

[Related Commercial Resources](#)

## CHAPTER 67. CODES AND STANDARDS

THE codes and standards and other publications listed here represent practices, methods, or standard published by the organizations indicated. They are useful guides for the practicing engineer in determining test methods, ratings, performance requirements, and limits of HVAC&R equipment. Copies of these publications can be obtained from most of the organizations listed in the Publisher column, from Global Engineering Documents at [global.ihs.com](http://global.ihs.com), or from Techstreet at [techstreet.com](http://techstreet.com). Addresses of the organizations are given at the end of the chapter.

Selected Codes and Standards Published by Various Societies and Associations			
Subject	Title	Publisher	Reference
<b>Air Conditioners</b>	Commercial Systems Overview	ACCA	ACCA Manual CS-1993
	Residential Equipment Selection, 2nd ed.	ACCA	ANSI/ACCA 3 Manual S <sup>®</sup> -2014
	HVAC Quality Installation Specification	ACCA	ANSI/ACCA 5 QI-2015
	Technician's Guide & Workbook for Quality Installations	ACCA	ACCA 2015
	Laboratory Methods of Testing Air Terminal Units	ASHRAE	ANSI/ASHRAE 130-2016
	Non-Ducted Air Conditioners and Heat Pumps—Testing and Rating for Performance	ISO	ISO 5151:2017
	Ducted Air-Conditioners and Air-to-Air Heat Pumps—Testing and Rating for Performance	ISO	ISO 13253:2017
	Guidelines for Roof Mounted Outdoor Air-Conditioner Installations	SMACNA	SMACNA 1997
	Heating and Cooling Equipment	UL/CSA	ANSI/UL 1995-2011/C22.2 No. 236-11
	Performance Standard for Split-System and Single-Package Central Air Conditioners and Heat Pumps	CSA	CAN/CSA C656-14
Gas-Fired	Energy Performance Rating for Large and Single Packaged Vertical Air Conditioners and Heat Pumps	CSA	CAN/CSA C746-2017
	Commercial Systems Overview	ACCA	ACCA Manual CS-1993
	Residential Equipment Selection, 2nd ed.	ACCA	ANSI/ACCA 3 Manual S-2014
	Home Evaluation and Performance Improvement	ACCA	ANSI/ACCA 12 QH-2018
	Technician's Guide & Workbook for Home Evaluation and Performance Improvement	ACCA	ACCA 2014
	Gas-Fired, Heat Activated Air Conditioning and Heat Pump Appliances	CSA	ANSI Z21.40.1-1996/CGA 2.91-M96 (R2017)
	Gas-Fired Work Activated Air Conditioning and Heat Pump Appliances (Internal Combustion)	CSA	ANSI Z21.40.2-1996/CGA 2.92-M96 (R2017)
	Performance Testing and Rating of Gas-Fired Air Conditioning and Heat Pump Appliances	CSA	ANSI Z21.40.4a-1998/CGA 2.94a-M98 (R2017)
	Packaged Terminal Air-Conditioners and Heat Pumps	AHRI/CSA	AHRI 310/380-2017/CSA C744-2017
	Room Air Conditioners	AHAM	ANSI/AHAM RAC-1-2015
Packaged Terminal Room	Method of Testing for Rating Room Air Conditioners and Packaged Terminal Air Conditioners	ASHRAE	ANSI/ASHRAE 16-2016
	Method of Testing for Rating Room Air Conditioner and Packaged Terminal Air Conditioner Heating Capacity	ASHRAE	ANSI/ASHRAE 58-1986 (RA14)
	Method of Testing for Rating Fan-Coil Conditioners	ASHRAE	ANSI/ASHRAE 79-2015
	Energy Performance of Room Air Conditioners	CSA	CAN/CSA C368.1-14
	Room Air Conditioners	CSA	C22.2 No. 117-1970 (R2016)

Unitary	Room Air Conditioners, Ed. 7	UL	ANSI/UL 484-2014
	Commercial Systems Overview	ACCA	ACCA Manual CS-1993
	Residential Equipment Selection, 2nd ed.	ACCA	ANSI/ACCA 3 Manual S-2014
	Unitary Air-Conditioning and Air-Source Heat Pump Equipment	AHRI	ANSI/AHRI 210/240-2017
	Sound Rating of Outdoor Unitary Equipment	AHRI	AHRI 270-2015
	Application of Sound Rating Levels of Outdoor Unitary Equipment	AHRI	AHRI 275-2010
	Commercial and Industrial Unitary Air-Conditioning and Heat Pump Equipment	AHRI	AHRI 340/360-2015
	Methods of Testing for Rating Electrically Driven Unitary Air-Conditioning and Heat Pump Equipment	ASHRAE	ANSI/ASHRAE 37-2009
	Methods of Testing for Rating Heat Operated Unitary Air-Conditioning and Heat-Pump Equipment	ASHRAE	ANSI/ASHRAE 40-2014
	Methods of Testing for Rating Seasonal Efficiency of Unitary Air Conditioners and Heat Pumps	ASHRAE	ANSI/ASHRAE 116-2010
Ships	Method of Testing for Rating Computer and Data Processing Room Unitary Air Conditioners	ASHRAE	ANSI/ASHRAE 127-2012
	Method of Rating Unitary Spot Air Conditioners	ASHRAE	ANSI/ASHRAE 128-2011
	Specification for Mechanically Refrigerated Shipboard Air Conditioner	ASTM	ASTM F1433-97 (2010)
Accessories	Flashing and Stand Combination for Air Conditioning Units (Unit Curb)	IAPMO	IAPMO PS 120-2004
<b>Air Conditioning</b>	Commercial Systems Overview	ACCA	ACCA Manual CS-1993
	Heat Pump Systems	ACCA	ACCA Manual H-1984
	Residential Load Calculation, 8th ed.	ACCA	ANSI/ACCA 2 Manual J-2016
	Commercial Load Calculation, 5th ed.	ACCA	ACCA Manual N-2012
	Comfort, Air Quality, and Efficiency by Design	ACCA	ACCA Manual RS-1997
	HVAC Quality Installation Specification	ACCA	ANSI/ACCA 5 QI-2015
	Technician's Guide & Workbook for Quality Installations	ACCA	ACCA 2015
	Peak Cooling and Heating Load Calculations in Buildings Except Low-Rise Residential Buildings	ASHRAE/ACCA	ANSI/ASHRAE/ACCA 183-2007 (RA 2017)
	Environmental Systems Technology, 2nd ed. (1999)	NEBB	NEBB
	Installation of Air-Conditioning and Ventilating Systems	NFPA	NFPA 90A-2018
	Standard of Purity for Use in Mobile Air-Conditioning Systems	SAE	SAE J1991-2011
	HVAC Systems Applications, 2nd ed.	SMACNA	SMACNA 2010
	HVAC Systems—Duct Design, 4th ed.	SMACNA	SMACNA 2006
	Heating and Cooling Equipment	UL/CSA	ANSI/UL 1995-2015/C22.2 No. 236-15
Aircraft	Air Conditioning of Aircraft Cargo	SAE	SAE AIR806B-1997 (R2015)
	Aircraft Fuel Weight Penalty Due to Air Conditioning	SAE	SAE AIR1168/8-2011
	Air Conditioning Systems for Subsonic Airplanes	SAE	SAE ARP85F-2012
	Environmental Control Systems Terminology	SAE	SAE ARP147E-2001 (R2017)
	Testing of Airplane Installed Environmental Control Systems (ECS)	SAE	SAE ARP217D-1999 (R2016)
	Guide for Qualification Testing of Aircraft Air Valves	SAE	SAE ARP986D-2015
	Control of Excess Humidity in Avionics Cooling	SAE	SAE ARP987B-2015
	Engine Bleed Air Systems for Aircraft	SAE	SAE ARP1796B-2015
	Aircraft Ground Air Conditioning Service Connection	SAE	SAE AS4262B-2012
	Air Cycle Air Conditioning Systems for Military Air Vehicles	SAE	SAE AS4073A-2013

Automotive	Refrigerant 12 Automotive Air-Conditioning Hose	SAE	SAE J51-2015
	Design Guidelines for Air Conditioning Systems for Off-Road Operator Enclosures	SAE	SAE J169-1985
	Test Method for Measuring Power Consumption of Air Conditioning and Brake Compressors for Trucks and Buses	SAE	SAE J1340-2011
	Information Relating to Duty Cycles and Average Power Requirements of Truck and Bus Engine Accessories	SAE	SAE J1343-2000
	Rating Air-Conditioner Evaporator Air Delivery and Cooling Capacities	SAE	SAE J1487-2013
	Recovery and Recycle Equipment for Mobile Automotive Air-Conditioning Systems	SAE	SAE J1990-2011
	R134a Refrigerant Automotive Air-Conditioning Hose	SAE	SAE J2064-2015
Ships	Service Hose for Automotive Air Conditioning	SAE	SAE J2196-2011
	Mechanical Refrigeration and Air-Conditioning Installations Aboard Ship	ASHRAE	ANSI/ASHRAE 26-2010
<b>Air Curtains</b>	Practice for Mechanical Symbols, Shipboard Heating, Ventilation, and Air Conditioning (HVAC)	ASTM	ASTM F856-97 (2014)
	Laboratory Methods of Testing Air Curtains for Aerodynamic Performance	AMCA	AMCA 220-05 (R2012)
	Air Terminals	AHRI	AHRI 880-2017
	Standard Methods for Laboratory Airflow Measurement	ASHRAE	ANSI/ASHRAE 41.2-1987 (RA92)
	Method of Testing the Performance of Air Outlets and Inlets	ASHRAE	ANSI/ASHRAE 70-2006 (RA11)
	Residential Mechanical Ventilating Systems	CSA	CAN/CSA F326-M91 (R2014)
	Air Curtains for Entranceways in Food and Food Service Establishments	NSF	ANSI/NSF 37-2017
<b>Air Diffusion</b>	Air Distribution Basics for Residential and Small Commercial Buildings	ACCA	ACCA Manual T-2001
	Balancing and Testing Air and Hydronic Systems	ACCA	ACCA Manual B-2009
	Method of Testing the Performance of Air Outlets and Inlets	ASHRAE	ANSI/ASHRAE 70-2006 (RA11)
<b>Air Filters</b>	Method of Testing for Room Air Diffusion	ASHRAE	ANSI/ASHRAE 113-2013
	Comfort, Air Quality, and Efficiency by Design	ACCA	ACCA Manual RS-1997
	Home Evaluation and Performance Improvement	ACCA	ANSI/ACCA 12 QH-2018
	Technician's Guide & Workbook for Home Evaluation and Performance Improvement	ACCA	ACCA 2015
	Balancing and Testing Air and Hydronic Systems	ACCA	ACCA Manual B-2009
	Industrial Ventilation: A Manual of Recommended Practice, 29th ed. (2016)	ACGIH	ACGIH
	Portable Electric Room Air Cleaners	AHAM	ANSI/AHAM AC-1-2015
	Residential Air Filter Equipment	AHRI	ANSI/AHRI 680-2017
	Commercial and Industrial Air Filter Equipment	AHRI	ANSI/AHRI 850-2013
	Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size	ASHRAE	ANSI/ASHRAE 52.2-2017
	Laboratory Test Method for Assessing the Performance of Gas-Phase Air Cleaning Systems: Loose Granular Media	ASHRAE	ANSI/ASHRAE 145.1-2015
	Laboratory Test Method for Assessing the Performance of Gas-Phase Air Cleaning Systems: Air Cleaning Devices	ASHRAE	ANSI/ASHRAE 145.2-2016
	Code on Nuclear Air and Gas Treatment	ASME	ASME AG-1-2017
	Nuclear Power Plant Air-Cleaning Units and Components	ASME	ASME N509-1989 (R1996)
	In-Service Testing of Nuclear Air Treatment, Heating, Ventilating, and Air-Conditioning Systems	ASME	ASME N511-2007

