



*NSF International Standard /  
American National Standard*

## NSF/ANSI 49 - 2014

**Biosafety Cabinetry: Design,  
Construction, Performance, and  
Field Certification**



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NSF International Standard/  
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for Drinking Water Additives —

**Biosafety Cabinetry: Design,  
Construction, Performance, and  
Field Certification**

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## Foreword<sup>2</sup>

The purpose of this Standard is to establish minimum requirements for materials, design, construction, and performance of Biosafety Cabinetry that are designed to protect personnel, product, and the environment. This Standard details requirements for performance testing as well as field certification testing.

This edition of the Standard (NSF/ANSI 49-2014) includes the following revisions:

**Issue 48:** This revision adds a motor stability test procedure for motor speed control systems.

**Issue 49:** This revision updates the Sealant use language in Annex H.

**Issue 50:** This revision affirms new language regarding the type of fans used in Biosafety Cabinets.

**Issue 51:** This revision affirms new language regarding the Type Biosafety Cabinet blower startup.

**Issue 52:** This revision clarifies details surrounding the DOP port location in section 5.22.

**Issue 53:** This revision adds definitions to clarify biosafety cabinet shell penetrations and cable ports with considerations given to service technicians and cabinet users relating to safety.

**Issue 55:** This revision updates the instrumentation language.

**Issue 60:** This revision updates the Airflow Grid language in sections A.8.3.1 and A.8.3.2, and the related figure A15.

**Issue 61:** This revision updates the language in sections 5.19.4 and 5.25.1 to include a section requiring the use of a sash position too low alarm.

**Issue 72:** This revision updates multiple figures throughout the Standard to improve clarity.

This Standard was developed by the NSF Joint Committee on Biosafety Cabinetry using the consensus process described by the American National Standards Institute.

Suggestions for improvement of this Standard are welcome. This Standard is maintained on a Continuous Maintenance schedule and can be opened for comment at any time. Comments should be sent to Chair, Joint Committee on Biosafety Cabinetry at [standards@nsf.org](mailto:standards@nsf.org), or c/o NSF International, Standards Department, PO Box 130140, Ann Arbor, Michigan 48113-0140, USA.

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NSF/ANSI Standard  
for Biosafety Cabinetry —

# Biosafety Cabinetry: Design, Construction, Performance, and Field Certification

## 1 General

### 1.1 Scope

This Standard applies to Class II (laminar flow) biosafety cabinetry designed to minimize hazards inherent in work with agents assigned to biosafety levels 1, 2, 3, or 4. It also defines the tests that shall be passed by such cabinetry to meet this Standard. This Standard includes basic requirements for the design, construction, and performance of biosafety cabinets that are intended to provide personnel, product, and environmental protection; reliable operation; durability and structural stability; cleanability; limitations on noise level; illumination; vibration; and motor/blower performance.

### 1.2 Minimum requirements

Cabinets qualifying under this Standard shall have passed all of the designated tests. Units with component parts covered under existing NSF standards or criteria shall conform to those applicable requirements.

### 1.3 Variations in design and construction

Cabinetry varying in design, construction, or installation of accessory equipment may qualify under this Standard, if appropriate tests and investigations indicate that the equipment is durable and reliable, can be cleaned and decontaminated, and performs in conformance to this Standard. Such equipment shall meet the requirements for materials and finishes in this Standard.

Major modifications require appropriate tests for conformance. Major modifications include, but are not limited to, changes in the following: location or capacity or quantity or all three of blower/motor(s); size or design or both of air plenums; position of High Efficiency Particulate Air/Ultra Low Penetrating Air (HEPA/ULPA) filters; position or redesign of work surface; work area intake and exhaust air grilles; window placement or design; access opening size; location and size of exhaust port; and built-in accessory equipment (centrifuges, ultraviolet lighting, supports for intravenous drug container, arm rests, etc.). Relocation of utility service equipment (electrical outlets, petcocks, etc.) is not considered a major modification if other provisions of this Standard are not compromised.