

# CHAPTER 15

## EXHAUST SYSTEMS

### SECTION M1501 GENERAL

**M1501.1 Outdoor discharge.** The air removed by every mechanical exhaust system shall be discharged to the outdoors. Air shall not be exhausted into an *attic*, soffit, ridge vent or crawl space.

**Exception:** Whole-house *ventilation*-type *attic* fans that discharge into the *attic* space of *dwelling units* having private *attics* shall be permitted.

### SECTION M1502 CLOTHES DRYER EXHAUST

**M1502.1 General.** Clothes dryers shall be exhausted in accordance with the manufacturer's instructions.

**M1502.2 Independent exhaust systems.** Dryer exhaust systems shall be independent of all other systems and shall convey the moisture to the outdoors.

**Exception:** This section shall not apply to *listed* and *labeled* condensing (ductless) clothes dryers.

**M1502.3 Duct termination.** Exhaust ducts shall terminate on the outside of the building. Exhaust duct terminations shall be in accordance with the dryer manufacturer's installation instructions. If the manufacturer's instructions do not specify a termination location, the exhaust duct shall terminate not less than 3 feet (914 mm) in any direction from openings into buildings. Exhaust duct terminations shall be equipped with a backdraft damper. Screens shall not be installed at the duct termination.

**M1502.4 Dryer exhaust ducts.** Dryer exhaust ducts shall conform to the requirements of Sections M1502.4.1 through M1502.4.6.

**M1502.4.1 Material and size.** Exhaust ducts shall have a smooth interior finish and shall be constructed of metal a minimum 0.016-inch (0.4 mm) thick. The exhaust duct size shall be 4 inches (102 mm) nominal in diameter.

**M1502.4.2 Duct installation.** Exhaust ducts shall be supported at 4 foot (1219 mm) intervals and secured in place. The insert end of the duct shall extend into the adjoining duct or fitting in the direction of airflow. Ducts shall not be joined with screws or similar fasteners that protrude into the inside of the duct.

**M1502.4.3 Transition duct.** Transition ducts used to connect the dryer to the exhaust *duct system* shall be a single length that is *listed* and *labeled* in accordance with UL 2158A. Transition ducts shall be a maximum of 8 feet (2438 mm) in length. Transition ducts shall not be concealed within construction.

**M1502.4.4 Duct length.** The maximum allowable exhaust duct length shall be determined by one of the methods specified in Section M1502.4.4.1 or M1502.4.4.2.

**M1502.4.4.1 Specified length.** The maximum length of the exhaust duct shall be 35 feet (10 668 mm) from the connection to the transition duct from the dryer to the outlet terminal. Where fittings are used, the maximum length of the exhaust duct shall be reduced in accordance with Table M1502.4.4.1.

**M1502.4.4.2 Manufacturer's instructions.** The size and maximum length of the exhaust duct shall be determined by the dryer manufacturer's installation instructions. The code official shall be provided with a copy of the installation instructions for the make and model of the dryer at the concealment inspection. In the absence of fitting equivalent length calculations from the clothes dryer manufacturer, Table M1502.4.4.1 shall be used.

**M1502.4.5 Length identification.** Where the exhaust duct is concealed within the building construction, the equivalent length of the exhaust duct shall be identified on a permanent label or tag. The label or tag shall be located within 6 feet (1829 mm) of the exhaust duct connection.

**TABLE M1502.4.4.1  
DRYER EXHAUST DUCT FITTING EQUIVALENT LENGTH**

DRYER EXHAUST DUCT FITTING TYPE	EQUIVALENT LENGTH
4 inch radius mitered 45 degree elbow	2 feet 6 inches
4 inch radius mitered 90 degree elbow	5 feet
6 inch radius smooth 45 degree elbow	1 foot
6 inch radius smooth 90 degree elbow	1 foot 9 inches
8 inch radius smooth 45 degree elbow	1 foot
8 inch radius smooth 90 degree elbow	1 foot 7 inches
10 inch radius smooth 45 degree elbow	9 inches
10 inch radius smooth 90 degree elbow	1 foot 6 inches

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 degree = 0.0175 rad.

**M1502.4.6 Exhaust duct required.** Where space for a clothes dryer is provided, an exhaust *duct system* shall be installed. Where the clothes dryer is not installed at the time of occupancy the exhaust duct shall be capped or plugged in the space in which it originates and identified and marked “future use.”