<b>Air-Handling Units</b>	Specification for Filters Used in Air or Nitrogen Systems	ASTM	ASTM F1791-00 (2013)
	Method for Sodium Flame Test for Air Filters	BSI	BS 3928:1969 (R2014)
	Particulate Air Filters for General Ventilation: Determination of Filtration Performance	BSI	BS EN 779:2012
	Electrostatic Air Cleaners	UL	ANSI/UL 867-2011
	High-Efficiency, Particulate, Air Filter Units	UL	ANSI/UL 586-2009
	Air Filter Units	UL	ANSI/UL 900-2015
	Exhaust Hoods for Commercial Cooking Equipment	UL	UL 710-2012
	Grease Filters for Exhaust Ducts	UL	UL 1046-2010
	Commercial Systems Overview	ACCA	ACCA Manual CS-1993
	Residential Equipment Selection	ACCA	ANSI/ACCA 3 Manual S-2014
<b>Air Leakage</b>	Central Station Air-Handling Units	AHRI	ANSI/AHRI 430-2014
	Non-Recirculating Direct Gas-Fired Industrial Air Heaters	CSA	ANSI Z83.4-2017/CSA 3.7-2017
	Technician's Guide & Workbook for Duct Diagnostics and Repair	ACCA	ACCA 2016
	HVAC Quality Installation Specification	ACCA	ANSI/ACCA 5 QI-2015
	Technician's Guide & Workbook for Quality Installations	ACCA	ACCA 2015
	Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings	ASHRAE	ANSI/ASHRAE 62.2-2016
	Method of Test for Determining the Airtightness of HVAC Equipment	ASHRAE	ANSI/ASHRAE 193-2010 (RA14)
	Test Method for Determining Air Change in a Single Zone by Means of a Tracer Gas Dilution	ASTM	ASTM E741-11 (2017)
	Test Method for Determining Air Leakage Rate by Fan Pressurization	ASTM	ASTM E779-10
	Test Method for Field Measurement of Air Leakage Through Installed Exterior Window and Doors	ASTM	ASTM E783-02 (2010)
<b>Boilers</b>	Practices for Air Leakage Site Detection in Building Envelopes and Air Barrier Systems	ASTM	ASTM E1186-2017
	Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure and Temperature Differences Across the Specimen	ASTM	ASTM E1424-91 (2016)
	Test Methods for Determining Airtightness of Buildings Using an Orifice Blower Door	ASTM	ASTM E1827-11 (2017)
	Practice for Determining the Effects of Temperature Cycling on Fenestration Products	ASTM	ASTM E2264-05 (2013)
	Test Method for Determining Air Flow Through the Face and Sides of Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen	ASTM	ASTM E2319-04 (2011)
	Test Method for Determining Air Leakage of Air Barrier Assemblies	ASTM	ASTM E2357-17
	HVAC Air Duct Leakage Test Manual, 2nd ed.	SMACNA	SMACNA 2012
	Packaged Boiler Engineering Manual (1998)	ABMA	ABMA 100
	Selected Codes and Standards of the Boiler Industry (2001)	ABMA	ABMA 103
	Operation and Maintenance Safety Manual (1995)	ABMA	ABMA 106
	Fluidized Bed Combustion Guidelines (1995)	ABMA	ABMA 200
	Guide to Clean and Efficient Operation of Coal Stoker-Fired Boilers (2002)	ABMA	ABMA 203
	Guideline for Performance Evaluation of Heat Recovery Steam Generating Equipment (1995)	ABMA	ABMA 300

	Guidelines for Industrial Boiler Performance Improvement (1999)	ABMA	ABMA 302
	Measurement of Sound from Steam Generators (1995)	ABMA	ABMA 304
	Guideline for Gas and Oil Emission Factors for Industrial, Commercial, and Institutional Boilers (1997)	ABMA	ABMA 305
	Combustion Control Guidelines for Single Burner Firetube and Watertube Industrial/Commercial/Institutional Boilers (1999)	ABMA	ABMA 307
	Combustion Control Guidelines for Multiple-Burner Boilers (2001)	ABMA	ABMA 308
	Boiler Water Quality Requirements and Associated Steam Quality for ICI Boilers (2012)	ABMA	ABMA 402
	HVAC Quality Installation Specification	ACCA	ANSI/ACCA 5 QI-2015
	Technician's Guide & Workbook for Quality Installations	ACCA	ACCA 2015
	Residential Equipment Selection	ACCA	ANSI/ACCA 3 Manual S 2014
	Commercial Systems Overview	ACCA	ACCA Manual CS-1993
	Method of Testing for Annual Fuel Utilization Efficiency of Residential Central Furnaces and Boilers	ASHRAE	ANSI/ASHRAE 103-2017
	Boiler and Pressure Vessel Code—Section I: Power Boilers; Section IV: Heating Boilers	ASME	BPVC-2017
	Fired Steam Generators	ASME	ASME PTC 4-2013
	Boiler, Pressure Vessel, and Pressure Piping Code	CSA	CSA B51-14
	Testing Standard, Method to Determine Efficiency of Commercial Heating Boilers, 2nd ed. (2007)	HYDI	HYDI BTS-2000
	Rating Procedure for Heating Boilers, 6th ed. (2005)	HYDI	IBR
	Single Burner Boiler Operations	NFPA	ANSI/NFPA 8501-97
	Prevention of Furnace Explosions/Implosions in Multiple Burner Boilers	NFPA	ANSI /NFPA 8502-99
	Heating, Water Supply, and Power Boilers—Electric	UL	ANSI/UL 834-2004
	Boiler and Combustion Systems Hazards Code	NFPA	NFPA 85-2015
Gas or Oil	Home Evaluation and Performance Improvement	ACCA	ANSI/ACCA 12 QH-2018
	Technician's Guide & Workbook for Home Evaluation and Performance Improvement	ACCA	ACCA 2015
	Controls and Safety Devices for Automatically Fired Boilers	ASME	ASME CSD-1-2015
	Gas-Fired Low-Pressure Steam and Hot Water Boilers	CSA	ANSI Z21.13-2017/CSA 4.9-2017
	Industrial and Commercial Gas-Fired Package Boilers	CSA	CAN 1-3.1-77 (R2016)
	Oil-Burning Equipment: Steam and Hot-Water Boilers	CSA	B140.7-05 (R2014)
	Oil-Fired Boiler Assemblies	UL	UL 726-1995
	Commercial-Industrial Gas Heating Equipment	UL	UL 795-2016
	Standards and Typical Specifications for Tray Type Deaerators, 10th ed. (2016)	HEI	HEI 120
Terminology	Ultimate Boiler Industry Lexicon: Handbook of Power Utility and Boiler Terms and Phrases, 6th ed. (2001)	ABMA	ABMA 101
<b>Building Codes</b>	ASTM Standards Used in Building Codes	ASTM	ASTM
	Practice for Conducting Visual Assessments for Lead Hazards in Buildings	ASTM	ASTM E2255M-13
	Standard Practice for Periodic Inspection of Building Facades for Unsafe Conditions	ASTM	ASTM E2270-14

