

AHRI Standard 410-2001

(Formerly ARI Standard 410-2001)

2001 Standard for

Forced-Circulation

Air-Cooling and

Air-Heating Coils



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AHRI STANDARD 410-2001 WITH ADDENDUM 3, **Forced-Circulation Air-Heating and Air-Cooling Coils**

June 2011

AHRI Standard 410-2001 with Addendum 3, Forced-Circulation Air-Heating and Air-Cooling Coils, is comprised of only the shaded portions shown. The June 2011 Addendum 3 has been incorporated into the already published 2001 version of AHRI Standard 410 to avoid confusion.

Particular additions (shown shaded in the standard), deletions (shown with a strikethrough and shaded in the standard), and corrections (shown shaded in the standard) are as follows:

1. In the following sections "propylene" was added

- Certified Ratings item c
- Table of Contents
- Figure 16
- Sections
 - 3.1.a
 - 3.1.1.a
 - 3.3.1
- Table 1
- Table 2
- Sections
 - 3.3.2
 - 5.2.7
 - 5.3.1
 - 5.4.3
 - 5.4.3.3
 - 5.4.3.3.2
 - 5.4.3.4
 - 5.4.4
 - 5.4.8
 - 6.2.2 Equations
 - (7b), (7c), (8a), (9a), (10a), figure before (15b), (17b), (18b), (19b), (20b), and (24a)
 - 6.3.7 (Form 410-7)
- Sections
 - 6.4.7
 - 7.1
 - K, l, m, n
 - 8.1
 - $(c_{pg}), (f'), (Q_{gSTD}), (V_g), (w),$ and (x_g)
 - 8.2.2
 - (ffa) and (g)
- Figures 12, 13, 14, 15 and 16



AHRI STANDARD 410-2001 WITH ADDENDUM 2,
Forced-Circulation Air-Heating and Air-Cooling Coils

May 2005

AHRI Standard 410-2001 with Addendum 2, Forced-Circulation Air-Heating and Air-Cooling Coils, is comprised of only the shaded portions shown. The May 2005 Addendum 2 has been incorporated into the already published 2001 version of AHRI Standard 410 to avoid confusion.

Particular additions (shown shaded in the standard), deletions (~~shown with a strikethrough and shaded in the standard~~), and corrections (shown shaded in the standard) are as follows:

1. In Section 5.2.5.1 the last sentence was replaced with the following :

If the calculated capacity is less than 97.5%, new ratings shall be calculated.

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AHRI STANDARD 410-2001 WITH ADDENDUM 1,
Forced-Circulation Air-Heating and Air-Cooling Coils

May 2002

AHRI Standard 410-2001 with Addendum 1, *Forced-Circulation Air-Heating and Air-Cooling Coils*, is comprised of only the shaded portions shown. The May 2002 Addendum 1 has been incorporated into the already published 2001 version of AHRI Standard 410 to avoid confusion.

Particular additions (shown shaded in the standard), deletions (~~shown with a strikethrough and shaded in the standard~~), and corrections (shown shaded in the standard) are as follows:

1. In Section 6.4.1 the second sentence was replaced with the following:

Published values of air-side pressure drop, under test, shall not be exceeded by more than 10%, or 0.05 in H₂O [12.5 Pa], whichever is greater.

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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 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 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 Forced-Circulation Air-Cooling Coils for application under non-frosting conditions, and Forced-Circulation Air-Heating Coils, as defined in Section 3 of the standard.

Coils Included. This program applies only to coils intended:

- a. For field installation (built-up systems)
- b. For use in central station air-conditioning units
- c. For use in central station heating or heating and ventilating units

Exclusion. It does not include:

- a. Coils sold to original equipment manufacturers for inclusion in packaged units
- b. Coils installed in packaged air-conditioning or heating units by the manufacturer
- c. Special coils: Coils of fin or tube material of special configuration not having cataloged performance data

Note: For the purpose of this program, a packaged unit is an assembly of components including coil(s) whose rating is based on a test of the complete assembly.

Certified Ratings

The following Certification Program ratings are verified by test:

- a. Average total cooling or heating capacity, Btu/h [W]
- b. Air pressure drop through coil at standard air density, in H₂O [kPa]
- c. Water, ~~or~~ aqueous ethylene glycol, or aqueous propylene glycol solutions pressure drop through coil (including headers) at average fluid density, ft of fluid [m of fluid]

Note:

This standard supersedes ARI Standard 410-91.

This is a preview of "AHRI 410-2001". [Click here to purchase the full version from the ANSI store.](#)

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FORCED-CIRCULATION AIR-COOLING AND AIR-HEATING COILS

Section 1. Purpose

1.1 Purpose. The purpose of this standard is to establish for Forced-Circulation Air-Cooling and Air-Heating Coils: definitions; classifications; test requirements; rating requirements; minimum data requirements for Published Ratings; symbols and units; reference properties and conversion factors; 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 Forced-Circulation Air-Cooling and Air-Heating Coils, as defined in Section 3 and classified in Section 4 of this standard, and for application under non-frosting conditions.

This standard documents a fundamental means for establishing coil performance by extension of laboratory test data to other operating conditions and other coil sizes and row depths.

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 Coil Line. For the purpose of this standard, a coil line is defined as having the following in common:

- a. Fluid (volatile refrigerant, water, steam, or aqueous ethylene glycol, or aqueous propylene glycol solutions)
- b. Tube size, spacing, arrangement (parallel or staggered) or internal construction
- c. Fin configuration (not spacing)

3.1.1 Examples of coil lines are:

- a. *Aqueous Ethylene Glycol or Aqueous Propylene Glycol Solutions.* If conditions b and c of 3.1 are satisfied, the following are types which may be part of one line:
 1. Continuous circuit type
 2. Self-draining type
 3. Cleanable type