

STANDARD INFORMATION

Standard Number: ANSI Z21.11.2

Standard Name: Gas-Fired Room Heaters, Volume II, Unvented Room Heaters

Standard Edition and Issue Date: 28th Edition Dated November 7, 2016

Date of Revision: November 7, 2016

Date of Previous Revision of Standard: 27th Edition Issued May 13, 2013

EFFECTIVE DATE OF NEW/REVISED REQUIREMENTS

Effective Date: **January 1, 2019**

IMPACT, OVERVIEW, AND ACTION REQUIRED

Impact Statement: A review of all Listing Reports is necessary to determine which products comply with new/revised requirements and which products will require re-evaluation. **NOTE:** Effective immediately, this revised standard will be exclusively used for evaluation of new products unless the Applicant requests in writing that current requirements be used along with their understanding that their listings will be withdrawn on Effective Date noted above, unless the product is found to comply with new/revised requirements.

Overview of Changes: Revised Construction, Marking, Instructions and New Required Testing. Specific details of new/revised requirements are found in table below.

If the applicable requirements noted in the table are not described in your report(s), these requirements will need to be confirmed as met and added to your report(s) such as markings, instructions, test results, etc. (as required).

Client Action Required:

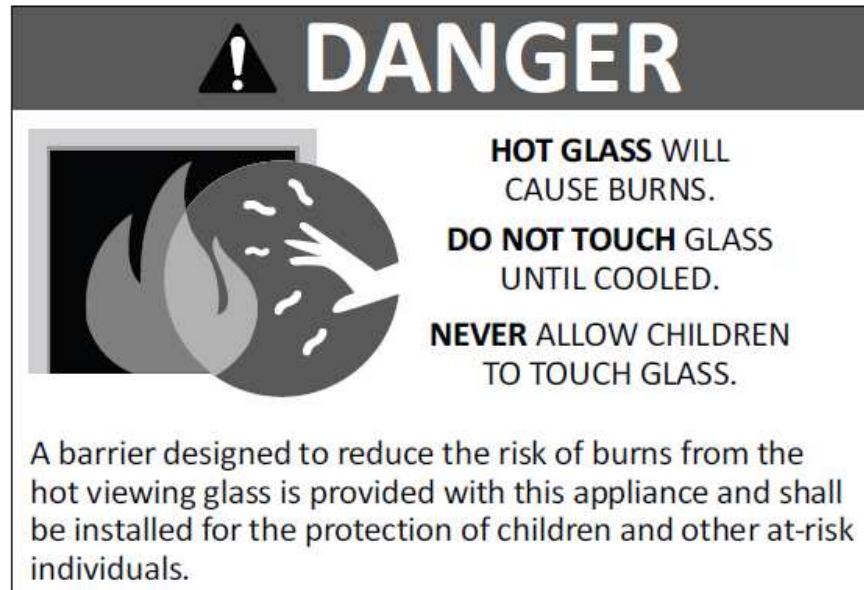
Information – To assist our Engineer with review of your Listing Reports, please submit technical information in response to the new/revised paragraphs noted in the attached or explain why these new/revised requirements do not apply to your product (s).

Current Listings Not Active? – Please immediately identify any current Listing Reports or products that are no longer active and should be removed from our records. We will do this at no charge as long as Intertek is notified in writing prior to the review of your reports.



STANDARD INFORMATION

CLAUSE	VERDICT	COMMENT
4.1.2		<u>Unvented decorative room heaters or unvented fireplace inserts shall be installed with a fire screen or guard between the living space and any flame. This fire screen or guard shall be designed and certified for the appliance.</u>
4.1.26		<u>An appliance design having an outside glass viewing area temperature that exceeds 172°F (78 °C) as measured in Clause 5.12.5 shall be provided with a barrier for the appliance glass viewing area.</u> <u>The barrier shall be constructed to maintain a fixed relationship between essential barrier parts and the outside glass viewing area under normal and reasonable conditions of handling and usage.</u>
4.8.3		<u>If a manually operated electric ignition system is used for pilot burner ignition, ignition and safety shut- off device assemblies shall comply with the Standard for <i>Manually Operated Electric Gas Ignition Systems and Components</i>, ANSI Z21.92 • CSA 6.29.</u>
4.20	Info	Instructions
4.20 (d)		<u>For appliances requiring a barrier, as determined under Clause 5.11.4: “A barrier designed to reduce the risk of burns from the hot viewing glass is provided with this appliance and shall be installed for the protection of children and other at-risk individuals.”</u>
4.20 (e)		<u>“If the barrier becomes damaged, the barrier shall be replaced with the manufacturer’s barrier for this appliance.”</u>
4.20.1 (i)		Added <div style="border: 1px solid black; padding: 10px; margin: 5px 0;"> <p>⚠ WARNING: FIRE, EXPLOSION, AND ASPHYXIATION HAZARD</p> <p>Improper adjustment, alteration, service, maintenance, or installation of this heater or its controls can cause death or serious injury.</p> <p>Read and follow instructions and precautions in User’s Information Manual provided with this heater.”</p> </div>
4.20.1 (k)		<u>Where applicable, provide a means by which the consumer can identify the barrier, such as graphic representation, clear description, or reference marking.</u>
4.20.2		<u>For a glass fronted room heater where the temperature of the outside glass viewing area surface exceeds the limits specified in Clause 5.11.4, the following danger graphic and statement shall be shown.</u>



