

Commercial Kitchen Hood

Application Guide

2009 Edition

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Preface

Commercial cooking operations produce heat, moisture and cooking vapors, including smoke- and grease-laden air that can create hazardous conditions in a commercial kitchen. Excess heat and humidity, as well as deposits of grease particles on cooking and food preparation surfaces, can promote the development of food-borne pathogens or allergens. Prolonged exposure to smoke can result in breathing-related disorders such as chronic obstructive pulmonary disease (COPD). Accumulations of grease particles in exhaust hoods and ducts can provide a fuel source for fires that can potentially be ignited by the cooking equipment. A properly designed, installed and maintained commercial cooking exhaust system is necessary to ensure the health and safety of the kitchen personnel as well as the other occupants of the building, whether it is a restaurant, a hospital or any other commercial food preparation operation.

This application guide was developed to assist code officials, design professionals and builders in understanding the codes regulating commercial cooking exhaust hood systems. The applicable requirements in the *International Mechanical Code*® (IMC®), *International Fire Code*® (IFC®), *International Fuel Gas Code*® (IFGC®), *International Building Code*® (IBC®) and *International Energy Conservation Code*® (IECC®) are addressed in detail with accompanying illustrations, photographs and sample calculations to clarify the intent of the codes.

This application guide is divided into five chapters. Chapter 1 addresses the health and fire hazards associated with commercial cooking operations and provides an overview of the applicable portions of the various codes. Chapter 2 addresses the ventilation and makeup air requirements for commercial kitchens. Chapter 3 addresses Type I and II exhaust hood requirements. Chapter 4 addresses the exhaust ducts that serve the kitchen hoods and the shaft enclosure requirements. The requirements for automatic fire-extinguishing systems and portable fire extinguishers are addressed in Chapter 5.

Included in this application guide are excerpts from two manufacturers' installation instructions for the relatively new alternatives to constructing a shaft enclosure for the exhaust ducts—field-applied grease duct enclosures and factory-built grease duct assemblies. The installation instructions are included to assist installers and inspectors to understand the basic installation of a typical field-applied grease duct enclosure or a factory-built grease duct assembly. The reproduction of this information in no way is an endorsement or promotion by International Code Council (ICC) of any product.

The information and opinions expressed in this application guide are those of the author and do not necessarily represent the official position of the ICC. Additionally, the opinions may not represent the viewpoint of any enforcing agency. Opinions expressed in this publication are only intended to be a resource in the application of the various codes as they apply to commercial cooking exhaust hood systems, and the code official is not obligated to accept these opinions. The code official is the final authority in rendering interpretations of the code and its adopted standards.

Questions or comments concerning this application guide are encouraged. Please direct any correspondence to applicationguide@iccsafe.org.

About the International Code Council®

The International Code Council (ICC®), a membership association dedicated to building safety, fire prevention and energy efficiency, develops the codes and standards used to construct residential and commercial buildings, including homes and schools. The mission of ICC is to provide the highest quality codes, standards, products and services for all concerned with the safety and performance of the built environment. Most United States cities, counties and states choose the International Codes, building safety codes developed by the International Code Council. The International Codes also serve as the basis for construction of federal properties around the world, and as a reference for many nations outside the United States. The Code Council is also dedicated to innovation and sustainability. ICC Evaluation Service, a subsidiary of ICC, issues Evaluation Reports and Listings for innovative building products as well as environmental documents such as ICC-ES VAR Environmental Reports and ICC-ES Environmental Product Declarations (EPDs).

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About the Author

The *Commercial Kitchen Hood Application Guide, 2009 Edition* was developed by Larry Simpson, a mechanical engineer who has worked for 12 years in ICC's Codes and Standards department. He served for 6 years as Secretary to the ICC International Mechanical Code Development Committee and 2 years as Secretary to the IFGC, IPC, IECC and IRC Plumbing and Mechanical Code Development Committees. Prior to his service with ICC, he worked for 26 years on the design of electric generation plants with the Southern Company. Larry graduated from Tennessee Technological University with a Bachelor of Science in Mechanical Engineering and is a registered Professional Engineer in the state of Alabama. He is a certified mechanical inspector and has presented numerous seminars on the IMC, IPC and IFGC to inspectors and designers.

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