

Commercial Kitchen Hoods (Types 1 + 2) Design Guidance

2009 International Building and Mechanical Code and Commentaries

This is a design review checklist for code requirements for commercial kitchen hoods including grease ducts and their connections to hood and roof exhaust fans, exhaust fan details, make-up air details and suppression systems, etc. Please ensure the following items are fully addressed in the design documents. Also note that this list is a minimum scope of what we will be reviewing. Additional or result and issues may arise as these items are addressed.

Type 1 Hoods

IMC SECTION 507 "...SHALL BE INSTALLED WHERE COOKING APPLIANCES PRODUCE GREASE OR SMOKE, SUCH AS GRIDDLES, FRYERS, BOILERS, OVEN, RANGES, SMOKERS AND WOK RANGES". THIS INCLUDES CONVEYER AND DECK-STYLE PIZZA OVENS (IMC COMMENTARY).

- 1 Show / note all cooking equipment that must be provided with a Type 1 hood.
- 2 UL listing for the Type 1 kitchen grease hoods to be installed. See IMC 507.1.
- 3 Provide a heat sensor or other device to insure the automatic operation of both the kitchen hood and the make-up air systems upon activation of the cooking devices. IMC 507.2.1.1.

4 Use Applications:

Extra Heavy Duty (IMC 507.2.4): Type 1 hoods over these appliances shall not cover other appliances that require fire extinguishing equipment and such hoods shall discharge to an independent exhaust system.

Fuel-burning Appliances (IMC 507.3): Provisions shall be made to prevent the hood system from interfering with the normal operation of the vents for these appliances.

5 Materials (IMS 507.5):

Type 1 hoods shall be constructed of steel that is a minimum .043 inch thick or stainless steel that is minimum .037 inch thick.

6 Supports shall be noncombustible and capable of supporting the hood, adjacent ductwork, the effluent load and the possible weight of the personnel working in or on the hood. IMC 507.6

7 Joints, seams, penetrations (IMC 507.7):

External hood joints shall be made with a continuous liquid-tight weld or braze to the lower outermost perimeter of the hood. Internal joint, seams, penetrations, filter support frames, and other appendages shall not be required to be brazed or welded. They shall be sealed grease tight.

8 Cleaning, grease gutters (IMC 507.8):

The hood shall be designed to allow thorough cleaning of the entire hood. Grease gutters shall drain to an approved collection receptacle that is also easily cleaned.

9 Clearances (IMC 507.9):

Provide a minimum 18 inch clearance from the Type 1 grease hood to any combustible material. Clearance is not required for gypsum board attached to noncombustible structures provided that a smooth, cleanable, nonabsorbent and noncombustible material is applied between the gyp board and the hood. This material shall extend 18" minimum beyond all sides or edges of the hood.

10 Show the location of the Type 1 hood in relation to the kitchen ceiling and walls. If any portion of the hood penetrates the ceiling, wall or furred space it shall be enclosed from the point of penetration to the outlet terminal. IMC 506.3.10.

11 Provide performance, capture, & containment test for the Type hood system. The permit holder shall provide the necessary test equipment and devices required to test the equipment. IMC 507.16.

GREASE DUCT (IMC 506.3):

- 1 Provide the grease duct size. Note the design air velocity.
- 2 Provide the type of the joint seams and connections to be used for the installation of the grease duct to the Type 1 hood and exhaust fan.
- 3 Show the grease duct exhaust fan to be a minimum 10' above grade. Verify that the location will not be a public nuisance or create problems in general due to the location, direction, or nature of the exhaust.
- 4 Show the exhaust fan termination to be a minimum 40" above the roof. Show how one side is hinged with a flexible electrical connector for inspection and cleaning.
- 5 Provide a "light test" for grease duct prior to enclosing or concealing. IMC 506.3.3.1
- 6 Provide specifications, installation details and current ICC Evaluation Report for the grease duct wrap system. This wrap shall extend from 18 inches below any combustible truss or wood joist to a point 18" above the surface of the roof covering or provide an 18" clearance to combustible material for the same distance or provide a noncombustible 1-hr fire-rated shaft with a gyp board and 3" minimum clearance.
- 7 Address duct grease accumulation and cleanout per IMC 506.3.6, 7, 8, 9.
- 8 Address the grease duct enclosures per IMC 506.3.10 (including exceptions).

MAKEUP AIR (IMC SECTION 508):

- 1 Provide exhaust and makeup air calculations for the kitchen or the entire space as applicable. Include all sources of exhaust air and make-up air.
- 2 Provide an interlock device between all grease hoods and make-up air units to insure simultaneous operation when active.
- 3 Provide a heat sensor or other device to insure the automatic operation of both the kitchen hood and the make-up air systems upon activation of the cooking devices.
- 4 Makeup air intake opening locations shall comply with IMC 401.4
- 5 Makeup air temperature shall not vary from the conditioned space by more than 10°F.
- 6 Compensating hoods shall bear labels stating their air volume requirements.
- 7 A balance report, prepared by a qualified third party, shall be presented to SLC's inspector.

SUPPRESSION SYSTEM (IMC SECTION 509, IBC 904.2.1):

- 1 Provide plans and details for Type 1 hood approved automatic fire suppression system complying with the IBC and IFC. Include shutdown devices.
- 2 A balance report, prepared by a qualified third party, shall be presented to SLC's inspector.

Type 2 Hoods

IMC SECTION 507.2.2 "SHALL BE INSTALLED OVER COOKING OR DISHWASHING APPLIANCES THAT PRODUCE HEAT, STEAM OR PRODUCTS OF COMBUSTION AND DO NOT PRODUCE GREASE OR SMOKE SUCH AS STEAMERS, KETTLES, PASTA COOKERS, AND DISHWASHING MACHINES.

- 1 Exceptions
 - Under counter type commercial dishwashing machines
 - Dishwashing machines that have a built-in exhaust system.
 - Light duty electric convection, bread, retherm, or microwave over.
 - Toaster, steam tables, popcorn poppers, hot dog cookers, coffee makers, rice cookers, and holding/warming ovens.
- 2 Materials should be steel not less than .030 (22 gauge), stainless steel not less than .024 (24 gauge), copper weighing not less than 24 oz. per sq ft, or of any other approved material. IMC 507.5.
- 3 Supports shall be noncombustible and capable of supporting the hood, adjacent ductwork, the effluent load and the possible weight of the personnel working in or on the hood. IMC 507.5.
- 4 Joints, seams, and penetrations shall be constructed as set forth in IMC Ch. 6, shall be sealed on the interior of the hood and provide a smooth surface that is readily cleanable and water tight. IMC 507.7.2.