



**BSR/ASHRAE Addendum a to
ANSI/ASHRAE Standard 185.1-2020**

Public Review Draft

**Proposed Addendum a to Standard
185.1-2020, Method of Testing UV-C
Lights for Use in Air-Handling Units
or Air Ducts to Inactivate Airborne
Microorganisms**

**First Public Review (April 2025)
(Draft shows Proposed Changes to Current Standard)**

This draft has been recommended for public review by the responsible project committee. To submit a comment on this proposed standard, go to the ASHRAE website at www.ashrae.org/standards-research--technology/public-review-drafts and access the online comment database. The draft is subject to modification until it is approved for publication by the Board of Directors and ANSI. Until this time, the current edition of the standard (as modified by any published addenda on the ASHRAE website) remains in effect. The current edition of any standard may be purchased from the ASHRAE Online Store at www.ashrae.org/bookstore or by calling 404-636-8400 or 1-800-727-4723 (for orders in the U.S. or Canada).

This standard is under continuous maintenance. To propose a change to the current standard, use the change submittal form available on the ASHRAE website, www.ashrae.org.

The appearance of any technical data or editorial material in this public review document does not constitute endorsement, warranty, or guaranty by ASHARE of any product, service, process, procedure, or design, and ASHRAE expressly disclaims such.

© 2025 ASHRAE. This draft is covered under ASHRAE copyright. Permission to reproduce or redistribute all or any part of this document must be obtained from the ASHRAE Manager of Standards, 180 Technology Parkway NW, Peachtree Corners, GA 30092. Phone: 404-636-8400, Ext. 1125. Fax: 404-321-5478. E-mail: standards.section@ashrae.org.

ASHRAE, 180 Technology Parkway NW, Peachtree Corners, GA 30092

PROPOSED ADDENDUM A TO ANSI/ASHRAE STANDARD 185.1-2020
Method of Testing UV-C Lights for Use in Air-Handling Units or Air Ducts to Inactivate Airborne Microorganisms

FOREWORD TO THE ADDENDUM

ASHRAE Standard 241-2023: *Control of Infectious Aerosols* requires that air cleaners, except those using only mechanical, fibrous filters, have laboratory testing results for effectiveness against MS2 to be included for use when Infection Risk Management Mode (IRMM) is implemented. For single-pass UV-C lights mounted in air-handling units or air ducts, ANSI/ASHRAE Standard 185.1 needs to include MS2 as an option for testing. This addendum adds an optional MS2 test for these UV-C systems so Standard 185.1 results can be used directly under the requirements of Standard 241.

PROPOSED CHANGES

[Add the following text as a new paragraph to the end of the Foreword:]

This test method is incorporated into ASHRAE Standard 241: *Control of Infectious Aerosols* by reference. Under the requirements of Standard 241, the effectiveness of UV-C systems installed in air-handling units can be determined using this method with bacteriophage MS2 as the challenge organism. For the purposes of Standard 241, only testing with MS2 is required. Testing with only MS2 will result in a non-standard test under this method but will provide results that can be used to meet Standard 241 requirements.

[Make changes to Section 6.1.1 as follows]

6.1.1 Test Organisms. The bioaerosol tests will be conducted using two organisms, covering the range of reasonable interest for UV-C device applications. The first organism to be used in the test is *Mycobacterium parafortuitum* (ATCC® 19686), and the second organism is *Aspergillus sydowii* (ATCC® 36542).

Informative Note 1: *Mycobacterium parafortuitum* is a nonmotile, rod-shaped bacterium 2 to 4 µm long (Wayne and Kubica 1986). It grows rapidly on standard bacterial culture media and produces smooth, pale yellow colonies that disperse readily in water. *Aspergillus sydowii* is 2 µm in diameter and is utilized as the surrogate for fungi. These test organisms have been used in prior studies of UV-C radiation (Grinshpun et al. 2003; Kujundzic et al. 2007; VanOsdell and Foarde 2002; Xu et al. 2003, 2005).

Informative Note 2: See Normative Appendix A for the option of testing with MS2 for ASHRAE Standard 241 use.

[Add New Normative Appendix A]

Note: Adding this appendix will require re-lettering Informative Appendices A-I to new Informative Appendices B-J in the table of contents, throughout the text of the standard, and in the appendices themselves.

(This is a normative appendix and is part of this standard.)

NORMATIVE APPENDIX A

OPTIONAL 185.1 MS2 TEST FOR STANDARD 241 COMPLIANCE

1. All requirements of Standard 185.1 shall be met for every MS2 test performed to meet requirements of Standard 241 except as follows:

1.1 The test organisms of the regular test under this standard shall be replaced with MS2 (ATCC 15597-B1).

1.2 Testing laboratories shall follow their appropriate standard operating procedures for sampling and analyzing MS2.

1.3 The final test report shall be labeled "ASHRAE 185.1: Optional MS2 Test for Standard 241 Compliance."

1.4 The final test report shall list MS2 as the challenge organism and shall include a description of the technique used to cultivate, generate, sample, and analyze for reductions in MS2 concentrations resulting from UV exposure.

1.5 The final test report shall report MS2 in plaque forming units (PFUs) instead of colony forming units (CFUs).