



Venting Gas-fired Appliances

Properly designed and installed chimneys, vents and venting systems are necessary to conduct flue gases produced by the combustion of fuels in appliances to the outdoors. UL has a wide variety of certifications of both fuel-burning appliances and venting equipment that can help achieve this objective. Understanding where to locate these certifications and how the certifications relate to corresponding code requirements will help you to provide safe, code compliant installations.



Installation codes

UL certified gas-fired appliances and venting systems for these products are intended for installation in accordance with the following installation codes:

- ANSI Z223.1/NFPA 54 National Fuel Gas Code
- International Fuel Gas Code
- International Residential Code
- Uniform Mechanical Code.

These codes include requirements intended to minimize the hazards associated with high temperatures and combustion gases. In general, factory built vents and chimneys are required to be listed (certified), except for instances where limited use of metal chimneys and vents are specifically allowed. In general, US codes permit Category IV gas-fired appliances to be vented using unlisted plastic vents where such vents are tested and covered

under the specific appliance listing. These vents are intended to be installed in accordance with the appliance manufacturer's installation instructions.

Gas-fired Appliance categories

Various gas-fired appliances, which are required to be vented, are categorized for the purpose of vent selection into four categories (Categories I, II, III, and IV), based on their vent static pressure (non-positive or positive) and whether the vent gas conditions avoids or may cause excessive condensate production in the vent.

When required by the safety standard, UL certified gas-fired appliances are marked to indicate their specific category, and this category is also referenced in the installation instructions provided with the appliance. For those gas-fired appliances that are not categorized, the suitable method of venting is specified in the manufacturer's installation instructions.



Venting Gas-fired Appliances (continued)

Installation considerations

An approach that code users and enforcers can use to achieve proper installations is as follows.

1. Identify the code requirements that are applicable for the specific installation.
2. Confirm that appropriate UL Listed products are used. This includes both the appliance and the venting equipment. Categories for various venting products are described below, along with the UL standards used to investigate these products. These certifications can be found in the UL Online Certifications Directory at www.ul.com/database.
3. Obtain a copy of the installation instructions and verify that the products are installed in accordance with both the manufacturer's instructions and the relevant code requirements.

Listed chimney and vent systems consist entirely of factory-made parts that are to be assembled in the field in accordance with the manufacturer's installation instructions. The parts of each model of chimney or vent are designed to be assembled with the other parts of that model without requiring field construction. Each assembly consists of one or more chimney or vent pipe sections, factory-furnished base plates, lateral supports, thimble and flashing assembly, termination cap and other parts as specified in the installation instructions provided with each chimney or vent assembly.

Both the codes and the installation instructions provide specific requirements on the sizing of the system, clearances to combustibles, the assembly of the components of the system, the locations where the system may be used, and any restrictions on their use.

Listed vents and chimneys

The types of listed vents and chimneys that are suitable for venting listed Category I gas-fired appliances, listed appliances equipped with a draft hood, and appliances listed for use with Type B gas vents are (1) factory-built chimneys, (2) listed chimney lining systems for gas venting in masonry chimneys, and (3) Type B gas vents.





Venting Gas-fired Appliances (continued)

There are three types of factory built chimneys, each of which are limited in their intended use by the temperature of the flue gases.

Residential-type and building-heating appliance chimneys (DDXU) are intended for venting flue gases at a temperature not exceeding 1000°F (540°C), under continuous operating conditions, from gas-, liquid- and solid-fuel-fired residential-type appliances and building-heating appliances. These chimneys are investigated in accordance with the Standard for Safety for Factory-Built Chimneys for Residential Type and Building Heating Appliances, UL 103.

Factory-built 1400°F chimneys (DDTZ) are intended for venting flue gases at a temperature not exceeding 1400°F under continuous operating conditions, from building heating appliances and other low-heat appliances. They are investigated in accordance with the Standard for Safety for 1400 Degree Fahrenheit Factory-Built Chimneys, UL 2561, which contains requirements which were previously included in UL 103 and UL 959.

Medium-heat appliance chimneys (DDQV) are intended for venting flue gases at a temperature not exceeding 1800°F, under continuous operating conditions, and are investigated in accordance with the Standard for Safety for Medium Heat Appliance Factory-Built Chimneys, UL 959.

Chimney liners (DDZR) are intended for installation in masonry chimneys, and are investigated in accordance with the Standard for Safety for Chimney Liners, UL 1777. Unless specified in the individual listings, all listed chimney liners are intended for use with gas, liquid and solid-fuel-fired, residential-type and building-heating appliances.

Type B gas vents (DFFZ) are investigated in accordance with the Standard for Safety for Gas Vents, UL 441. Type B gas vents are not intended to be used for:

- Venting wall furnaces that are only listed for use with Type BW gas vents
- Incinerators and appliances listed for use with chimneys only
- Combination gas-oil burning appliances

- Appliances that may be converted readily to the use of solid or liquid fuels.

Type BW gas vents (DFFZ) are only intended for venting approved vented recessed heaters having inputs not greater than specified in the individual listing.

Low-temperature venting systems, Type L (DFTX) are for use with combination gas- and oil-fired appliances listed as suitable for venting with Type L venting systems. They may be used also where Type B gas vents are permitted. These types of venting systems are investigated in accordance with the Standard for Safety for Type L Low-Temperature Venting Systems, UL 641.

Special gas vents (DGSH) are intended for venting listed Category II, III, and IV appliances, and are investigated in accordance with the Standard for Safety for Venting Systems For Categories II, III and IV Gas-Burning Appliances, UL 1738.

Chimney and vent accessories

Listed chimney and vent connectors and accessories (DDCY) are engineered systems intended for connecting appliances to a vertical chimney or vent, or to reduce the clearances from connectors to combustible material. The type(s) of fuel-fired heating appliances (e.g., gas, liquid, solid fuel) with which these connectors and accessories have been investigated are indicated in the individual listings.

Flashings and roof jacks are provided as part of the listings for sealing roof and exterior wall penetrations. All gas vent caps (DFFZ and DFMY) up to 12 inches in internal diameter have been investigated for draft loss and wind effects and are intended for installation on listed gas vents with which they are compatible. They are required to be terminated a sufficient distance from the roof as specified in the listing of the venting system. Decorative termination shrouds are listed under the product category of gas caps and accessories (DFMY).

Using the proper UL certified gas-fired appliances and venting products in a given installation, and installing these products in accordance with manufacturer's installations and applicable code requirements will help you achieve safe, code compliant installations.