Mechanical	Standard Practice for Building Enclosure Commissioning	ASTM	ASTM E2813-12
	Structural Welding Code—Steel	AWS	AWS D1.1M/D1.1:2015
	BOCA National Building Code, 14th ed. (1999)	BOCA	BNBC
	Uniform Building Code, vol. 1, 2, and 3 (1997)	ICBO	UBC V1, V2, V3
	International Building Code® (2018)	ICC	IBC
	International Code Council Performance Code® for Buildings and Facilities (2018)	ICC	ICC PC
	International Existing Building Code® (2018)	ICC	IEBC
	International Energy Conservation Code® (2018)	ICC	IECC
	International Property Maintenance Code® (2018)	ICC	IPMC
	International Residential Code® (2018)	ICC	IRC
	Building Construction and Safety Code®	NFPA	ANSI/NFPA 5000-2018
	National Building Code of Canada (2015)	NRC	NRC
	Standard Building Code (1999)	SBCCI	SBC
	Safety Code for Elevators and Escalators	ASME	ASME A17.1-2016
	Natural Gas and Propane Installation Code	CSA	CAN/CSA B149.1-10
	Propane Storage and Handling Code	CSA	CAN/CSA B149.2-10
	Uniform Mechanical Code (2018)	IAPMO	IAPMO
	International Mechanical Code® (2018)	ICC	IMC
	International Fuel Gas Code® (2018)	ICC	IFGC
	Standard Gas Code (1999)	SBCCI	SBC
<b>Burners</b>	Domestic Gas Conversion Burners	CSA	ANSI Z21.17-1998/CSA 2.7-M98 (R2014)
	Installation of Domestic Gas Conversion Burners	CSA	ANSI Z21.8-1994 (R2017)
	Installation Code for Oil Burning Equipment	CSA	CAN/CSA B139-09 (R2014)
	Oil-Burning Equipment: General Requirements	CSA	CAN/CSA B140.0-03 (R2013)
	Vapourizing-Type Oil Burners	CSA	B140.1-1966 (R2015)
	Atomizing-Type Oil Burners	CSA	CAN/CSA B140.2.1-10 (R2014)
	Pressure Atomizing Oil Burner Nozzles	CSA	B140.2.2-1971 (R2015)
	Oil Burners	UL	ANSI/UL 296-2017
	Waste Oil-Burning Air-Heating Appliances	UL	ANSI/UL 296A-1995
	Commercial-Industrial Gas Heating Equipment	UL	UL 795-2016
<b>Chillers</b>	Commercial/Industrial Gas and/or Oil-Burning Assemblies with Emission Reduction Equipment	UL	UL 2096-2006
	Commercial Systems Overview	ACCA	ACCA Manual CS-1993
	Absorption Water Chilling and Water Heating Packages	AHRI	ANSI/AHRI 560-2000
	Water-Chilling and Heat Pump Water-Heating Packages Using the Vapor Compression Cycle	AHRI	ANSI/AHRI 550/590-2015
	Method of Testing Liquid-Chilling Packages	ASHRAE	ANSI/ASHRAE 30-2017
	Method of Testing Absorption Water-Chilling and Water-Heating Packages	ASHRAE	ANSI/ASHRAE 182-2008 (RA13)
	Performance Standard for Rating Packaged Water Chillers	CSA	CAN/CSA C743-09 (R2014)
<b>Chimneys</b>	Specification for Clay Flue Liners	ASTM	ASTM C315-07 (2016)
	Specification for Industrial Chimney Lining Brick	ASTM	ASTM C980-17
	Practice for Installing Clay Flue Lining	ASTM	ASTM C1283-15
	Guide for Design and Construction of Brick Liners for Industrial Chimneys	ASTM	ASTM C1298-95 (2013)
	Guide for Design, Fabrication, and Erection of Fiberglass Reinforced Plastic (FRP) Chimney Liners with Coal-Fired Units	ASTM	ASTM D5364-14

	Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances	NFPA	ANSI/NFPA 211-2016
	Medium Heat Appliance Factory-Built Chimneys	UL	ANSI/UL 959-2010
	Factory-Built Chimneys for Residential Type and Building Heating Appliance	UL	ANSI/UL 103-2010
<b>Cleanrooms</b>	Practice for Cleaning and Maintaining Controlled Areas and Clean Rooms	ASTM	ASTM E2042/E2042M-09 (2016)
	Practice for Design and Construction of Aerospace Cleanrooms and Contamination Controlled Areas	ASTM	ASTM E2217-12
	Practice for Tests of Cleanroom Materials	ASTM	ASTM E2312-11
	Practice for Aerospace Cleanrooms and Associated Controlled Environments—Cleanroom Operations	ASTM	ASTM E2352-04 (2010)
	Test Method for Sizing and Counting Airborne Particulate Contamination in Clean Rooms and Other Dust-Controlled Areas Designed for Electronic and Similar Applications	ASTM	ASTM F25/F25M-09 (2015)
	Practice for Continuous Sizing and Counting of Airborne Particles in Dust-Controlled Areas and Clean Rooms Using Instruments Capable of Detecting Single Sub-Micrometre and Larger Particles	ASTM	ASTM F50-12 (2015)
	Procedural Standards for Certified Testing of Cleanrooms, 3rd ed. (2009)	NEBB	NEBB
<b>Climate Data</b>	Residential Load Calculations	ACCA	ANSI/ACCA 2 Manual J-2016
	Commercial Load Calculations	ACCA	ACCA Manual N-2012
	Climatic Data for Building Design Standards	ASHRAE	ANSI/ASHRAE 169-2013
<b>Coils</b>	Forced-Circulation Air-Cooling and Air-Heating Coils	AHRI	AHRI 410-2001
	Methods of Testing Forced Circulation Air Cooling and Air Heating Coils	ASHRAE	ANSI/ASHRAE 33-2016
<b>Comfort Conditions</b>	Threshold Limit Values for Physical Agents (updated annually)	ACGIH	ACGIH
	Comfort, Air Quality, and Efficiency by Design	ACCA	ACCA Manual RS-1997
	Thermal Environmental Conditions for Human Occupancy	ASHRAE	ANSI/ASHRAE 55-2017
	Classification for Serviceability of an Office Facility for Thermal Environment and Indoor Air Conditions	ASTM	ASTM E2320-04 (2012)
	Hot Environments—Estimation of the Heat Stress on Working Man, Based on the WBGT Index (Wet Bulb Globe Temperature)	ISO	ISO 7243:2017
	Ergonomics of the Thermal Environment—Analytical Determination and Interpretation of Thermal Comfort Using Calculation of the PMV and PPD Indices and Local Thermal Comfort Criteria	ISO	ISO 7730:2005
	Ergonomics of the Thermal Environment—Determination of Metabolic Rate	ISO	ISO 8996:2004
	Ergonomics of the Thermal Environment—Estimation of the Thermal Insulation and Water Vapour Resistance of a Clothing Ensemble	ISO	ISO 9920:2007
<b>Commissioning</b>	HVAC Quality Installation Specification	ACCA	ANSI/ACCA 5 QI-2015
	HVAC Quality Installation Verification Protocols	ACCA	ANSI/ACCA 9 QIvp-2016
	Technician's Guide & Workbook for Quality Installations	ACCA	ACCA 2015
	The Commissioning Process	ASHRAE	ASHRAE <i>Guideline</i> 0-2013
	HVAC&R Technical Requirements for the Commissioning Process	ASHRAE	ASHRAE <i>Guideline</i> 1.1-2007
	Commissioning Process for Buildings and Systems	ASHRAE	ASHRAE 202-2013

	Standard Practice for Building Enclosure Commissioning	ASTM	ASTM E2813-12
<b>Compressors</b>	HVAC Systems—Commissioning Manual, 2nd ed.	SMACNA	SMACNA 2013
	Displacement Compressors, Vacuum Pumps and Blowers	ASME	ASME PTC 9-1970
	Performance Test Code on Compressors and Exhausters	ASME	ASME PTC 10-1997 (RA14)
	Compressed Air and Gas Handbook, 6th ed. (2003)	CAGI	CAGI
Refrigerant	Positive Displacement Condensing Units	AHRI	ANSI/AHRI 520-2004
	Positive Displacement Refrigerant Compressors and Compressor Units	AHRI	CAN/ANSI/AHRI 540-2015
	Safety Standard for Refrigeration Systems	ASHRAE	ANSI/ASHRAE 15-2016
	Methods of Testing for Rating Positive Displacement Refrigerant Compressors and Condensing Units That Operate at Subcritical Temperatures of the Refrigerant	ASHRAE	ANSI/ASHRAE 23.1-2010
<b>Computers</b>	Hermetic Refrigerant Motor-Compressors	UL/CSA	UL 984-1996/C22.2 No.140.2-96 (R2016)
	Method of Testing for Rating Computer and Data Processing Room Unitary Air Conditioners	ASHRAE	ANSI/ASHRAE 127-2012
	Method of Test for the Evaluation of Building Energy Analysis Computer Programs	ASHRAE	ANSI/ASHRAE 140-2017
	Fire Protection of Information Technology Equipment	NFPA	NFPA 75-2017
<b>Condensers</b>	Commercial Systems Overview	ACCA	ACCA Manual CS-1993
	Residential Equipment Selection, 2nd ed.	ACCA	ANSI/ACCA 3 Manual S-2014
	Water-Cooled Refrigerant Condensers, Remote Type	AHRI	AHRI 450-2007
	Remote Mechanical-Draft Air-Cooled Refrigerant Condensers	AHRI	ANSI/AHRI 460-2005
	Remote Mechanical Draft Evaporative Refrigerant Condensers	AHRI	ANSI/AHRI 490-2011
	Safety Standard for Refrigeration Systems	ASHRAE	ANSI/ASHRAE 15-2016
	Methods of Testing for Rating Remote Mechanical-Draft Air-Cooled Refrigerant Condensers	ASHRAE	ANSI/ASHRAE 20-1997 (RA06)
	Methods of Testing for Rating Liquid Water-Cooled Refrigerant Condensers	ASHRAE	ANSI/ASHRAE 22-2014
	Methods of Testing for Rating Positive Displacement Refrigerant Compressors and Condensing Units That Operate at Subcritical Temperatures of the Refrigerant	ASHRAE	ANSI/ASHRAE 23.1-2010
	Methods of Laboratory Testing Remote Mechanical-Draft Evaporative Refrigerant Condensers	ASHRAE	ANSI/ASHRAE 64-2011
	Steam Surface Condensers	ASME	ASME PTC 12.2-2010
	Standards for Steam Surface Condensers, 12th ed. (2017)	HEI	HEI 118
	Standards for Direct Contact Barometric and Low Level Condensers, 9th ed. (2014)	HEI	HEI 117
	Refrigerant-Containing Components and Accessories, Nonelectrical	UL	ANSI/UL 207-2009
<b>Condensing Units</b>	Commercial Systems Overview	ACCA	ACCA Manual CS-1993
	Residential Equipment Selection, 2nd ed.	ACCA	ANSI/ACCA 3 Manual S-2014
	Commercial and Industrial Unitary Air-Conditioning Condensing Units	AHRI	ANSI/AHRI 365-2009
	Methods of Testing for Rating Positive Displacement Refrigerant Compressors and Condensing Units	ASHRAE	ANSI/ASHRAE 23.1-2010
	Heating and Cooling Equipment	UL/CSA	ANSI/UL 1995-2015/C22.2 No. 236-15



