

STANDARD INFORMATION

Standard: ANSI Z21.47 / CSA 2.3

Standard ID:

Gas-Fired Central Furnaces [ANSI Z21.47:2021 Ed.8]

Gas-Fired Central Furnaces [CSA 2.3:2021 Ed.8]

Previous Standard ID:

Gas-Fired Central Furnaces [ANSI Z21.47:2016 Ed.7]

Gas-Fired Central Furnaces [CSA 2.3:2016 Ed.7]

EFFECTIVE DATE OF NEW/REVISED REQUIREMENTS

Effective Date: **May 1, 2023**

IMPACT, OVERVIEW, AND ACTION REQUIRED

Impact Statement: Per our accreditation, Intertek is required to review reports against the standard revisions to confirm compliance. Once compliance is confirmed, the standard reference in the report is updated to show continued compliance to the technical requirements of the standard. Reports not updated to this version by the effective date above will be withdrawn.

Overview of Changes:

- Requirements to be described in the manual if the furnace is used for heat during the construction of a building
- New specific clause to require the installation instructions to include information detailing the minimum distance from adjacent public walkways, adjacent buildings, openable windows, and building openings
- New clause requiring the installation instructions to provide information on protecting building material from degradation by flue gases
- New venting information requirements requiring specific details
- Added pendulum testing for direct vent systems

Specific details of new/revise requirements are found in table below.

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 – Please immediately identify any current Listing Reports or products that are no longer active and should be removed from our records.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
		<i>Additions to existing requirements are <u>underlined</u> and deletions are shown lined out below.</i>
4	Info	Construction
4.2	Info	Materials
4.2.6		<i>New clause added;</i> Non-metallic materials and joining methods shall comply with nationally recognized standards or be acceptable to the testing agency.
4.23	Info	Installation manuals
		Installation manuals shall contain the following safety information to be followed by the installer: ix) A statement specifying whether the furnace may be used for some combination of heating or cooling or air circulation of buildings or structures under the following stages: <u>2) finishing stages of construction—if the manufacturer allows the use of the furnace only during the finishing stages of construction, the instructions shall specify all the requirements to which the installation comply prior to and during its use, including</u> <u>A) return air and vent openings shall be covered during installation and construction to minimize penetration of dust at all times prior to the finishing stages of construction;</u> <u>B) interior drywall installation shall be completed and covered with paint or primer;</u> <u>C) premises shall be substantially free of debris and dust;</u> <u>D) proper vent installation;</u> <u>E) furnace operating under thermostatic control;</u> <u>F) return air duct sealed to the furnace;</u> <u>G) minimum MERV 11 air filter in place during the finishing stages of construction;</u> <u>H) appropriate new filter shall be installed as per manufacturer’s shipped installation instruction prior to final occupancy;</u> <u>I) set furnace input rate and temperature rise per rating plate marking;</u> <u>J) means for providing combustion air in accordance with the manufacturer’s shipped installation instructions;</u> <u>K) return air temperature maintained between 55 °F (13 °C) and 80 °F (27 °C); and</u> <u>L) furnace shall be set up to operate in accordance with the manufacturer’s shipped installation instructions and shall be verified for operating conditions including ignition, input rate, temperature rise, and venting.</u>
4.23.2		



CLAUSE	VERDICT	COMMENT
4.23.6		<p>Installation manuals for installing vents, venting systems, and provisions for adequate combustion and ventilation air shall include the following instructions:</p> <ul style="list-style-type: none">i) instructions for proper venting installation, as described in the following:<ul style="list-style-type: none">x) For furnaces for other than recreational vehicle installation, installation instructions accompanying a direct vent appliance or other appliance that can utilize a side wall vent system shall include information on where the vent terminal can and cannot terminate, including<ul style="list-style-type: none"><u>2) the minimum distance from adjacent public walkways, adjacent buildings, openable windows, and building openings as specified in ANSI Z223.1/NFPA 54 and/or CSA B149.1;</u><u>4) information on protecting building materials from degradation by flue gases; and</u>l) <u>for venting systems for other than natural draft, the instructions accompanying the appliance shall specify the maximum and minimum vent equivalent lengths; and</u><u>m) for a direct vent appliance, complete information shall be provided covering building wall thicknesses that can be penetrated and part numbers of vent-air intake kits, if several vent-air intake kits are available, for use with various ranges of wall thickness.</u>
4.24	Info	Maintenance and service manuals
4.24.2		<p>Maintenance and service manuals shall include the following instructions (with recommended frequency guidelines, as applicable):</p> <ul style="list-style-type: none">g) the following information regarding lubrication of the furnace shall indicate either<ul style="list-style-type: none">iii) when lubrication of the motor, blower, or fan bearings shall be performed only by a qualified service agency.4) <u>method for resealing vent-air intake system;</u>
4.26	Info	Furnace markings
4.26.4		<p>Rating plate(s)</p> <p>Each furnace shall bear a plate or a combination of adjacent plates of Class IIIA marking material located so as to be easily read when the furnace is in a normally installed position. A plate(s), visible after removal of an access panel without the use of tools, may be used. A plate(s) shall not be located on a removable access panel, except as noted below.</p> <p>A rating plate may be located on a removable panel if the panel must be in place for the operation of the furnace. An additional Class IIIA marking shall be affixed to a non-removable panel with model number, serial number, and a note as to the location of the furnace rating plate.</p>



