



# **TEXAS DEPARTMENT OF LICENSING AND REGULATION**

*Compliance Division/Boiler Program*

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November 15, 2016

## **BOILER TECHNICAL GRAM**

**Number:** 2016-05

**To:** Deputy Boiler Inspectors  
Authorized Inspectors  
Authorized Inspection Agencies

**From:** Office of the Chief Boiler Inspector  
TDLR, Compliance Division, Boiler Program

**Subject:** Rule 65.602. Chimneys and Vents (*Adopted effective June 15, 2015, 40 TexReg 3121*)  
All chimneys and vents shall be installed in accordance with Boiler Manufacture recommendations and Chimney/Vent Manufacturer recommendations.

This technical gram is written to clarify the effect of Rule 65.602 with the use of PVC for flue piping on condensing boilers.

The design of condensing boilers is such that the flue temperatures are at 140 degrees F or lower. This allows the for the fumes of combustion to condense in the vent piping or chimney, hence it is called a "Condensing Boiler". The manufacturers of Condensing Boilers allow for the use of many different types of material for the flue piping, which is addressed in the boiler manufacturer's installation instructions.

In the example below, you will note the boiler's Installation Manual requires only the following ASTM specifications to be used when installing PVC for the vent and intake air pipe.

- ASTM-D2665;
- Schedule 40, 80 or 120 ASTM-1785 or;
- ASTM-2241

In the picture of the installed boiler, you can see the ASTM specification listed on the PVC for the vent pipe which is ASTM-D-1785 Schedule 40. Since this ASTM material specification is in accordance with the manufacturer's installation manual, this is permissible.

Any questions regarding this Technical Gram should be addressed to the Chief Boiler Inspector or an Inspection Specialist.

Sincerely,

Robby D. Troutt  
Chief Boiler Inspector  
TDLR – Boiler Program

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*Mike Arismendez, Chair– Shallowater, Texas*

*Tom Butler, Vice-Chair – Deer Park, Texas*  
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*Rick Figueroa – Brenham, Texas*

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# TEXAS DEPARTMENT OF LICENSING AND REGULATION

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## VENTING INSTALLATION

### ⚠ WARNING

#### Breathing Hazard - Carbon Monoxide Gas



- Install vent system in accordance with codes.
- Do not operate water heater if exposed to flooding or water damage.
- Special consideration must be taken with installations above 10,000 feet (3,048 m) refer to high altitude section of this manual.
- Do not operate if soot buildup.
- Do not obstruct water heater air intake with insulating jacket or blanket.
- Do not place chemical vapor emitting products near water heater.
- Gas and carbon monoxide detectors are available.
- Never operate the heater unless it is vented to the outdoors and has adequate air supply to avoid risks of improper operation, fire, explosion or asphyxiation.
- Analyze the entire vent system to make sure that condensate will not become trapped in a section of vent pipe and therefore reduce the open cross sectional area of the vent.

Breathing carbon monoxide can cause brain damage or death. Always read and understand the instruction manual.

Never operate the water heater unless it is vented to outdoors. The instructions in this section of the manual must be followed to avoid choked combustion or recirculation of flue gases. Such conditions cause sooting of the combustion chamber, burners and flue tubes and creates a risk of asphyxiation.

#### GENERAL VENTING INFORMATION

The water heaters covered in this manual are operationally equivalent to Category IV appliances and may be installed in either a Power Vent or Direct Vent configuration.

#### APPROVED MATERIALS

Approved vent and intake air pipe materials that may be used in the United States:

PVC pipe materials:

- DWV ASTM-D2665 or CSA B181.2
- Schedule 40, 80, 120 ASTM-D1785 or CSA B137.3
- SDR Series ASTM-2241 or CSA B137.3

CPVC pipe materials:

- CPVC 41 ASTM-D2846 or CSA B137.6
- Schedule 40, 80 ASTM-F441 or CSA B137.8
- SDR Series ASTM-F442

Polypropylene - See page 28

- M & G Duravent PolyPro vent system
- Centrotherm InnoFlue vent system

AL29-4C Stainless Steel - See page 29

- HeatFab Saf-T Vent
- Duravent FasNSeal

Approved vent pipe materials that must be used in Canada:

#### CATEGORY IV APPLIANCES

Category IV appliances operate at positive pressure and with vent gas condensate in the vent pipe.

#### POWER VENT CONFIGURATION

Power Vent configurations are installed where they are installed in the atmosphere through a sealed vent pipe configuration. Power Vent configurations have one vent pipe which can be terminated in the atmosphere. See Figure 36 and Figure 37 on page 35.

#### DIRECT VENT CONFIGURATION

Direct Vent configurations are installed where the outdoor atmosphere discharges all flue gases through a sealed vent (exhaust) pipe connected to the water heater. Direct Vent configurations have seven different arrangements. See Figure 44 on page 35.

#### GENERAL VENTING INFORMATION

These instructions must be followed:

1. DO NOT install the water heater unless there is adequate supply of air. If the installation space does not provide adequate air, the water heater must be installed in a room with adequate air supply.
2. If the water heater is to be installed in a cleaning establishment or any space with another heater(s), be installed in a room with adequate air supply for combustion is determined.
3. The vent and intake air pipes must be installed in a room with adequate air supply.
4. The minimum clearance (exhaust) and intake air pipes through a combustible wall must be maintained.
5. The water heater must be installed during shutdown period.
6. The vent (exhaust) pipe must not be installed in a room with another appliance's intake air pipe.
7. The intake air pipe must not be installed in a room with another appliance's intake air pipe.
8. Locate the water heater so that air piping will remain unobstructed. See Venting Requirements.
9. Do not install the vent or intake air pipe so that water or condensate will be trapped in the pipe.
10. Vent pipes must be pitched away from the water heater (to a minimum of 1/4 inch per foot).
11. Do not anchor the vent pipes to floors or ceilings unless the manufacturer's instructions are followed to prevent vibration noise.
12. Use only approved vent pipe materials.

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