

ANSI/ASHRAE Standard 154-2011
(Supersedes ANSI/ASHRAE Standard 154-2003)



ASHRAE STANDARD

Ventilation for Commercial Cooking Operations

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NOTE

Approved addenda, errata, or interpretations for this standard can be downloaded free of charge from the ASHRAE Web site at www.ashrae.org/technology.

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FOREWORD

First published in 2003, ASHRAE Standard 154 has been thoroughly revised in this edition to make it code enforceable and to provide the most complete design guidance available on commercial kitchen ventilation components and systems. In revising this standard, the project committee has drawn upon recent laboratory research that was sponsored in part by ASHRAE and assembled by the ASHRAE Technical Committee on kitchen ventilation, TC 5.10. It has also relied upon the significant field experiences of the manufacturers, designers, and users of kitchen ventilation systems. The standard is intended to serve as a template for standardization, harmonization, and ongoing revision of related model and adopted codes and to bring consistency to design requirements and applications of commercial kitchen ventilation systems.

The major changes in this edition include the following:

- In Section 2, the standard's scope has been revised to clarify its focus on three types of systems: kitchen hoods, exhaust systems, and replacement air systems.
- In Section 3, new definitions have been added and others revised to provide more explicit guidance to code officials.
- In Section 4, Table 1 now specifies when hoods are required for various appliances or cooking operations and defines the duty level for the cooking operation when Type II is used. Table 2 provides the duty level for cooking operations that require a Type I hood. Additionally, Section 4 now states that a Type I hood must be listed to the appropriate standard. Tables 3 and 4 have been revised to show updated overhangs and minimum exhaust airflow rates for Type II hoods. Section 4.6 on demand-control ventilation has been added.
- In Section 5, duct leakage performance tests to verify that installed ductwork is not leaking have been added.
- Section 7, "System Controls," has been added.

In addition to being written in code-enforceable language, Standard 154 now includes notes and appendices that provide a better understanding of best design practices.

The project committee would like to thank Bob Ajemian, Greg DuChane, Mark Finck, Don Fisher, Jason Greenberg, Doug Horton, Ken Hutchinson, Tom Kuehn, Bruce Lukens, Mike Morgan, Dwayne Sloan, and Tony Spata for their help in revising this standard.

1. PURPOSE

The purpose of this standard is to provide design criteria for acceptable performance in commercial cooking ventilation systems.

2. SCOPE

2.1 This standard covers the following:

- a. kitchen hoods,
- b. exhaust systems, and
- c. replacement air systems.

2.2 This standard shall not be used to circumvent any safety, health, or environmental requirements.

3. DEFINITIONS

air curtain supply: see *air curtain* under *makeup air (dedicated replacement air)*, which is under *replacement air*.

appliance: a cooking device or apparatus used in a kitchen that consumes energy provided by gas, electricity, solid fuel, steam, or another fuel source.

appliance duty level: an appliance rating category based upon the exhaust airflow required to capture, contain, and remove the cooking effluent and products of combustion under typical operating conditions with a non-engineered wall-mounted canopy hood (based upon ASHRAE RP-1362¹). This is different from the historical approach, in which duty levels were based upon the temperature of the cooking surface. The following appliance duty classifications are used in this standard:

- **light:** a cooking process requiring an exhaust airflow rate of less than 200 cfm/ft (310 L/s/m) for capture, containment, and removal of the cooking effluent and products of combustion.
- **medium:** a cooking process requiring an exhaust airflow rate of 200 to 300 cfm/ft (310 to 460 L/s/m) for capture, containment, and removal of the cooking effluent and products of combustion.
- **heavy:** a cooking process requiring an exhaust airflow rate of 300 to 400 cfm/ft (460 to 620 L/s/m) for capture, containment, and removal of the cooking effluent and products of combustion.
- **extra-heavy:** a cooking process requiring an exhaust airflow rate greater than 400 cfm/ft (620 L/s/m) for capture, containment, and removal of the cooking effluent and products of combustion.

appliance with integral hood: an electric appliance having an integrated hood system that has been listed to UL Standard 197² or UL Standard 710B.³

approved: acceptable to the authority having jurisdiction.

back-wall supply: see *back-wall* under *makeup air (dedicated replacement air)*, which is under *replacement air*.

baffle filter: see *grease removal device*.