standard 58-1986 (RA 2014)
(Reaffirmation of ANSI/ASHRAE Standard 58-1986)

Method of Testing for Rating Room Air-Conditioner and Packaged Terminal Air-Conditioner Heating Capacity

Approved by the ASHRAE Standards Committee on October 25, 1986, and reaffirmed on June 28, 2014; by the ASHRAE Board of Directors on December 12, 1986, and reaffirmed on July 2, 2014; and by the American National Standards Institute on October 20, 1998, and reaffirmed on July 3, 2014.

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NOTE

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

(This foreword is not part of this standard. It is merely informative and does not contain requirements necessary for conformance to the standard. It has not been processed according to the ANSI requirements for a standard and may contain material that has not been subject to public review or a consensus process. Unresolved objectors on informative material are not offered the right to appeal at ASHRAE or ANSI.)

FOREWORD

The 1986 standard was approved by the ASHRAE Standards Committee on Oct. 25, 1986; by the ASHRAE Board of Directors on Dec. 12, 1986; and by the American National Standards Institute on Feb. 18, 1987.

The standard was reaffirmed with minor editorial changes by the Standards Committee on Oct. 18, 1988. The ASHRAE Board of Directors approved the reaffirmation on Oct. 26, 1999 and the American National Standards Institute on Oct. 26, 1999.

This is a reaffirmation of Standard 58-1986 (RA 1999). This standard was prepared under the auspices of the American Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE). It may be used, in whole or in part, by an association or government agency with due credit to ASHRAE. Adherence is strictly on a voluntary basis and merely in the interests of obtaining uniform standards throughout the industry.

This 2014 version of the reaffirmation has no updates included other than a revised foreword and Standards Committee roster. A revised version of this standard will be released for public review in the near future.

1. PURPOSE

The purpose of this standard is to prescribe test methods for determining the heating capacities and airflow quantities for room air conditioners and packaged terminal air conditioners equipped with means for room heating.

2. SCOPE

2.1 This standard

(a) establishes a uniform method of testing for obtaining 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.

2.2 For purposes of this standard, room air conditioners and packaged terminal air conditioners are defined in Section 3, "Definitions."

2.3 This standard does not prescribe methods of testing to obtain cooling capacities of room air conditioners or packaged terminal air conditioners.

3. DEFINITIONS

accuracy of readings: where percentage limits of readings are herein given, the reference basis is the magnitude of the greater quantity measured and not the scale of the instrument.

heat pump room air conditioner/heat pump packaged terminal air conditioner: a room air conditioner or packaged terminal air conditioner that employs a means for reversing the function of the indoor and outdoor coils such that the indoor coil becomes the refrigerating system condenser, allowing for heating of the air in the conditioned space; similarly, the outdoor coil becomes the evaporator, utilizing outdoor air as a source of heat.

heating capacity: the rate, expressed in Btu/h (W), at which the equipment adds heat to the air passing through it under specified conditions of operation.

indoor air-enthalpy test method: a procedure for determining heating capacity in Btu/h (W) that involves measurement of the quality of air entering and leaving and the airflow rate and the air-enthalpy change.

indoor coil: the heat exchanger that removes heat from or adds heat to the conditioned space.

outdoor coil: the heat exchanger that rejects heat to, or absorbs heat from, a source external to the conditioned space.

packaged terminal air conditioner: a factory-selected combination of heating and cooling components, assemblies, or sections, including a primary source of refrigeration and dehumidification, intended to serve an individual room or zone.

qualification test: a procedure employed for verifying the accuracy of the measuring techniques (temperature, airflow rates, duct heat calibration) employed in determination of room heating effect. This qualification procedure is periodically employed in determining room heating effect.

room air conditioner: an encased assembly designed as a unit primarily for mounting in a window, through a wall, or as a console. It is designed primarily to provide free delivery of conditioned air to an enclosed space, room, or zone. It includes a primary source of refrigeration and dehumidification, means for air circulation, air cleaning, and heating, and may include means for ventilation and humidification.

standard air: air having a density of 0.075 lb/ft^3 (1.202 kg/m^3) and equivalent to dry air at a temperature of 70°F (21.1°C) and a barometric pressure of 29.92 in. Hg (101 kPa).

standard barometric pressure: 29.92 in. Hg (101 kPa).

4. CLASSIFICATIONS

4.1 Two basic types of products are considered in this standard, as seen in the title, scope, and definitions: room air conditioners and packaged terminal air conditioners. For the purpose of conciseness throughout the body of the text, the general term "air conditioner" will be used.

4.2 Two types of heating means commonly are employed in these products: electrical resistance and heat pump (reverse cycle). Additional means include steam and hot water.

4.3 There are two basic methods of testing heat pump units: steady-state (no defrosting) and transient (with defrost cycles required).

4.4 There are two basic heating capacity calculations: the specific heat method for no moisture change and the enthalpy method when moisture is added.