<b>Containers</b>	Series 1 Freight Containers—Classifications, Dimensions, and Ratings	ISO	ISO 668:2013
	Series 1 Freight Containers—Specifications and Testing; Part 2: Thermal Containers	ISO	ISO 1496-2:2008
<b>Controls</b>	Animal Environment in Cargo Compartments	SAE	SAE AIR1600-1996 (R2015)
	Temperature Control Systems (2002)	AABC	National Standards, Ch. 12
	Field Testing of HVAC Controls Components	ASHRAE	ASHRAE <i>Guideline</i> 11-2009
	Specifying Direct Digital Control Systems	ASHRAE	ASHRAE <i>Guideline</i> 13-2015
	BACnet™—A Data Communication Protocol for Building Automation and Control Networks	ASHRAE	ANSI/ASHRAE 135-2016
	Method of Test for Conformance to BACnet®	ASHRAE	ANSI/ASHRAE 135.1-2013
	Method of Test for Rating Air Terminal Unit Controls	ASHRAE	ASHRAE 195-2013
	Temperature-Indicating and Regulating Equipment	CSA	C22.2 No. 24-15
	Performance Requirements for Thermostats Used with Individual Room Electric Space Heating Devices	CSA	CAN/CSA C828-13
	Solid-State Controls for Appliances	UL	UL 244A-2003
	Limit Controls	UL	ANSI/UL 353-1994
	Primary Safety Controls for Gas- and Oil-Fired Appliances	UL	ANSI/UL 372-1994
	Temperature-Indicating and -Regulating Equipment	UL	UL 873-2007
	Tests for Safety-Related Controls Employing Solid-State Devices	UL	UL 991-2004
	Automatic Electrical Controls; Part 1: General Requirements	UL	UL 60730-1-2016
Commercial and Industrial	Guidelines for Boiler Control Systems (Gas/Oil Fired Boilers) (1998)	ABMA	ABMA 301
	Guideline for the Integration of Boilers and Automated Control Systems in Heating Applications (1998)	ABMA	ABMA 306
	Industrial Control and Systems: General Requirements	NEMA	NEMA ICS 1-2000 (R2015)
	Preventive Maintenance of Industrial Control and Systems Equipment	NEMA	NEMA ICS 1.3-1986 (R2015)
	Industrial Control and Systems, Controllers, Contactors, and Overload Relays Rated Not More than 2000 Volts AC or 750 Volts DC	NEMA	NEMA ICS 2-2000 (R2005)
	Industrial Control and Systems: Instructions for the Handling, Installation, Operation and Maintenance of Motor Control Centers Rated Not More than 600 Volts	NEMA	NEMA ICS 2.3-1995 (R2008)
Residential	Industrial Control Equipment	UL	ANSI/UL 508-1999
	Manually Operated Gas Valves for Appliances, Appliance Connector Valves and Hose End Valves	CSA	ANSI Z21.15-2009 (R2017)/CSA 9.1-2009 (R2017)
	Gas Appliance Pressure Regulators	CSA	ANSI Z21.18-2007 (R2017)/CSA 6.3-2007 (R2016)
	Automatic Gas Ignition Systems and Components	CSA	ANSI Z21.20-2005 (R2016)
	Gas Appliance Thermostats	CSA	ANSI Z21.23-2010 (R2015)
	Manually-Operated Piezo-Electric Spark Gas Ignition Systems and Components	CSA	ANSI Z21.77-2005/CSA 6.23-2005 (R2015)
	Manually Operated Electric Gas Ignition Systems and Components	CSA	ANSI Z21.92-2001 (R2016)/CSA 6.29-2001 (R2016)
	Residential Controls—Electrical Wall-Mounted Room Thermostats	NEMA	NEMA DC 3-2008
	Residential Controls—Surface Type Controls for Electric Storage Water Heaters	NEMA	NEMA DC 5-1989 (R2008)

<b>Coolers</b>	Residential Controls—Temperature Limit Controls for Electric Baseboard Heaters	NEMA	NEMA DC 10-2009 (2014)
	Residential Controls—Hot-Water Immersion Controls	NEMA	NEMA DC 12-1985 (R2008)
	Line-Voltage Integrally Mounted Thermostats for Electric Heaters	NEMA	NEMA DC 13-1979 (R2013)
	Residential Controls—Class 2 Transformers	NEMA	NEMA DC 20-1992 (R2014)
	Safety Guidelines for the Application, Installation, and Maintenance of Solid State Controls	NEMA	NEMA ICS 1.1-1984 (R2015)
	Electrical Quick-Connect Terminals	UL	ANSI/UL 310-2014
	Refrigeration Equipment	CSA	CAN/CSA C22.2 No. 120-13
	Unit Coolers for Refrigeration	AHRI	ANSI/AHRI 420-2016
	Quality Maintenance of Commercial Refrigeration Systems	ACCA	ANSI/ACCA 14 QMref-2015
	Refrigeration Unit Coolers	UL	ANSI/UL 412-2011
	Air Methods of Testing Forced Convection and Natural Convection Air Coolers for Refrigeration	ASHRAE	ANSI/ASHRAE 25-2001 (RA06)
	Drinking Water Methods of Testing for Rating Drinking-Water Coolers with Self-Contained Mechanical Refrigeration	ASHRAE	ANSI/ASHRAE 18-2008 (RA13)
	Drinking-Water Coolers	UL	ANSI/UL 399-2017
	Drinking Water System Components—Health Effects	NSF	ANSI/NSF 61-2017
	Evaporative Method of Testing Direct Evaporative Air Coolers	ASHRAE	ANSI/ASHRAE 133-2015
	Method of Test for Rating Indirect Evaporative Coolers	ASHRAE	ANSI/ASHRAE 143-2015
	Food and Beverage Milking Machine Installations—Vocabulary	ASABE	ANSI/ASABE AD3918-2007 (R2011)
	Methods of Testing for Rating Vending Machines for Sealed Beverages	ASHRAE	ANSI/ASHRAE 32.1-2017
	Methods of Testing for Rating Pre-Mix and Post-Mix Beverage Dispensing Equipment	ASHRAE	ANSI/ASHRAE 32.2-2003 (RA11)
<b>Cooling Towers</b>	Manual Food and Beverage Dispensing Equipment	NSF	ANSI/NSF 18-2016
	Commercial Bulk Milk Dispensing Equipment	NSF	ANSI/NSF 20-2016
	Refrigerated Vending Machines	UL	ANSI/UL 541-2016
	Liquid Refrigerant-Cooled Liquid Coolers, Remote Type	AHRI	AHRI 480-2007
	Methods of Testing for Rating Liquid Coolers	ASHRAE	ANSI/ASHRAE 24-2013
	Liquid Cooling Systems	SAE	SAE AIR1811A-1997 (R2015)
	Cooling Tower Testing (2002)	AABC	National Standards, Ch 13
	Commercial Systems Overview	ACCA	ACCA Manual CS-1993
	Bioaerosols: Assessment and Control (1999)	ACGIH	ACGIH
	Atmospheric Water Cooling Equipment	ASME	ASME PTC 23-2003 (RA14)
	Water-Cooling Towers	NFPA	NFPA 214-2016
	Acceptance Test Code for Water-Cooling Towers	CTI	CTI ATC-105 (2000)
	Code for Measurement of Sound from Water Cooling Towers	CTI	CTI ATC-128 (2014)
	Nomenclature for Industrial Water Cooling Towers	CTI	CTI BUL-109 (2015)
	Recommended Practice for Airflow Testing of Cooling Towers	CTI	CTI PFM-143 (1994)
	Fiberglass-Reinforced Plastic Panels	CTI	CTI STD-131 (2009)
	Certification of Water Cooling Tower Thermal Performance	CTI	CTI STD-201RS (2017)
	<b>Crop Drying</b> Density, Specific Gravity, and Mass-Moisture Relationships of Grain for Storage	ASABE	ANSI/ASAE D241.4-1992 (R2012)
	Thermal Properties of Grain and Grain Products	ASABE	ASAE D243.4-2003 (R2012)

	Moisture Relationships of Plant-Based Agricultural Products	ASABE	ASAE D245.6-2007 (R2012)
	Dielectric Properties of Grain and Seed	ASABE	ASAE D293.4-2012
	Construction and Rating of Equipment for Drying Farm Crops	ASABE	ASAE S248.3-1976 (R2010)
	Resistance to Airflow of Grains, Seeds, Other Agricultural Products, and Perforated Metal Sheets	ASABE	ASAE D272.3-1996 (R2011)
	Shelled Corn Storage Time for 0.5% Dry Matter Loss	ASABE	ASAE D535-2005 (R2010)
	Moisture Measurement—Unground Grain and Seeds	ASABE	ASAE S352.2-1998 (R2012)
	Moisture Measurement—Meat and Meat Products	ASABE	ASAE S353-1972 (R2012)
	Moisture Measurement—Forages	ASABE	ANSI/ASAE S358.3-2012
	Moisture Measurement—Peanuts	ASABE	ASAE S410.2-2010
	Thin-Layer Drying of Agricultural Crops	ASABE	ANSI/ASAE S448.1-2001 (R2012)
	Moisture Measurement—Tobacco	ASABE	ASAE S487-1987 (R2012)
	Energy Efficiency of Peanut Drying Systems	ASABE	ASAE S488.1-2013
	Temperature Sensor Locations for Seed-Cotton Drying Systems	ASABE	ASAE S530.1-2007 (R2012)
<b>Dampers</b>	Laboratory Methods of Testing Dampers for Rating	AMCA	AMCA 500-D-12
	Selecting Outdoor, Return, and Relief Dampers for Air-Side Economizer Systems	ASHRAE	ASHRAE <i>Guideline</i> 16-2014
<b>Dehumidifiers</b>	Commercial Systems Overview	ACCA	ACCA Manual CS-1993
	Bioaerosols: Assessment and Control (1999)	ACGIH	ACGIH
	Dehumidifiers	AHAM	ANSI/AHAM DH-1-2008
	Method of Testing for Rating Desiccant Dehumidifiers Utilizing Heat for the Regeneration Process	ASHRAE	ANSI/ASHRAE 139-2015
	Criteria for Moisture-Control Design Analysis in Buildings	ASHRAE	ANSI/ASHRAE 160-2016
	Method of Test for Rating Desiccant-Based Dehumidification Equipment	ASHRAE	ANSI/ASHRAE 174-2009
	Method of Testing for Rating Indoor Pool Dehumidifiers	ASHRAE	ANSI/ASHRAE 190-2013
	Method of Testing for Rating DX-Dedicated Outdoor Air Systems for Moisture Removal Capacity and Moisture Removal Efficiency	ASHRAE	ANSI/ASHRAE 198-2013
	Moisture Separator Reheaters	ASME	PTC 12.4-1992 (RA14)
	Dehumidifiers	CSA	C22.2 No. 92-15
	Performance of Dehumidifiers	CSA	CAN/CSA C749-15
	Dehumidifiers	UL	ANSI/UL 474-2015
<b>Desiccants</b>	Method of Testing Desiccants for Refrigerant Drying	ASHRAE	ANSI/ASHRAE 35-2014
<b>Driers</b>	Liquid-Line Driers	AHRI	ANSI/AHRI 710-2009
	Method of Testing Liquid Line Refrigerant Driers	ASHRAE	ANSI/ASHRAE 63.1-1995 (RA01)
	Refrigerant-Containing Components and Accessories, Nonelectrical	UL	ANSI/UL 207-2009
<b>Ducts and Fittings</b>	Hose, Air Duct, Flexible Nonmetallic, Aircraft	SAE	SAE AS1501C-1994 (R2013)
	Ducted Electric Heat Guide for Air Handling Systems, 2nd ed.	SMACNA	SMACNA 1994
	Factory-Made Air Ducts and Air Connectors	UL	ANSI/UL 181-2013
Construction	Industrial Ventilation: A Manual of Recommended Practice, 29th ed. (2016)	ACGIH	ACGIH
	Preferred Metric Sizes for Flat, Round, Square, Rectangular, and Hexagonal Metal Products	ASME	ASME B32.100-2016
	Sheet Metal Welding Code	AWS	AWS D9.1M/D9.1:2018