The Danger letter-type shall be a sans-serif font with a minimum letter height of the following:

- a) The symbol and word, "DANGER," shall be boldfaced type having a minimum uppercase letter height of 0.498 in (12.65 mm)*;
- b) The words, as shown above in the boxed statement, shall be boldfaced type having a minimum uppercase letter height of 0.120 in (3.05 mm). The minimum vertical spacing between lines of type shall be 0.046 in (1.17 mm). † Lowercase letters shall be compatible with the uppercase letter size specifications.
- c) The word DANGER shall be in white letters on a contrasting background.

* This letter height corresponds to 36-point type.

† These letter height and line spacing measurements correspond to 12-point type.

4.20.14 (h)

ii) a statement, as applicable:

- 1) that cutting any sheet-metal parts of the solid-fuel burning fireplace or listed ventless firebox enclosure in which the non-zero clearance unvented fireplace insert is to be installed is prohibited;
- 2) that cutting any sheet-metal from the decommissioned fireplace or firebox, for the installation of zero-clearance unvented fireplace insert, may be necessary and is acceptable in this application.



Each room heater shall bear a Class IIIB marking with letters on a contrasting background, located adjacent to the controlling device or in an equally conspicuous position where the instructions can be easily read. These instructions shall include the statement:

4.21.2

“Keep burner and control compartment clean. See installation and operating instructions accompanying heater.”

On an appliance of such design that space does not permit proper location of these instructions, they may be furnished on a metal tag attached to the appliance.

4.21.3(f)

Type of gas for which equipped: Nat., Mfd., Mix., LP propane, or Btu LP gas-air mixture (the heating value for the LP gas-air mixture shall be indicated).

Identification of this standard by indicating either this edition of the standard, or the most recent effective addenda thereto, with one of the following markings:

4.21.3(m)

“ANS Z21.11.2-(year) Unvented Heaters;”
“ANS Z21.11.2a-(year) Unvented Heaters;” or
“ANS Z21.11.2b-(year) Unvented Heaters.”

Rating plate

4.21.4

Each appliance shall bear a plate of Class IIIA marking material located to be easily read when the appliance is in a normally installed position. The following information shall appear on the plate:

“For use only with barrier(s) Part No(s) _____ . Follow installation instructions.”

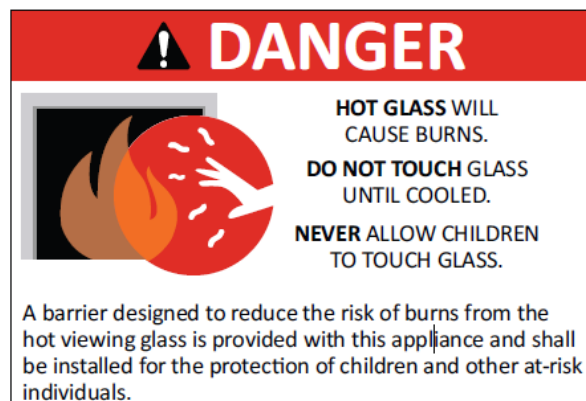
4.21.10(g)

“WARNING: The fire screen or guard designed for this unvented decorative room heater or unvented fireplace insert must be installed prior to operation.”

Instruction plate

For a glass fronted gas appliance where the temperature of the outside glass viewing area surface exceeds the limits specified in Clause 5.11.4, the following danger graphic and statements shall be shown on a Class IIIA-2 Permanent Label.

4.21.27



The Danger letter-type shall be a sans-serif font with a minimum letter height of the following:



The symbol and word, "DANGER," shall be boldfaced type having a minimum uppercase letter height of 0.498 in (12.65 mm)*;

The words, as shown above, in the boxed statement shall be boldfaced type having a minimum uppercase letter height of 0.120 in (3.05 mm). The minimum vertical spacing between lines of type shall be 0.046 in (1.17 mm). † Lower case letters shall be compatible with the uppercase letter size specifications; and

The word DANGER shall be in white letters on a red background.

