

ANSI/AHRI Standard 440 with Addendum 1 (Formerly ARI Standard 440)

2008 Standard for Performance Rating of Room Fan- Coils



2111 Wilson Boulevard, Suite 500
Arlington, VA 22201, USA
www.ahrinet.org
PH 703.524.8800
FX 703.562.1942

we make life better™



ANSI/AHRI STANDARD 440 -2008 WITH ADDENDUM 1, *PERFORMANCE RATING OF ROOM FAN-COILS*

April 2014

Note: This addendum is not ANSI approved but will be submitted to ANSI for approval.

Addendum 1 (dated April 2014) of ANSI/AHRI Standard 440-2008 modifies ANSI/AHRI Standard 440-2008 as follows. The following changes have been incorporated (additions are shown by shading and deletions are shown by ~~strike throughs~~) into Insulation Efficiency Test in Sections 8.1.1 and 8.1.2 of the already published 2008 version of ANSI/AHRI Standard 440 -2008.

The changes include:

8.1.1 ~~Temperature~~ **Test Conditions.**

- a. Ambient air temperature: 80.0°F [26.7°C] dry-bulb, 75.0°F [23.9°C] wet-bulb
- b. Entering water temperature: ~~43°F [6.1°C]~~ 42°F [5.6°C]
- c. ~~Water temperature rise: 6.0°F [3.3°C]~~ Water flow rate from standard cooling rating test

8.1.2 *Procedure.* After establishing specified temperature conditions, the unit shall operate continuously at its lowest fan speed for a period of ~~four~~ **two** hours at the following external static pressure:

- a. Free Delivery 0.0 in H₂O [0.0 kPa]
- b. Furred-in 0.0 in H₂O [0.0 kPa]
- c. High-Static 0.050 in H₂O [0.012 kPa]

For equipment with motor speed taps, the unit shall be set to the lowest fan-speed tap. For equipment without motor speed taps, the unit shall be run at a fan-speed which produces between 60% and 70% of the airflow at which the standard cooling rating test was conducted, with instructions provided by the manufacturer on how to adjust the motor controls to achieve this setting.

For equipment with a single fan speed, the external static pressure specified in the standard cooling rating test shall be used.

IMPORTANT

SAFETY DISCLAIMER

AHRI does not set safety standards and does not certify or guarantee the safety of any products, components or systems designed, tested, rated, installed or operated in accordance with this standard/guideline. It is strongly recommended that products be designed, constructed, assembled, installed and operated in accordance with nationally recognized safety standards and code requirements appropriate for products covered by this standard/guideline.

AHRI uses its best efforts to develop standards/guidelines employing state-of-the-art and accepted industry practices. AHRI does not certify or guarantee that any tests conducted under its standards/guidelines will be non-hazardous or free from risk.

AHRI CERTIFICATION PROGRAM PROVISIONS

Scope of the Certification Program

The certification program includes Room Fan-Coils as defined in Section 3, having air-delivery capacities of 1500 cfm [0.7080 m³/s] or less.

Room Fan-Coils employing Volatile Refrigerant Coils or steam coils, central-station air-handling units as defined in AHRI Standard 430, and unit ventilators as defined in ARI Standard 840 are not included.

Certified Ratings

The following certification program ratings shall be verified by test at the Standard Rating Conditions for Cooling Capacity (Section 6.3.1), and for power input (Section 6.3.4):

1. Total Cooling Capacity, Btu/h [W]
2. Sensible Cooling Capacity, Btu/h [W]
3. Power Input, W [W]

Conformance to the requirements of the insulation efficiency test and the low voltage test (Section 8) shall also be verified by test.

Note:

This standard supersedes ARI Standard 440-2005.

TABLE OF CONTENTS

SECTION	PAGE
Section 1. Purpose	1
Section 2. Scope	1
Section 3. Definitions	1
Section 4. Classifications.....	3
Section 5. Test Requirements	3
Section 6. Rating Requirements	3
Section 7. Minimum Data Requirements for Published Ratings.....	5
Section 8. Operating Requirements.....	6
Section 9. Marking and Nameplate Data.....	6
Section 10. Conformance Conditions.....	6

TABLES

Table 1. Heating Rating Conditions	4
--	---

APPENDICES

Appendix A. References - Normative	7
Appendix B. References - Informative	7

PERFORMANCE RATING OF ROOM FAN-COILS

Section 1. Purpose

1.1 *Purpose.* The purpose of this standard is to provide for Room Fan-Coils: definitions; classifications; test requirements; rating requirements; minimum data requirements for Published Ratings; operating requirements; marking and nameplate data; and conformance conditions.

1.1.1 *Intent.* This standard is intended for the guidance of the industry, including manufacturers, engineers, installers, contractors and users.

1.1.2 *Review and Amendment.* This standard is subject to review and amendment as technology advances.

Section 2. Scope

2.1 *Scope.* This standard applies to Room Fan-Coils, defined in Section 3, having air-delivery capacities of 1500 cfm [0.7080 m³/s] or less.

2.2 *Exclusions.*

2.2.1 This standard does not apply to central-station air-handling units as defined in ANSI/AHRI Standard 430.

2.2.2. This standard does not apply to unit ventilator units as defined in AHRI Standard 840.

2.2.3 This standard does not apply to Room Fan-Coils employing:

- a. Volatile Refrigerant Coils
- b. Steam coils

Section 3. Definitions

All terms in this document shall follow the standard industry definitions in the current edition of ASHRAE *Terminology of Heating, Ventilation, Air Conditioning and Refrigeration* unless otherwise defined in this section.

3.1 *Capacity.*

3.1.1 *Cooling Capacity.* The capacity associated with the change in air enthalpy which includes both the Latent and Sensible Capacities expressed in Btu/h[W].

3.1.1.1 *Latent Capacity.* Capacity associated with a change in humidity ratio.

3.1.1.2 *Sensible Capacity.* Capacity associated with a change in dry-bulb temperature.

3.1.2 *Heating Capacity.* The capacity associated with the change in dry-bulb temperature expressed in Btu/h[W].

3.2 *Fan.* A device for moving air which utilizes a power-driven rotating impeller.

3.3 *Forced-Air Circulation.* Air circulation caused by a difference in pressure produced by a fan.

3.4 *Grille.* Lattice or grating covering the delivery or intake opening of an air passage.

3.5 *Non-Volatile Refrigerant Coil.* A coil in which the cooling fluid (usually water) remains in the liquid state during its passage through the coil.