Installation	Fibrous Glass Duct Construction Standards, 5th ed.	NAIMA	NAIMA AH116
	Residential Fibrous Glass Duct Construction Standards, 3rd ed.	NAIMA	NAIMA AH119
	Thermoplastic Duct (PVC) Construction Manual, 2nd ed.	SMACNA	SMACNA 1995
	Accepted Industry Practices for Sheet Metal Lagging, 1st ed.	SMACNA	SMACNA 2002
	Fibrous Glass Duct Construction Standards, 7th ed.	SMACNA	SMACNA 2003
	Round Industrial Duct Construction Standards, 2nd ed.	SMACNA	SMACNA 1999
	Rectangular Industrial Duct Construction Standards, 2nd ed.	SMACNA	SMACNA 2004
	Flexible Duct Performance and Installation Standards, 5th ed.	ADC	ADC-91
	HVAC Quality Installation Specification	ACCA	ANSI/ACCA 5 QI-2015
	HVAC Quality Installation Verification Protocols	ACCA	ANSI/ACCA 9 QIvp-2016
Material Specifications	Technician's Guide & Workbook for Duct Diagnostics and Repair	ACCA	ACCA 2016
	Installation of Air-Conditioning and Ventilating Systems	NFPA	NFPA 90A-2018
	Installation of Warm Air Heating and Air-Conditioning Systems	NFPA	NFPA 90B-2018
	Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet and Strip	ASTM	ASTM A480/A480M-17
	Specification for Steel, Sheet, Carbon, Structural, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for	ASTM	ASTM A568/A568M-17a
	Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dipped Process	ASTM	ASTM A653/A653M-17
	Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process	ASTM	ASTM A924/A924M-17a
	Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable	ASTM	ASTM A1008/A1008M-16
	Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength	ASTM	ASTM A1011/A1011M-17a
	Practice for Measuring Flatness Characteristics of Coated Sheet Products	ASTM	ASTM A1030/A1030M-16
System Design	Installation Techniques for Perimeter Heating and Cooling	ACCA	ACCA Manual 4-1990
	Residential Duct Systems	ACCA	ANSI/ACCA Manual D-2016
	Commercial Low Pressure, Low Velocity Duct System Design	ACCA	ACCA Manual Q-1990
	Air Distribution Basics for Residential and Small Commercial Buildings	ACCA	ACCA Manual T-2001
	Method of Test for Determining the Design and Seasonal Efficiencies of Residential Thermal Distribution Systems	ASHRAE	ANSI/ASHRAE 152-2014
	Closure Systems for Use with Rigid Air Ducts	UL	ANSI/UL 181A-2013
	Closure Systems for Use with Flexible Air Ducts and Air Connectors	UL	ANSI/UL 181B-2013
Testing	Duct Leakage Testing (2002)	AABC	National Standards, Ch 5
	Balancing and Testing Air and Hydronic Systems	ACCA	ACCA Manual B 2009
	HVAC Quality Installation Specification	ACCA	ANSI/ACCA 5 QI-2015

	HVAC Quality Installation Verification Protocols	ACCA	ANSI/ACCA 9 QIvp-2016
	Technician's Guide & Workbook for Quality Installations	ACCA	ACCA 2015
	Technician's Guide & Workbook for Duct Diagnostics and Repair	ACCA	ACCA 2016
	Flexible Duct Test Code, 3rd ed.	ADC	ADC FD 72-R1
	Test Method for Measuring Acoustical and Airflow Performance of Duct Liner Materials and Prefabricated Silencers	ASTM	ASTM E477-13
	Method of Testing to Determine Flow Resistance of HVAC Ducts and Fittings	ASHRAE	ANSI/ASHRAE 120-2017
	Method of Testing HVAC Air Ducts	ASHRAE	ANSI/ASHRAE/SMACNA 126-2016
	HVAC Air Duct Leakage Test Manual, 2nd ed.	SMACNA	SMACNA 2012
	HVAC Duct Systems Inspection Guide, 3rd ed.	SMACNA	SMACNA 2006
<b>Economizers</b>	Selecting Outdoor, Return, and Relief Dampers for Air-Side Economizer Systems	ASHRAE	ASHRAE <i>Guideline</i> 16-2014
<b>Electrical</b>	Electrical Power Systems and Equipment—Voltage Ratings	ANSI	ANSI C84.1-2011
	Test Method for Bond Strength of Electrical Insulating Varnishes by the Helical Coil Test	ASTM	ASTM D2519-07 (2012)
	Standard Specification for Shelter, Electrical Equipment, Lightweight	ASTM	ASTM E2377-10
	Canadian Electrical Code (24th ed.), Safety Standard for Electrical Installations	CSA	CSA C22.1-18
	ICC Electrical Code, Administrative Provisions (2006)	ICC	ICCEC
	Low Voltage Cartridge Fuses	NEMA	NEMA FU 1-2012
	Industrial Control and Systems: Terminal Blocks	NEMA	NEMA ICS 4-2015
	Industrial Control and Systems: Enclosures	NEMA	ANSI/NEMA ICS 6-1993 (R2016)
	Application Guide for Ground Fault Protective Devices for Equipment	NEMA	ANSI/NEMA PB 2.2-2014
	General Color Requirements for Wiring Devices	NEMA	NEMA WD 1-1999 (R2015)
	Wiring Devices—Dimensional Specifications	NEMA	ANSI/NEMA WD 6-2016
	National Electrical Code®	NFPA	NFPA 70-2017
	National Fire Alarm and Signaling Code	NFPA	NFPA 72-2016
	Compatibility of Electrical Connectors and Wiring	SAE	SAE AIR1329-2014
	Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit-Breaker Enclosures	UL	ANSI/UL 489-2016
<b>Energy</b>	Air-Conditioning and Refrigerating Equipment Nameplate Voltages	AHRI	ANSI/AHRI 110-2016
	Comfort, Air Quality, and Efficiency by Design	ACCA	ACCA Manual RS-1997
	Thermal Energy Storage	ACCA	ACCA 2005
	Measurement of Energy and Demand Savings	ASHRAE	ASHRAE <i>Guideline</i> 14-2014
	Energy Standard for Buildings Except Low-Rise Residential Buildings	ASHRAE	ANSI/ASHRAE/IES 90.1-2016
	Energy-Efficient Design of Low-Rise Residential Buildings	ASHRAE	ANSI/ASHRAE/IES 90.2-2007
	Energy Conservation in Existing Buildings	ASHRAE	ANSI/ASHRAE/IES 100-2015
	Methods of Determining, Expressing, and Comparing Building Energy Performance and Greenhouse Gas Emissions	ASHRAE	ANSI/ASHRAE 105-2014
	Method of Test for the Evaluation of Building Energy Analysis Computer Programs	ASHRAE	ANSI/ASHRAE 140-2017
	Method of Test for Determining the Design and Seasonal Efficiencies of Residential Thermal Distribution Systems	ASHRAE	ANSI/ASHRAE 152-2014

	Standard for the Design of High-Performance, Green Buildings Except Low-Rise Residential Buildings	ASHRAE/USGBC	ANSI/ASHRAE/USGBC/IES 189.1-2014
	National Green Building Standard	ICC/ASHRAE	ICC/ASHRAE 700-2015
	Fuel Cell Power Systems Performance	ASME	PTC 50-2002 (RA14)
	International Energy Conservation Code® (2018)	ICC	IECC
	International Green Construction Code™ (2015)	ICC	IGCC
	Uniform Solar Energy and Hydronics Code (2015)	IAPMO	IAPMO
	Energy Management Guide for Selection and Use of Fixed Frequency Medium AC Squirrel-Cage Polyphase Induction Motors	NEMA	NEMA MG 10-2017
	Energy Management Guide for Selection and Use of Single-Phase Motors	NEMA	NEMA MG 11-1977 (R2012)
	HVAC Systems—Commissioning Manual, 2nd ed.	SMACNA	SMACNA 2013
	Building Systems Analysis and Retrofit Manual, 2nd ed.	SMACNA	SMACNA 2011
	Energy Systems Analysis and Management, 2nd ed.	SMACNA	SMACNA 2014
	Energy Management Equipment	UL	UL 916-2015
<b>Exhaust Systems</b>	Fan Systems: Supply/Return/Relief/Exhaust (2002)	AABC	National Standards, Ch 10
	Commercial Systems Overview	ACCA	ACCA Manual CS-1993
	Industrial Ventilation: A Manual of Recommended Practice, 29th ed. (2016)	ACGIH	ACGIH
	Fundamentals Governing the Design and Operation of Local Exhaust Ventilation Systems	AIHA	ANSI/AIHA Z9.2-2012
	Spray Finishing Operations: Safety Code for Design, Construction, and Ventilation	AIHA	ANSI/AIHA Z9.3-2007
	Laboratory Ventilation	AIHA	ANSI/AIHA Z9.5-2012
	Recirculation of Air from Industrial Process Exhaust Systems	AIHA	ANSI/AIHA Z9.7-2007
	Method of Testing Performance of Laboratory Fume Hoods	ASHRAE	ANSI/ASHRAE 110-2016
	Ventilation for Commercial Cooking Operations	ASHRAE	ANSI/ASHRAE 154-2016
	Performance Test Code on Compressors and Exhausters	ASME	PTC 10-1997 (RA14)
	Flue and Exhaust Gas Analyses	ASME	PTC 19.10-1981
	Mechanical Flue-Gas Exhausters	CSA	CAN B255-16
	Exhaust Systems for Air Conveying of Vapors, Gases, Mists, and Particulate Solids	NFPA	ANSI/NFPA 91-2015
	Draft Equipment	UL	UL 378-2006
<b>Expansion Valves</b>	Thermostatic Refrigerant Expansion Valves	AHRI	ANSI/AHRI 750-2016
	Method of Testing Capacity of Thermostatic Refrigerant Expansion Valves	ASHRAE	ANSI/ASHRAE 17-2015
<b>Fan-Coil Units</b>	Industrial Ventilation: A Manual of Recommended Practice, 29th ed. (2016)	ACGIH	ACGIH
	Room Fan-Coils	AHRI	ANSI/AHRI 440-2008
	Methods of Testing for Rating Fan-Coil Conditioners	ASHRAE	ANSI/ASHRAE 79-2015
	Heating and Cooling Equipment	UL/CSA	ANSI/UL 1995-2015/C22.2 No. 236-15
<b>Fans</b>	Residential Duct Systems	ACCA	ANSI/ACCA 1 Manual D-2016
	Commercial Low Pressure, Low Velocity Duct System Design	ACCA	ACCA Manual Q-2003
	Balancing and Testing Air and Hydronic Systems	ACCA	ACCA Manual B-2009
	HVAC Quality Installation Specifications	ACCA	ANSI/ACCA 5 QI-2015

