



# ADDENDA

**ANSI/ASHRAE 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**

Approved by ASHRAE and the American National Standards Institute on June 30, 2025.

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**Cognizant TC: 2.9, Ultraviolet Air and Surface Treatment**

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- participation in the next review of the Standard,
- offering constructive criticism for improving the Standard, or
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## FOREWORD

*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.*

**Informative Note:** In this addendum, changes to the current standard are indicated in the text by underlining (for additions) and ~~striking through~~ (for deletions) unless the instructions specifically mention some other means of indicating the changes.

## Addendum a to Standard 185.1-2020

**Add the following text to the end of the foreword.**

*This test method is incorporated by reference into ASHRAE Standard 241, Control of Infectious Aerosols. 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 nonstandard test under this method but will provide results that can be used to meet Standard 241 requirements.*

**Modify Section 6.1.1 as shown.**

**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 Notes:**

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).
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 results in relettering original Informative Appendices A through I as new Informative Appendices B through 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

#### A1. REQUIREMENTS

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

**A1.1** The test organisms of the regular test under this standard shall be replaced with MS2 (ATCC 15597-B1).

**A1.2** Testing laboratories shall follow their appropriate standard operating procedures for sampling and analyzing MS2.

**A1.3** The final test report shall be labeled “ASHRAE 185.1: Optional MS2 Test for Standard 241 Compliance.”

**A1.4** 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.

**A1.5** The final test report shall report MS2 in plaque forming units (PFUs) instead of colony forming units (CFUs).

## **POLICY STATEMENT DEFINING ASHRAE'S CONCERN FOR THE ENVIRONMENTAL IMPACT OF ITS ACTIVITIES**

ASHRAE is concerned with the impact of its members' activities on both the indoor and outdoor environment. ASHRAE's members will strive to minimize any possible deleterious effect on the indoor and outdoor environment of the systems and components in their responsibility while maximizing the beneficial effects these systems provide, consistent with accepted Standards and the practical state of the art.

ASHRAE's short-range goal is to ensure that the systems and components within its scope do not impact the indoor and outdoor environment to a greater extent than specified by the Standards and Guidelines as established by itself and other responsible bodies.

As an ongoing goal, ASHRAE will, through its Standards Committee and extensive Technical Committee structure, continue to generate up-to-date Standards and Guidelines where appropriate and adopt, recommend, and promote those new and revised Standards developed by other responsible organizations.

Through its *Handbook*, appropriate chapters will contain up-to-date Standards and design considerations as the material is systematically revised.

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The effects of the design and selection of equipment and systems will be considered within the scope of the system's intended use and expected misuse. The disposal of hazardous materials, if any, will also be considered.

ASHRAE's primary concern for environmental impact will be at the site where equipment within ASHRAE's scope operates. However, energy source selection and the possible environmental impact due to the energy source and energy transportation will be considered where possible. Recommendations concerning energy source selection should be made by its members.

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