* *These line height and line spacing measurements correspond to 12-point type.*

† *This letter height measurement corresponds to 24-point type.*

A universal unvented room heater, capable of operation with either propane or natural gas, shall at any setting or position of the switching means of the appliance, as well as any setting or position of the convertible regulator, comply with the tests specified in Clauses 5.4, 5.5, 5.7, 5.8, or 5.10, 5.11, 5.13, 5.19, 5.20, 5.21, 5.22 with the appliance operating:

5.1.13

a) on natural gas with the gas selection means of the appliance set for propane;

~~b) on propane with the gas selection means of the appliance set for natural gas.~~

b) on natural gas with the convertible regulator set for propane and the simple switching means set for propane;

c) on natural gas with the convertible regulator set for propane and the simple switching means set for natural gas;

d) on natural gas with the convertible regulator set for natural gas and the simple switching means set for propane;

e) on propane with the gas selection means of the appliance set for natural gas;

f) on propane with the convertible regulator set for natural gas and the simple switching means set for propane;

g) on propane gas with the convertible regulator set for natural gas and the simple switching means set for natural gas; and

h) on propane gas with the convertible regulator set for propane and the simple switching means set for natural gas.

Method of test

5.4.2

This test shall be repeated with the room heater operating at a manifold pressure 50 percent below that obtained during burner adjustment for appliances for use with natural, manufactured, or mixed or LP gas-air mixtures; and 15 percent below that obtained during burner adjustment for appliances for use with ~~liquefied petroleum gases~~ propane gas.

Automatic shutdown of a universal unvented room heater

5.6

A universal unvented room heater not complying with Clause 5.1.13 ~~and intended to shut down when operating with the gas selection means of the appliance in the improper position~~ shall comply with the following test.



5.11.4	Info	<p><u>Where the outside temperature of the glass viewing area surface exceeds 172°F (78 °C)*, when installed according to Clause 5.19, Wall, floor, and ceiling temperatures, and operated to equilibrium, a provided barrier shall comply with burn hazard limits under Clause 5.12.3, Barrier burn hazard potential (other than a barrier made of glass).</u></p> <p><i>* The maximum temperatures specified are based on a 77°F (25 °C) room temperature. When the room temperature is other than 77°F (25 °C), the allowable temperatures shall be increased or decreased 1 degree for each 1 degree of room temperature greater or less than 77°F (25 °C), within a range of 70-80°F (21-27 °C).</i></p> <p>Method of Test</p> <p><u>Evaluation shall be performed using the outside surface temperatures of the glass viewing area as determined by the Method of Test in Clause 5.11.1, Glass fronts.</u></p>
5.12	Info	Burn hazard potential
5.12.1		<p><u>An unvented heater shall comply with Clause 5.12.2 or 5.12.3 in order to determine the burn hazard potential for the external surfaces of the glass viewing area, barriers made of glass, or barriers other than glass.</u></p>
5.12.2		<p>Burn hazard potential of glass viewing areas including barriers made of glass</p> <p><u>Temperatures of the glass viewing area or the barrier made of glass, when tested in the following Method of Test, shall not exceed 172°F (78 °C)*.</u></p> <p>Method of Test</p> <p><u>This test is to be conducted at the same time as Clause 5.19, Wall, floor, and ceiling temperatures. The hottest point of the glass viewing area or the barrier made of glass is to be established in accordance with the Method of Test in 5.11, Glass fronts.</u></p> <p><u>Burn hazard potential shall be determined for all exterior glass viewing area surfaces or barrier surfaces made of glass that can be fully contacted by the flat tip of the test probe surface having a diameter of at least 11/16 in. (17.5mm).</u></p> <p><u>Surface temperatures shall be measured using the probe illustrated in Figure 6, Temperature-measuring accessibility probe. The probe is to be heated to 99°F (37 °C). The probe is then to be applied to the hottest point of the glass viewing area or the barrier made of glass with a 5 lb force (22 N) for 10 seconds. The probe is to be applied so that the tip will fully contact the surface. The tip is considered to be the disc and flat surface of the cork surrounding the disc. The surface temperatures obtained shall not exceed 172°F (78 °C).</u></p> <p><i>* The maximum temperatures specified are based on a 77°F (25 °C) room temperature. When the room temperature is other than 77°F (25 °C) the allowable temperatures shall be increased or decreased 1 degree for each degree of room temperature greater or less than 77°F (25 °C), within a range of 70–80°F (21-27 °C).</i></p>
5.12.3		<p>Burn hazard potential (other than barriers made of glass)</p> <p><u>A barrier, which is intended to prevent direct contact with the glass viewing area surface by the accessibility probe shown in Figure 7, Accessibility probe, shall be designed to prevent contact with the glass viewing area surface having temperatures in excess of 172°F (78 °C)* when testing according to Clause 5.12.2.</u></p> <p>Method of Test</p>



