STANDARD

ANSI/ASHRAE Standard 79-2015
(Supersedes ANSI/ASHRAE Standard 79-2002)

Method of Test for Fan-Coil Units

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NOTE

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FOREWORD

ASHRAE Standard 79 prescribes laboratory methods of testing the capacity of fan-coil units.

The 2015 edition of the standard includes updates to purpose, scope, and definitions. Updates to the traceability for calibration of test instruments were brought in alignment with other related standards, and test instruments in Section 4 were updated to current models. References to an alternative method of airflow in Normative Annex B were added to Section 5. New material was added to Section 9 to update and clarify methods for testing exposed and concealed fan coils for total sound, as well as methods to measure sound paths for discharge and radiated sound. An alternate method of airflow measurement was added to Normative Annex B. Two new annexes, Informative Annex C, "Alternate Mixing-Tube Reference Dimensions," and Informative Annex D, "Examples of Various Types of Exposed and Concealed Fan Coils" were included. Figures were updated to improve resolution and clarity, and new figures were added. In addition, minor editorial changes were made, along with updates to normative references.

This revision of ASHRAE Standard 79 falls under the Standard Committee classification of "standard method of measurement." This standard was prepared under the auspices of ASHRAE. It may be used, in whole or in part, by 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.

1. PURPOSE AND SCOPE

1.1 Purpose. The purpose of this standard is to prescribe laboratory methods of testing fan-coil units to ensure uniform performance data for establishing ratings.

1.2 Scope. This standard includes procedures that

a. describe and specify test instruments and apparatus,
b. describe and specify laboratory test methods and procedures,
c. describe and specify test data to be recorded,
d. describe and specify calculations to be made from test data,
e. define terms used in testing, and
f. specify standard thermodynamic properties.

2. DEFINITIONS

equilibrium: for the purposes of this standard, a steady-state condition during which the fluctuations of variables being measured remain within the test tolerances given in Table 1 for 30 minutes.

evaporative equilibrium: the condition attained on a humidity measuring instrument when the humidity measurement has reached a stable and constant temperature.

external static pressure: the sum of the absolute values of the discharge static gage pressure and the inlet static gage pressure.

fan-coil unit: a factory-made assembly that provides air circulation caused by a difference in static pressure produced by an air-moving device, cooling or cooling and heating, and filtering of air, but does not include the source of cooling or heating.

fpm: feet per minute expressed in terms of velocity

instrument accuracy: ability of an instrument to indicate or record the true value of a measured quantity.

instrument precision: statistical error of an instrument subjected to repeated measurements over a range of input values.

latent cooling capacity: the rate, expressed in Btu/h (W), at which the fan coil under test reduces the moisture content of the air passing through it.

sensible capacity: the rate, expressed in Btu/h (W), at which the fan coil under test reduces or increases the dry-bulb temperature of the air passing through it.

TABLE 1 Test Tolerances

Symbol	Item	Units, I-P (SI)	Test-Run Operating Tolerance ±	Test Condition Tolerance ±
t_{a1}	Dry-bulb temperature of air entering test unit	°F (°C)	1.0 (0.5)	0.5 (0.25)
t'_{a1}	Wet-bulb temperature of air entering test unit	°F (°C)	0.3 (0.16)	0.3 (0.16)
Q_{an}	Airflow	%	1.0	—
t_{wl}	Temperature of water entering test unit for cooling capacity test	°F (°C)	0.2 (0.1)	0.2 (0.1)
Δt_w	Water temperature rise (cooling)	°F (°C)	0.2 (0.1)	0.2 (0.1)
Δt_w	Water temperature drop (heating)	°F (°C)	1.0 (0.5)	1.0 (0.5)
Q_w	Water flow rate	%	1.0	1.0
Air pressure difference between the test room and the unit outlet connection or between the unit inlet and unit outlet connection		in. wc (Pa)	0.01 (2.5)	0.005 (1.25)
Voltage applied to test unit		V	2.0	1.0