Technician's Guide & Workbook for Quality Installations	ACCA	ACCA 2015
Industrial Ventilation: A Manual of Recommended Practice, 29th ed. (2016)	ACGIH	ACGIH
Standards Handbook	AMCA	AMCA 99-16
Air Systems	AMCA	AMCA 200-95 (R2011)
Fans and Systems	AMCA	AMCA 201-02 (R2011)
Troubleshooting	AMCA	AMCA 202-17
Field Performance Measurement of Fan Systems	AMCA	AMCA 203-90 (R2011)
Balance Quality and Vibration Levels for Fans	AMCA	ANSI/AMCA 204-05 (R2012)
Laboratory Methods of Testing Air Circulator Fans for Rating and Certification	AMCA	ANSI/AMCA 230-15
Laboratory Method of Testing Positive Pressure Ventilators for Rating	AMCA	ANSI/AMCA 240-15
Reverberant Room Method for Sound Testing of Fans	AMCA	AMCA 300-14
Methods for Calculating Fan Sound Ratings from Laboratory Test Data	AMCA	AMCA 301-14
Application of Sone Ratings for Non-Ducted Air Moving Devices	AMCA	AMCA 302-73 (R2012)
Application of Sound Power Level Ratings for Fans	AMCA	AMCA 303-79 (R2012)
Recommended Safety Practices for Users and Installers of Industrial and Commercial Fans	AMCA	AMCA 410-96
Industrial Process/Power Generation Fans: Site Performance Test Standard	AMCA	AMCA 803-02 (R2008)
Home Evaluation and Performance Improvement	ACCA	ANSI/ACCA 12 QH-2018
Technician's Guide & Workbook for Home Evaluation and Performance Improvement	ACCA	ACCA 2015
Mechanical Balance of Impellers for Fans	AHRI	AHRI <i>Guideline</i> G-2016
Acoustics—Measurement of Airborne Noise Emitted and Structure-Borne Vibration Induced by Small Air-Moving Devices—Part 1: Airborne Noise Measurement	ASA	ANSI/ASA S12.11-2013-Part 1/ISO 10302-1:2013
Part 2: Structure-Borne Vibration	ASA	ANSI/ASA S12.11-2013-Part 2/ISO 10302-2:2013
Laboratory Methods of Testing Fans for Aerodynamic Performance Rating	ASHRAE/ AMCA	ANSI/ASHRAE 51-2016 ANSI/AMCA 210-16
Laboratory Methods of Testing Fans Used to Exhaust Smoke in Smoke Management Systems	ASHRAE	ANSI/ASHRAE 149-2013
Ventilation for Commercial Cooking Operations	ASHRAE	ANSI/ASHRAE 154-2016
Fans	ASME	ANSI/ASME PTC 11-2008
Fans and Ventilators	CSA	C22.2 No. 113-15
Energy Performance of Ceiling Fans	CSA	CAN/CSA C814-10 (R2015)
Residential Mechanical Ventilating Systems	CSA	CAN/CSA F326-M91 (R2014)
Electric Fans	UL	ANSI/UL 507-2017
Power Ventilators	UL	ANSI/UL 705-2017
<b>Fenestration</b> Practice for Calculation of Photometric Transmittance and Reflectance of Materials to Solar Radiation	ASTM	ASTM E971-11
Test Method for Solar Photometric Transmittance of Sheet Materials Using Sunlight	ASTM	ASTM E972-96 (2013)
Test Method for Solar Transmittance (Terrestrial) of Sheet Materials Using Sunlight	ASTM	ASTM E1084-86 (2015)
Practice for Determining Load Resistance of Glass in Buildings	ASTM	ASTM E1300-16
Practice for Installation of Exterior Windows, Doors and Skylights	ASTM	ASTM E2112-07 (2016)

	Test Method for Insulating Glass Unit Performance	ASTM	ASTM E2188-10
	Test Method for Testing Resistance to Fogging Insulating Glass Units	ASTM	ASTM E2189-10e1
	Specification for Insulating Glass Unit Performance and Evaluation	ASTM	ASTM E2190-10
	Guide for Assessing the Durability of Absorptive Electrochemical Coatings within Sealed Insulating Glass Units	ASTM	ASTM E2354-10
	Tables for Reference Solar Spectral Irradiance: Direct Normal and Hemispherical on 37° Tilted Surface	ASTM	ASTM G173-03 (2012)
	Windows	CSA	CSA A440-00 (R2005)
	Fenestration Energy Performance	CSA	CSA A440.2-14
	Window, Door, and Skylight Installation	CSA	CSA A440.4-07 (R2016)
<b>Filter-Driers</b>	Flow-Capacity Rating of Suction-Line Filters and Suction-Line Filter-Driers	AHRI	AHRI 730-2013
	Method of Testing Liquid Line Filter-Drier Filtration Capability	ASHRAE	ANSI/ASHRAE 63.2-2017
	Method of Testing Flow Capacity of Suction Line Filters and Filter-Driers	ASHRAE	ANSI/ASHRAE 78-1985 (RA 2017)
<b>Fireplaces</b>	Factory-Built Fireplaces	UL	ANSI/UL 127-2011
	Fireplace Stoves	UL	ANSI/UL 737-2011
<b>Fire Protection</b>	Test Method for Surface Burning Characteristics of Building Materials	ASTM/NFPA	ASTM E84-17a
	Test Methods for Fire Test of Building Construction and Materials	ASTM	ASTM E119-16a
	Test Method for Room Fire Test of Wall and Ceiling Materials and Assemblies	ASTM	ASTM E2257-17
	Test Method for Determining Fire Resistance of Perimeter Fire Barriers Using Intermediate-Scale Multi-Story Test Apparatus	ASTM	ASTM E2307-15
	Guide for Laboratory Monitors	ASTM	ASTM E2335-17
	Test Method for Fire Resistance Grease Duct Enclosure Systems	ASTM	ASTM E2336-16
	Practice for Specimen Preparation and Mounting of Textile, Paper or Polymeric (Including Vinyl) and Wood Wall or Ceiling Coverings, Facings, and Veneers, to Assess Surface Burning Characteristics	ASTM	ASTM E2404-17
	BOCA National Fire Prevention Code, 11th ed. (1999)	BOCA	BNFPC
	Uniform Fire Code	IFCI	UFC 1997
	International Fire Code® (2018)	ICC	IFC
	International Mechanical Code® (2018)	ICC	IMC
	International Urban-Wildland Interface Code® (2018)	ICC	IUWIC
	Fire-Resistance Tests—Elements of Building Construction; Part 1: Gen. Requirements	ISO	ISO 834-1:1999
	Fire-Resistance Tests—Door and Shutter Assemblies	ISO	ISO 3008:2007
	Reaction to Fire Tests—Ignitability of Building Products Using a Radiant Heat Source	ISO	ISO 5657:1997
	Fire Containment—Elements of Building Construction—Part 1: Ventilation Ducts	ISO	ISO 6944-1:2008
	Fire Service Annunciator and Interface	NEMA	NEMA SB 30-2005
	Fire Protection Handbook (2008)	NFPA	NFPA
	National Fire Codes® (issued annually)	NFPA	NFPA
	Fire Protection Guide to Hazardous Materials	NFPA	NFPA HAZ-2010
	Fire Code	NFPA	NFPA 1-2018