**Exception:** Where a *listed* condensing clothes dryer is installed prior to occupancy of the structure.

**M1502.5 Protection required.** Protective shield plates shall be placed where nails or screws from finish or other work are likely to penetrate the clothes dryer exhaust duct. Shield plates shall be placed on the finished face of all framing members where there is less than 1<sup>1</sup>/<sub>4</sub> inches (32 mm) between the duct and the finished face of the framing member. Protective shield plates shall be constructed of steel, shall have a minimum thickness of 0.062-inch (1.6 mm) and shall extend a minimum of 2 inches (51 mm) above sole plates and below top plates.

### SECTION M1503 RANGE HOODS

**M1503.1 General.** Range hoods shall discharge to the outdoors through a single-wall duct. The duct serving the hood shall have a smooth interior surface, shall be air tight and shall be equipped with a backdraft damper. Ducts serving range hoods shall not terminate in an *attic* or crawl space or areas inside the building.

**Exception:** Where installed in accordance with the manufacturer’s installation instructions, and where mechanical or natural *ventilation* is otherwise provided, *listed* and *labeled* ductless range hoods shall not be required to discharge to the outdoors.

**M1503.2 Duct material.** Single-wall ducts serving range hoods shall be constructed of galvanized steel, stainless steel or copper.

**Exception:** Ducts for domestic kitchen cooking *appliances* equipped with down-draft exhaust systems shall be permitted to be constructed of schedule 40 PVC pipe and fittings provided that the installation complies with all of the following:

1. The duct is installed under a concrete slab poured on grade; *and*
2. The underfloor trench in which the duct is installed is completely backfilled with sand or gravel; and
3. The PVC duct extends not more than 1 inch (25 mm) above the indoor concrete floor surface; and
4. The PVC duct extends not more than 1 inch (25 mm) above *gradeoutside of the building*; *and*
5. The PVC ducts are solvent cemented.

**M1503.3 Kitchen exhaust rates.** Where domestic kitchen cooking *appliances* are equipped with ducted range hoods or

down-draft exhaust systems, the fans shall be sized in accordance with Section M1507.3.

**M1503.4 Makeup air required.** Exhaust hood systems capable of exhausting in excess of 400 cubic feet per minute (0.19 m<sup>3</sup>/s) shall be provided with makeup air at a rate approximately equal to the exhaust air rate. Such makeup air systems shall be equipped with a means of closure and shall be automatically controlled to start and operate simultaneously with the exhaust system.

### SECTION M1504 INSTALLATION OF MICROWAVE OVENS

**M1504.1 Installation of a microwave oven over a cooking appliance.** The installation of a *listed* and *labeled* cooking *appliance* or microwave oven over a *listed* and *labeled* cooking *appliance* shall conform to the terms of the upper *appliance’s* *listing* and *label* and the manufacturer’s installation instructions. The microwave oven shall conform to UL 923.

### SECTION M1505 OVERHEAD EXHAUST HOODS

**M1505.1 General.** Domestic open-top broiler units shall have a metal exhaust hood, having a minimum thickness of 0.0157-inch (0.3950 mm) (No. 28 gage) with 1/4 inch (6.4 mm) clearance between the hood and the underside of combustible material or cabinets. A clearance of at least 24 inches (610 mm) shall be maintained between the cooking surface and the combustible material or cabinet. The hood shall be at least as wide as the broiler unit, extend over the entire unit, discharge to the outdoors and be equipped with a backdraft damper or other means to control infiltration/exfiltration when not in operation. Broiler units incorporating an integral exhaust system, and *listed* and *labeled* for use without an exhaust hood, need not have an exhaust hood.

### SECTION M1506 EXHAUST DUCTS

**M1506.1 Ducts.** Where exhaust duct construction is not specified in this chapter, construction shall comply with Chapter 16.

### SECTION M1507 MECHANICAL VENTILATION

**M1507.1 General.** Where toilet rooms and bathrooms are mechanically ventilated, the *ventilation equipment* shall be installed in accordance with this section.

**M1507.2 Recirculation of air.** Exhaust air from bathrooms and toilet rooms shall not be recirculated within a residence or to another *dwelling unit* and shall be exhausted directly to the outdoors. Exhaust air from bathrooms and toilet rooms shall not discharge into an *attic*, crawl space or other areas inside the building.

**M1507.3 Ventilation rate.** *Ventilation* systems shall be designed to have the capacity to exhaust the minimum air flow rate determined in accordance with Table M1507.3.

**TABLE M1507.3  
MINIMUM REQUIRED EXHAUST RATES FOR  
ONE- AND TWO-FAMILY DWELLINGS**

AREA TO BE VENTILATED	VENTILATION RATES
Kitchens	100 cfm intermittent or 25 cfm continuous
Bathrooms—Toilet Rooms	Mechanical exhaust capacity of 50 cfm intermittent or 20 cfm continuous

For SI: 1 cubic foot per minute = 0.4719 L/s.