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		<p>In Canada, the required rating plate information below shall be shown in both English and French. See Clause 13 for French translations.</p> <p>b) The rating plate(s) shall include the following information: xv) identification of this Standard by indicating either this edition of the Standard, or the most recent effective addenda thereto, with the following marking: “ANS Z21.47-(year) • CSA 2.3-(year) Central Furn” “<u>CSA/ANSI Z21.47:(year) • CSA 2.3:(year)</u>”;</p>
		<p>Clearance markings</p> <p>Each furnace shall bear the following marking(s), as applicable, on Class IIIA marking material unless otherwise specified herein, located as specified in Clause 4.26.4:</p>
4.26.10		<p>e) if the furnace is tested with a listed Type B vent or vent connector, the furnace shall be provided with a Class V marking in a location conspicuous prior to installation, clearly indicating the type of vent or vents such as B-0, B-1, B-1/2, etc., <u>Type B, Type BW, and Type L</u>, with which the furnace is approved. The manufacturer’s instructions shall state the specific type of Type B vent or vent connector to be used, together with the listed vent clearances from combustible material; and</p>
5	Info	Performance
5.27	Info	Wall, floor, and ceiling temperatures
5.27.7	Info	Maximum non-metallic vent material temperatures
		<p>The furnace shall be installed in an enclosure as specified in Clause 5.27.2. The venting system shall be installed in accordance with the manufacturer’s instructions at maximum vent length and at the clearances from combustible materials specified by the manufacturer. The first elbow of the vent system shall be located as close to the appliance flue collar as permitted by the manufacturer’s instructions, but not more than 4 ft from the appliance flue collar.</p>
5.27.7.2		<p>Bead-type iron-constantan thermocouples of 24 AWG (0.20 mm²) shall be installed at the following locations in the vent system:</p> <p>a) Five thermocouples shall be imbedded (from the outside of the pipe) in the vent material to within 0.031 in (0.79 mm) of the inside wall of the material. The thermocouple positions shall be along the wall having the largest radius in the first elbow of the venting system. The thermocouples shall be spaced at 1 in (25.4 mm) intervals with the first thermocouple located at the beginning of the bend in the elbow (nearest the inlet connection). The other four thermocouples shall be spaced farther downstream from the furnace.</p>



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		<p>b) Four thermocouples shall be imbedded in the vent material to within 0.031 in (0.79 mm) of the inside wall of the material and within 0.50 in (12.7 mm) of the flue collar of the furnace. The thermocouples shall be spaced about the circumference of the pipe at 90° (1.57 rad) intervals. This test shall be conducted in conjunction with Clause 5.27. The maximum vent material temperature shall be the hottest temperature of the vent pipe material at any of the thermocouples in the vent and shall not exceed the HDT of the vent material. During testing and after cool down, no shrinkage, warpage, cracks, or other distortion of the component shall cause the furnace not to comply with any other portion of the Standard. No discoloring of the vent material shall occur.</p> <p><u>In cases where the thermocouples are installed in an elbow, and the clearances specified in Clause 5.27.3 or 5.27.4 prevent this elbow from being installed inside the enclosure at the minimum permissible distance from the flue gas outlet, the appropriate clearance shall be increased sufficiently to allow the elbow to be installed inside the enclosure. No clearances shall be increased other than those which are required to permit the elbow to fit in the enclosure. The manufacturer's minimum specified vent clearance shall be maintained between the elbow and the closest inside surface of the enclosure. This enlarged enclosure shall be used solely to determine the vent system temperature; tests to determine all other temperatures shall be performed with the minimum specified clearances from the appliance specified in Clause 5.27.3 or 5.27.4.</u></p>
Table 15		<p>Maximum allowable material temperatures of typical non-metallic vent systems used for furnaces</p> <p>Table 15 has been revised. See standard for details.</p>
6	Info	Direct vent central furnaces construction
6.11	Info	Markings
6.11.1		<p>Each furnace shall bear a plate or a combination of adjacent plates of Class IIIA marking material located so as to be easily read when the furnace is in a normally installed position. A plate(s) visible after removal of an access panel, without the use of tools, may be utilized. This plate(s) shall include the following information:</p> <p>a) type of furnace as follows:</p> <ul style="list-style-type: none"> i) "Type MSP"; or ii) "Type FSP"; <p>b) type of furnace configuration as follows:</p> <ul style="list-style-type: none"> i) "Direct vent forced air furnace"; ii) "Direct vent forced air furnace with cooling unit"; or iii) <u>"Direct or non-direct vent forced air furnace"; and</u> <p>c) the type(s) of structure(s) for which the furnace is suited, including "building constructed on-site" and "manufactured home (mobile home)".</p>



CLAUSE	VERDICT	COMMENT
		<p>Any of the following may be substituted for “manufactured home (mobile home)” in the above marking:</p> <ul style="list-style-type: none"> i) mfd. home (mobile home); ii) manufactured (mobile) home; iii) mfd. (mobile home); iv) manufactured home; or v) mfd. home. <p><u>Note: The information specified under Items a) and b) may be combined in a single statement.</u></p>
7	Info	Direct vent central furnaces performance
7.4	Info	Direct vent systems
		<i>New section added;</i>
		Vent-air intake terminal pendulum load test
7.4.11		<p>The vent-air intake terminal of a direct vent system shall be sufficiently rigid in construction so as not to become damaged to the extent that it would be unsafe for use when subjected to impact in accordance with the following method of test. Following impact of the vent-air intake terminal, the appliance shall comply with the combustion test as specified in the following method of test.</p> <p>See standard for details.</p>
9	Info	Recreational vehicle central furnaces performance
9.7	Info	Efficiency
		<i>New clause added;</i>
9.7.1		<p>General</p> <p>A recreational furnace shall have a maximum flue loss of 22% as determined in Annex I.</p>
		Method of test
9.7.2		<p>The appliance shall be operated at normal pressure and rise conditions for 1 h at which time the flue gas temperatures and CO₂ shall be measured.</p>