Smoke Management	Installation of Sprinkler Systems	NFPA	NFPA 13-2016
	Flammable and Combustible Liquids Code	NFPA	NFPA 30-2018
	Fire Protection for Laboratories Using Chemicals	NFPA	NFPA 45-2015
	National Fire Alarm Code	NFPA	NFPA 72-2016
	Fire Doors and Other Opening Protectives	NFPA	NFPA 80-2016
	Health Care Facilities	NFPA	NFPA 99-2018
	Life Safety Code®	NFPA	NFPA 101-2018
	Methods of Fire Tests of Door Assemblies	NFPA	NFPA 252-2017
	Fire, Smoke and Radiation Damper Installation Guide for HVAC Systems, 5th ed.	SMACNA	SMACNA 2002
	Fire Tests of Door Assemblies	UL	ANSI/UL 10B-2008
	Heat Responsive Links for Fire-Protection Service	UL	ANSI/UL 33-2010
	Fire Tests of Building Construction and Materials	UL	ANSI/UL 263-2011
	Fire Dampers	UL	ANSI/UL 555-2006
	Fire Tests of Through-Penetration Firestops	UL	ANSI/UL 1479-2015
	The Commissioning Process for Smoke Control Systems	ASHRAE	ASHRAE <i>Guideline</i> 1.5-2012
	Laboratory Methods of Testing Fans Used to Exhaust Smoke in Smoke Management Systems	ASHRAE	ANSI/ASHRAE 149-2013
	Smoke-Control Systems Utilizing Barriers and Pressure Differences	NFPA	NFPA 92A-2009
	Smoke Management Systems in Malls, Atria, and Large Spaces	NFPA	NFPA 92B-2009
	Ceiling Dampers	UL	ANSI/UL 555C-2014
	Smoke Dampers	UL	ANSI/UL 555S-2014
	Quality Maintenance of Commercial Refrigeration Systems	ACCA	ANSI/ACCA 14 QMref-2015
	Energy Performance and Capacity of Household Refrigerators, Refrigerator-Freezers, Freezers, and Wine Chillers	CSA	C300-15
	Energy Performance of Food Service Refrigerators and Freezers	CSA	C827-10 (R2015)
	Refrigeration Equipment	CSA	CAN/CSA C22.2 No. 120-13
	Dispensing Freezers	NSF	ANSI/NSF 6-2016
	Commercial Refrigerators and Freezers	NSF	ANSI/NSF 7-2016
Commercial	Commercial Refrigerators and Freezers	UL	ANSI/UL 471-2010
	Ice Makers	UL	ANSI/UL 563-2009
	Ice Cream Makers	UL	ANSI/UL 621-2010
Household	Energy and Volume Refrigerating Appliances	AHAM	ANSI/AHAM HRF-1-2016
	Energy Performance and Capacity of Household Refrigerators, Refrigerator-Freezers, Freezers, and Wine Chillers	CSA	C300-15
<b>Fuels</b>	Threshold Limit Values for Chemical Substances (updated annually)	ACGIH	ACGIH
	National Gas Fuel Code	NFPA	ANSI Z223.1/NFPA 54-2015
	Reporting of Fuel Properties when Testing Diesel Engines with Biobased Fuels	ASABE	ASABE EP552.1-2017
	Coal Pulverizers	ASME	PTC 4.2 1969 (R2016)
	Classification of Coals by Rank	ASTM	ASTM D388-18
	Specification for Fuel Oils	ASTM	ASTM D396-17a
	Specification for Diesel Fuel Oils	ASTM	ASTM D975-17a
	Specification for Gas Turbine Fuel Oils	ASTM	ASTM D2880-15
	Specification for Kerosine	ASTM	ASTM D3699-13be1
	Practice for Receipt, Storage and Handling of Fuels for Gas Turbines	ASTM	ASTM D4418-17

Test Method for Determination of Yield Stress and Apparent Viscosity of Used Engine Oils at Low Temperature	ASTM	ASTM D6896-17
Test Method for Total Sulfur in Naphthas, Distillates, Reformulated Gasolines, Diesels, Biodiesels, and Motor Fuels by Oxidative Combustion and Electrochemical Detection	ASTM	ASTM D6920-13
Test Method for Determination of Homogeneity and Miscibility in Automotive Engine Oils	ASTM	ASTM D6922-13
Test Method for Measurement of Hindered Phenolic and Aromatic Amine Antioxidant Content in Non-Zinc Turbine Oils by Linear Sweep Voltammetry	ASTM	ASTM D6971-09 (2014)
Practice for Enumeration of Viable Bacteria and Fungi in Liquid Fuels—Filtration and Culture Procedures	ASTM	ASTM D6974-16
Test Method for Evaluation of Automotive Engine Oils in the Sequence IIIF, Spark-Ignition Engine	ASTM	ASTM D6984-17a
Test Method for Determination of Ignition Delay and Derived Cetane Number (DCN) of Diesel Fuel Oils by Combustion in a Constant Volume Chamber	ASTM	ASTM D6890-16e1
Test Method for Determination of Total Sulfur in Liquid Hydrocarbons and Hydrocarbon-Oxygenate Blends by Gas Chromatography with Flame Photometric Detection	ASTM	ASTM D7041-16
Test Method for Sulfur in Gasoline, Diesel Fuel, Jet Fuel, Kerosine, Biodiesel, Biodiesel Blends, and Gasoline-Ethanol Blends by Monochromatic Wavelength Dispersive X-Ray Fluorescence Spectrometry	ASTM	ASTM D7039-15a
Test Method for Flash Point by Modified Continuously Closed Cup (MCCCFP) Tester	ASTM	ASTM D7094-17a
Test Method for Determining the Viscosity-Temperature Relationship of Used and Soot-Containing Engine Oils at Low Temperatures	ASTM	ASTM D7110-15
Test Method for Determination of Trace Elements in Middle Distillate Fuels by Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES)	ASTM	ASTM D7111-16
Test Method for Determining Stability and Compatibility of Heavy Fuel Oils and Crude Oils by Heavy Fuel Oil Stability Analyzer (Optical Detection)	ASTM	ASTM D7112-12 (2017)
Test Method for Determination of Intrinsic Stability of Asphaltene-Containing Residues, Heavy Fuel Oils, and Crude Oils ( <i>n</i> -Heptane Phase Separation; Optical Detection)	ASTM	ASTM D7157-12
Test Method for Hydrogen Content of Middle Distillate Petroleum Products by Low-Resolution Pulsed Nuclear Magnetic Resonance Spectroscopy	ASTM	ASTM D7171-16
Gas-Fired Central Furnaces	CSA	ANSI Z21.47-2016/CSA 2.3-2016
Gas Unit Heaters, Gas Packaged Heaters, Gas Utility Heaters and Gas-Fired Duct Furnaces	CSA	ANSI Z83.8-2016/CSA 2.6-2016
Uniform Mechanical Code (2018)	IAPMO	>Chapter 13
Uniform Plumbing Code (2018)	IAPMO	Chapter 12
International Fuel Gas Code® (2018)	ICC	IFGC
Standard Gas Code (1999)	SBCCI	SGC
Commercial-Industrial Gas Heating Equipment (2011)	UL	UL 795-2016
<b>Furnaces</b>		
Commercial Systems Overview	ACCA	ACCA Manual CS-1993
Residential Equipment Selection, 2nd ed.	ACCA	ANSI/ACCA 3 Manual S-2014
HVAC Quality Installation Specification	ACCA	ANSI/ACCA 5 QI-2015
Technician's Guide & Workbook for Quality Installations	ACCA	ACCA 2015

	Method of Testing for Annual Fuel Utilization Efficiency of Residential Central Furnaces and Boilers	ASHRAE	ANSI/ASHRAE 103-2017
	Prevention of Furnace Explosions/Implosions in Multiple Burner Boilers	NFPA	NFPA 8502-99
	Residential Gas Detectors	UL	ANSI/UL 1484-2016
	Heating and Cooling Equipment	UL/CSA	ANSI/UL 1995-2015/C22.2 No. 236-15
	Single and Multiple Station Carbon Monoxide Alarms	UL	ANSI/UL 2034-2017
Gas	National Fuel Gas Code	AGA/NFPA	ANSI Z223.1/NFPA 54-2018
	Gas-Fired Central Furnaces	CSA	ANSI Z21.47-2016/CSA 2.3-2016
	Gas Unit Heaters, Gas Packaged Heaters, Gas Utility Heaters and Gas-Fired Duct Furnaces	CSA	ANSI Z83.8-2016/CSA 2.6-2016
	Thermal Efficiencies of Industrial and Commercial Gas-Fired Package Furnaces	CSA	CAN/CSA P.8-09 (R2014)
	International Fuel Gas Code® (2018)	ICC	IFGC
	Standard Gas Code (1999)	SBCCI	SGC
	Commercial-Industrial Gas Heating Equipment	UL	UL 795-2016
Oil	Specification for Fuel Oils	ASTM	ASTM D396-17a
	Specification for Diesel Fuel Oils	ASTM	ASTM D975-17a
	Test Method for Smoke Density in Flue Gases from Burning Distillate Fuels	ASTM	ASTM D2156-09 (2013)
	Standard Test Method for Vapor Pressure of Liquefied Petroleum Gases (LPG) (Expansion Method)	ASTM	ASTM D6897-16
	Oil Burning Stoves and Water Heaters	CSA	B140.3-1962 (R2015)
	Oil-Fired Warm Air Furnaces	CSA	B140.4-04 (R2014)
	Installation of Oil-Burning Equipment	NFPA	NFPA 31-2016
	Oil-Fired Central Furnaces	UL	UL 727-2018
	Oil-Fired Floor Furnaces	UL	ANSI/UL 729-2003
	Oil-Fired Wall Furnaces	UL	ANSI/UL 730-2003
Solid Fuel	Installation Code for Solid-Fuel-Burning Appliances and Equipment	CSA	CSA B365-10 (R2015)
	Solid-Fuel-Fired Central Heating Appliances	CSA	CAN/CSA B366.1-11 (R2015)
	Solid-Fuel and Combination-Fuel Central and Supplementary Furnaces	UL	ANSI/UL 391-2010
<b>Green Buildings</b>	Standard for the Design of High-Performance, Green Buildings Except Low-Rise Residential Buildings	ASHRAE/USGBC	ANSI/ASHRAE/USGBC/IES 189.1-2014
	National Green Building Standard	ICC/ASHRAE	ICC/ASHRAE 700-2015
	International Green Construction Code™ (2015)	ICC	IGCC
	Building Systems Analysis and Retrofit Manual, 2nd ed.	SMACNA	SMACNA 2011
<b>Heaters</b>	Gas-Fired High-Intensity Infrared Heaters	CSA	ANSI Z83.19-2017/CSA 2.35-2017
	Gas-fired Tubular and Low-Intensity Infrared Heaters	CSA	ANSI Z83.20-2016/CSA 2.34-2016
	Threshold Limit Values for Chemical Substances (updated annually)	ACGIH	ACGIH
	Industrial Ventilation: A Manual of Recommended Practice, 29th ed. (2016)	ACGIH	ACGIH
	Thermal Performance Testing of Solar Ambient Air Heaters	ASABE	ANSI/ASAE S423-1991 (R2012)
	Air Heaters	ASME	ASME PTC 4.3-2017
	Guide for Construction of Solid Fuel Burning Masonry Heaters	ASTM	ASTM E1602-03 (2017)

