

§ 431.76

22201, (703) 524-8800, or online at: www.ahrinet.org.

(1) ANSI/AHRI 1500-2015 (“AHRI 1500-2015”), *Performance Rating of Commercial Space Heating Boilers*, ANSI-approved November 28, 2014; IBR approved for appendix A to this subpart.

(2) [Reserved]

(c) ANSI. American National Standards Institute, 25 W 43rd Street, 4th Floor, New York, NY 10036. (212) 642-4900 or online at: www.ansi.org.

(1) CSA/ANSI Z21.47:21, (“ANSI Z21.47-2021”), *Gas-fired central furnaces*, ANSI-approved April 21, 2021; IBR approved for appendices A and B to this subpart.

(2) [Reserved]

(d) ASHRAE. American Society of Heating, Refrigerating and Air-Conditioning Engineers Inc., 180 Technology Parkway NW, Peachtree Corners, Georgia 30092, (404) 636-8400, or online at: www.ashrae.org.

(1) ANSI/ASHRAE 103-2022 (“ASHRAE 103-2022”), *Method of Testing for Annual Fuel Utilization Efficiency of Residential Central Furnaces and Boilers*, approved January 10, 2022; IBR approved for appendix A to this subpart.

(2) [Reserved]

(e) ASME. American Society of Mechanical Engineers, Service Center, 22 Law Drive, P.O. Box 2900, Fairfield, NJ 07007, (973) 882-1170, or online at: www.asme.org.

(1) ANSI/ASME PTC 19.3-1974 (R2004), *Supplement to ASME Performance Test Codes: Part 3: Temperature Measurement, Instruments and Apparatus*, reaffirmed 2004; IBR approved for appendix A to this subpart.

(2) [Reserved]

(f) ASTM. ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428, (877) 909-2786, or online at: www.astm.org/.

(1) ASTM D240-09, *Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter*, approved July 1, 2009; IBR approved for appendix A to this subpart.

(2) ASTM D396-14a, *Standard Specification for Fuel Oils*, approved October 1, 2014; IBR approved for appendix A to this subpart.

(3) ASTM D4809-09a, *Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter*

10 CFR Ch. II (1-1-24 Edition)

(*Precision Method*); approved September 1, 2009; IBR approved for appendix A to this subpart.

(4) ASTM D5291-10, *Standard Test Methods for Instrumental Determination of Carbon, Hydrogen, and Nitrogen in Petroleum Products and Lubricants*, approved May 1, 2010; IBR approved for appendix A to this subpart.

(5) ASTM E230/E230M-17 (“ASTM E230/E230M-17”), *Standard Specification for Temperature-Electromotive Force (emf) Tables for Standardized Thermocouples*, approved November 1, 2017; IBR approved for appendix A to this subpart.

(g) NFPA. National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471, 1-800-344-3555, or online at: www.nfpa.org.

(1) NFPA 97 (“NFPA 97-2003”), *Standard Glossary of Terms Relating to Chimneys, Vents, and Heat-Producing Appliances*; copyright 2023; IBR approved for appendix A to this subpart.

(2) [Reserved]

(h) UL. Underwriters Laboratories, Inc., 333 Pfingsten Road, Northbrook, IL 60062, (847) 272-8800, or online at: www.ul.com.

(1) UL 727 (“UL 727-2018”), *Standard for Safety Oil-Fired Central Furnaces*, Tenth Edition, published January 31, 2018; IBR approved for appendix A to this subpart.

(2) [Reserved]

[88 FR 36234, June 2, 2023]

§ 431.76 Uniform test method for the measurement of energy efficiency of commercial warm air furnaces.

(a) *Scope*. This section prescribes the test requirements used to measure the energy efficiency of commercial warm air furnaces with a rated maximum input of 225,000 Btu per hour or more.

(b) *Testing and calculations*—(1) *Thermal efficiency*. Test in accordance with appendix A to subpart D of this part when making representations of thermal efficiency.

(2) *Thermal efficiency two*. Test in accordance with appendix B to subpart D of this part when making representations of thermal efficiency two.

[88 FR 36234, June 2, 2023]

ENERGY CONSERVATION STANDARDS

§ 431.77 Energy conservation standards and their effective dates.

(a) *Gas-fired commercial warm air furnaces.* Each gas-fired commercial warm air furnace must meet the following energy efficiency standard levels:

(1) For gas-fired commercial warm air furnaces manufactured starting on January 1, 1994, until January 1, 2023, the TE at the maximum rated capacity (rated maximum input) must be not less than 80 percent; and

(2) For gas-fired commercial warm air furnaces manufactured starting on January 1, 2023, the TE at the maximum rated capacity (rated maximum input) must be not less than 81 percent.