The probe shall be applied: (1) with a 2.5 lb force (11.1 N); and (2) in any possible configuration and to any depth that the size of an opening will permit. The probe shall be rotated or angled to any possible position before, during, or after insertion through the opening. If necessary, the configuration shall be changed after the probe has been inserted through the opening.

Any glass surface the accessibility probe can contact with the barrier in place shall be measured according to Clause 5.12.2 or 5.12.3, to verify the glass surface temperature does not exceed 172°F (78 ° C)*. Removal of barrier may be required for measuring temperature.

** The maximum temperatures specified are based on a 77°F (25 °C) room temperature. When the room temperature is other than 77°F (25 °C), the allowable temperatures shall be increased or decreased 1 degree for each 1 degree of room temperature greater or less than 77°F (25 °C), within a range of 70-80° F (21-27 °C).*

A barrier other than glass shall be tested with the appliance in accordance with the Method of Test shown below.

Method of Test

An appliance with the barrier installed according to the manufacturer's instructions shall be installed according to Clause 5.19, Wall, floor, and ceiling temperatures. The barrier shall not become detached when subjected to the following Method of Test. A force probe as shown in Figure 7 shall be used to apply a 10 lb force (44.5 N) to all surface(s) of the barrier, which are directly in front of the viewing area. The probe force shall be applied normal to the plane of the surface(s) of the barrier. Where surfaces are rounded, the force probe shall be applied evenly and normal to the plane of the surface of the curved feature, approximately in the center of the curved feature. The barrier shall remain attached and shall not exhibit any deformation that would compromise the safe and intended function of the barrier. Any permanent deformation that occurs due to application of force prescribed above shall not be repaired or compensated for during the Thermesthesiometer evaluation. Should the barrier contact the glass with 10 lb force (44.5 N) applied as prescribed, a Thermesthesiometer test with 10 lb force (44.5 N) shall be required, below.

5.12.4

The appliance shall then be operated until equilibrium is attained. All framework surfaces of the barrier shall comply with the temperature requirements under Clause 5.20.1(a) and (b), Surface temperatures.

Using a thermal imaging camera, thermocouple array, or other temperature sensing device, find the hottest point(s) for each different thermal mass on the barrier. The outside surface of the barrier at the hottest point(s) identified above shall be measured using a Thermesthesiometer*, or the prescribed Calculational Procedure, Method A in the *Practice for Determination of Skin Contact Temperature from Heated Surfaces Using a Mathematical Model and Thermesthesiometer*, ASTM C1057.

Place the Thermesthesiometer on the hottest point(s) of each thermal mass applying a 4 to 5 lb force (17.8 to 22.24 N). Record the Thermesthesiometer's output temperature at 5 seconds.

In the event the barrier contacts the glass viewing area surface during the



application of the force probe (see Figure 7), the test shall be conducted by applying the Thermesthesiometer with a 10 lb force (44.5 N) where contact occurred. Record the Thermesthesiometer's output temperature at 5 seconds. The barrier complies with the requirements of this test if the Thermesthesiometer reading at 5 seconds does not exceed Threshold B (TB) as per ASTM C1055 formula 4.2.3TB that equals $58\text{ }^{\circ}\text{C}^{\dagger}$ (137°F) where TB is the critical contact temperature for reversible epidermal injury, °C. (See Figure 1, Temperature- Time Relationship for Burns in ASTM C1055.)

** See National Bureau of Standards Technical Note 816 - Engineering and Construction Manual for an Instrument to Make Burn Hazard Measurements in Consumer Products*

† The temperature under Clause 5.12.3 is not to be considered a surface temperature, it is the reading from the Thermesthesiometer or the mathematical method in ASTM C1057.

5.12.5

Decorative structural elements integral to the barrier which are located over the glass viewing area shall comply with the temperature requirements under Clause 5.20.1(a) and (b), Surface temperatures provided:

- a) decorative structural elements shall cover no more than 5 percent of the surface area over the glass viewing area; and
- b) the maximum width of a decorative framework element shall not exceed 0.75 inch (19 mm).

CUSTOMERS PLEASE NOTE: This Table and column "Verdict" can be used in determining how your current or future production is or will be in compliance with new/revised requirements.