(b) *Oil-fired commercial warm air furnaces.* Each oil-fired commercial warm air furnace must meet the following energy efficiency standard levels:

(1) For oil-fired commercial warm air furnaces manufactured starting on January 1, 1994, until January 1, 2023, the TE at the maximum rated capacity (rated maximum input) must be not less than 81 percent; and

(2) For oil-fired commercial warm air furnaces manufactured starting on January 1, 2023, the TE at the maximum rated capacity (rated maximum input) must be not less than 82 percent.

[81 FR 2528, Jan. 15, 2016]

APPENDIX A TO SUBPART D OF PART 431—UNIFORM TEST METHOD FOR MEASUREMENT OF THE ENERGY EFFICIENCY OF COMMERCIAL WARM AIR FURNACES (THERMAL EFFICIENCY)

NOTE: On and after May 28, 2024, any representations made with respect to the energy use or efficiency of commercial warm air furnaces must be made in accordance with the results of testing pursuant to this section. At that time, manufacturers must use the relevant procedures specified in this appendix, which reference ANSI Z21.47–2021, ASHRAE 103–2022, UL 727–2018, or AHRI 1500–2015. On and after July 3, 2023 and prior to May 28, 2024, manufacturers must test commercial warm air furnaces in accordance with this appendix or 10 CFR 431.76 as it appeared on January 1, 2023. DOE notes that, because testing under this section is required as of May 28, 2024, manufacturers may wish to begin using this amended test procedure as soon as possible. Any representations made with respect to the energy use or efficiency of such commercial warm air furnaces

must be made in accordance with whichever version is selected.

Manufacturers must use the results of testing under appendix B to this subpart to determine compliance with any standards for commercial warm air furnaces that use the thermal efficiency 2 (TE2) metric.

0. *Incorporation by reference.*

In §431.75, DOE incorporated by reference the entire standard for AHRI 1500–2015, ANSI Z21.47–2021, ASHRAE 103–2022, ASME PTC 19.3–1974 (R2004), ASTM D240–09, ASTM D396–14a, ASTM D4809–09a, ASTM D5291–10, ASTM E230/E230M–17, NFPA 97–2003, and UL 727–2018. However, for standards AHRI 1500–2015, ANSI Z21.47–2021, ASHRAE 103–2022, and UL 727–2018, only the enumerated provisions of those documents apply to this appendix, as follows:

0.1 ANSI Z21.47–2021

(a) Sections 5.1, 5.1.4, 5.2, 5.3, 5.4, 5.5, 5.5.1, 5.6, and 7.2.1 as specified in section 1.1 of this appendix;

(b) Section 5.40 as specified in sections 1.1 and 3.1 of this appendix;

(c) Section 5.2.8 as specified in section 4.1 of this appendix;

(d) Annex I as specified in section 3.1 of this appendix.

0.2 ASHRAE 103–2022

(a) Sections 7.2.2.4, 7.8, and 9.2 as specified in section 2.2 of this appendix;

(b) Sections 11.3.7.1 and 11.3.7.2 as specified in section 4.1 of this appendix.

0.3 UL 727–2018

(a) Sections 2, 3, 37, 38 and 39, 40, 40.6, 41, 42, 43.2, 44, 45, and 46 as specified in section 1.2 of this appendix;

(b) Figure 40.3 as specified in section 2.1 of this appendix.

0.4 AHRI 1500–2015

(a) Section C3.2.1.1 as specified in section 1.2 of this appendix;

(b) Sections C7.2.4, C7.2.5, and C7.2.6.2 as specified in section 3.2 of this appendix.

1. *Test setup and Testing.* Where this section prescribes use of ANSI Z21.47–2021 or UL 727–2018, perform only the procedures pertinent to the measurement of the steady-state efficiency, as specified in this section.

1.1 *Gas-fired commercial warm air furnaces.* The test setup, including flue requirement, instrumentation, test conditions, and measurements for determining thermal efficiency are as specified in section 1.3 of this appendix, and the following sections of ANSI Z21.47–2021: 5.1 (General, including ASME PTC 19.3–1974 (R2004) as referenced in Section 5.1.4), 5.2 (Basic test arrangements), 5.3 (Test ducts and plenums), 5.4 (Test gases), 5.5 (Test pressures and burner adjustments), 5.6 (Static pressure and air flow adjustments), 5.40 (Thermal efficiency), and 7.2.1 (Basic test arrangements for direct vent central furnaces). If section 1.3 of this appendix and ANSI Z21.47–2021 have conflicting provisions (*e.g.*, the number of thermocouples that should be