	Non-Recirculating Direct Gas-Fired Industrial Air Heaters	CSA	ANSI Z83.4-2017/CSA 3.7-2017
	Electric Duct Heaters	CSA	C22.2 No. 155-M1986 (R2017)
	Portable Kerosene-Fired Heaters	CSA	CAN3-B140.9.3-M86 (R2015)
	Standards for Closed Feedwater Heaters, 9th ed. (2015)	HEI	HEI 2622
	Electric Heating Appliances	UL	ANSI/UL 499-2014
	Electric Oil Heaters	UL	ANSI/UL 574-2003
	Oil-Fired Air Heaters and Direct-Fired Heaters	UL	UL 733-1993
	Electric Dry Bath Heaters	UL	ANSI/UL 875-2009
	Oil-Burning Stoves	UL	ANSI/UL 896-1993
Engine	Electric Engine Preheaters and Battery Warmers for Diesel Engines	SAE	SAE J1310-2011
	Selection and Application Guidelines for Diesel, Gasoline, and Propane Fired Liquid Cooled Engine Pre-Heaters	SAE	SAE J1350-2011
	Fuel Warmer—Diesel Engines	SAE	SAE J1422-2011
Nonresidential	Installation of Electric Infrared Brooding Equipment	ASABE	ASAE EP258.4-2014
	Gas-Fired Construction Heaters	CSA	ANSI Z83.7-2017/CSA 2.14-2017
	Recirculating Direct Gas-Fired Heating and Forced Ventilation Appliances for Commercial and Industrial Applications	CSA	ANSI Z83.18-2017
	Portable Industrial Oil-Fired Heaters	CSA	B140.8-1967 (R2015)
	Fuel-Fired Heaters—Air Heating—for Construction and Industrial Machinery	SAE	SAE J1024-2011
	Commercial-Industrial Gas Heating Equipment	UL	UL 795-2016
	Electric Heaters for Use in Hazardous (Classified) Locations	UL	ANSI/UL 823-2006
Pool	HVAC Design for Swimming Pools and Spas	ACCA	ANSI/ACCA 10 SPS-2010
	Methods of Testing and Rating Pool Heaters	ASHRAE	ANSI/ASHRAE 146-2011
	Gas-Fired Pool Heaters	CSA	ANSI Z21.56-2017/CSA 4.7-2017
	Oil-Fired Service Water Heaters and Swimming Pool Heaters	CSA	B140.12-03 (R2013)
Room	Specification for Room Heaters, Pellet Fuel-Burning Type	ASTM	ASTM E1509-12 (2017)
	Gas-Fired Room Heaters, Vol. II, Unvented Room Heaters	CSA	ANSI Z21.11.2-2016
	Gas-Fired Unvented Catalytic Room Heaters for Use with Propane Gas	CSA	ANSI Z21.76-2016
	Vented Gas-Fired Space Heating Appliances	CSA	ANSI Z21.86-2016/CSA 2.32-2016
	Vented Gas Fireplace Heaters	CSA	ANSI Z21.88-2017/CSA 2.33-2017
	Unvented Kerosene-Fired Room Heaters and Portable Heaters	UL	UL 647-1993
	Movable and Wall- or Ceiling-Hung Electric Room Heaters	UL	UL 1278-2014
	Fixed and Location-Dedicated Electric Room Heaters	UL	UL 2021-2015
	Solid Fuel-Type Room Heaters	UL	ANSI/UL 1482-2011
Transport	Heater, Airplane, Engine Exhaust Gas to Air Heat Exchanger Type	SAE	SAE ARP86-2011
	Heater, Aircraft Internal Combustion Heat Exchanger Type	SAE	SAE AS8040B-2013
	Motor Vehicle Heater Test Procedure	SAE	SAE J638-2011

Unit	Gas Unit Heaters, Gas Packaged Heaters, Gas Utility Heaters and Gas-Fired Duct Furnaces	CSA	ANSI Z83.8-2016/CSA 2.6-2016
	Oil-Fired Unit Heaters	UL	ANSI/UL 731-2018
<b>Heat Exchangers</b>	Remote Mechanical-Draft Evaporative Refrigerant Condensers	AHRI	ANSI/AHRI 490-2011
	Method of Testing Air-to-Air Heat/Energy Exchangers	ASHRAE	ANSI/ASHRAE 84-2013
	Boiler and Pressure Vessel Code—Section VIII, Division 1: Pressure Vessels	ASME	ASME BPVC-2017
	Single Phase Heat Exchangers	ASME	ASME PTC 12.5-2000 (R2015)
	Air Cooled Heat Exchangers	ASME	ASME PTC 30-1991 (RA11)
	Laboratory Methods of Test for Rating the Performance of Heat/Energy-Recovery Ventilators	CSA	C439-18
	Standards for Gasketed Plate Heat Exchangers, 1st ed. (2014)	HEI	HEI 126
	Standards for Shell and Tube Heat Exchangers, 5th ed. (2013)	HEI	HEI 129
	Standards of Tubular Exchanger Manufacturers Association, 9th ed. (2007)	TEMA	TEMA
	Refrigerant-Containing Components and Accessories, Nonelectrical	UL	ANSI/UL 207-2009
<b>Heating</b>	Commercial Systems Overview	ACCA	ACCA Manual CS-1993
	HVAC Quality Installation Specification	ACCA	ANSI/ACCA 5 QI-2015
	Technician's Guide & Workbook for Quality Installations	ACCA	ACCA 2015
	Residential Load Calculations	ACCA	ANSI/ACCA 2 Manual J-2016
	Comfort, Air Quality, and Efficiency by Design	ACCA	ACCA Manual RS-1997
	Residential Equipment Selection, 2nd ed.	ACCA	ANSI/ACCA 3 Manual S-2014
	Heating, Ventilating and Cooling Greenhouses	ASABE	ANSI/ASAE EP406.4-2003 (R2008)
	Peak Cooling and Heating Load Calculations in Buildings Except Low-Rise Residential Buildings	ASHRAE/ACCA	ANSI/ASHRAE/ACCA 183-2007 (RA 2017)
	Heater Elements	CSA	C22.2 No. 72-10 (R2014)
	Determining the Required Capacity of Residential Space Heating and Cooling Appliances	CSA	F280-12 (R2017)
	Heat Loss Calculation Guide (2001)	HYDI	HYDI H-22
	Residential Hydronic Heating Installation Design Guide	HYDI	IBR Guide
	Radiant Floor Heating (1995)	HYDI	HYDI 004
	Advanced Installation Guide (Commercial) for Hot Water Heating Systems (2001)	HYDI	HYDI 250
	Environmental Systems Technology, 2nd ed. (1999)	NEBB	NEBB
	Pulverized Fuel Systems	NFPA	NFPA 8503-97
	Aircraft Electrical Heating Systems	SAE	SAE AIR860B-2011
	Heating Value of Fuels	SAE	SAE J1498-2017
	Performance Test for Air-Conditioned, Heated, and Ventilating Off-Road Self-Propelled Work Machines	SAE	SAE J1503-2004
	HVAC Systems Applications, 2nd ed.	SMACNA	SMACNA 2010
	Electric Baseboard Heating Equipment	UL	ANSI/UL 1042-2009
	Electric Duct Heaters	UL	ANSI/UL 1996-2009
	Heating and Cooling Equipment	UL/CSA	ANSI/UL 1995-2015/C22.2 No. 236-15
<b>Heat Pumps</b>	Commercial Systems Overview	ACCA	ACCA Manual CS-1993
	Geothermal Heat Pump Training Certification Program	ACCA	ACCA Training Manual

	Heat Pumps Systems, Principles and Applications, 2nd ed.	ACCA	ACCA Manual H-1984
	Residential Equipment Selection, 2nd ed.	ACCA	ANSI/ACCA 3 Manual S-2014
	Industrial Ventilation: A Manual of Recommended Practice, 29th ed. (2016)	ACGIH	ACGIH
	Performance Rating of Unitary Air-Conditioning and Air-Source Heat Pump Equipment	AHRI	ANSI/AHRI 210/240-2017
	Commercial and Industrial Unitary Air-Conditioning and Heat Pump Equipment	AHRI	ANSI/AHRI 340/360-2015
	Single Package Vertical Air-Conditioner and Heat Pumps	AHRI	ANSI/AHRI 390-2003
	Direct Geexchange Heat Pumps	AHRI	ANSI/AHRI 870-2016
	Variable Refrigerant Flow (VRF) Multi-Split Air-Conditioning and Heat Pump Equipment	AHRI	ANSI/AHRI 1230-2014
	Methods of Testing for Rating Electrically Driven Unitary Air-Conditioning and Heat Pump Equipment	ASHRAE	ANSI/ASHRAE 37-2009
	Methods of Testing for Rating Seasonal Efficiency of Unitary Air-Conditioners and Heat Pumps	ASHRAE	ANSI/ASHRAE 116-2010
	Method of Test for Direct-Expansion Ground Source Heat Pumps	ASHRAE	ANSI/ASHRAE 194-2017
	Method of Testing for Rating of Multi-Purpose Heat Pumps for Residential Space Conditioning and Water Heating	ASHRAE	ANSI/ASHRAE 206-2013
	Performance Standard for Split-System and Single-Package Central Air Conditioners and Heat Pumps	CSA	CAN/CSA C656-14
	Installation of Air-Source Heat Pumps and Air Conditioners	CSA	CAN/CSA C273.5-11 (R2015)
	Performance of Direct-Expansion (DX) Ground-Source Heat Pumps	CSA	C748-13
	Water-Source Heat Pumps—Testing and Rating for Performance, Part 1: Water-to-Air and Brine-to-Air Heat Pumps	CSA	CAN/CSA C13256-1-01 (R2016)
	Part 2: Water-to-Water and Brine-to-Water Heat Pumps	CSA	CAN/CSA C13256-2-01 (R2015)
	Heating and Cooling Equipment (2011)	UL/CSA	ANSI/UL 1995/C22.2 No. 236-15
Gas-Fired	Gas-Fired, Heat Activated Air Conditioning and Heat Pump Appliances	CSA	ANSI Z21.40.1-1996/CGA 2.91-M96 (R2017)
	Gas-Fired, Work Activated Air Conditioning and Heat Pump Appliances (Internal Combustion)	CSA	ANSI Z21.40.2-1996/CGA 2.92-M96 (R2017)
	Performance Testing and Rating of Gas-Fired Air Conditioning and Heat Pump Appliances	CSA	ANSI Z21.40.4-1998/CGA 2.94-M98 (R2017)
<b>Heat Recovery</b>	Gas Turbine Heat Recovery Steam Generators	ASME	ANSI/ASME PTC 4.4-2008 (R2013)
	Water Heaters, Hot Water Supply Boilers, and Heat Recovery Equipment	NSF	ANSI/NSF 5-2016
<b>High-Performance Buildings</b>	Sustainable, High Performance Operations and Maintenance	ASHRAE	ASHRAE <i>Guideline</i> 32-2012
	Standard for the Design of High-Performance, Green Buildings Except Low-Rise Residential Buildings	ASHRAE/USGBC	ANSI/ASHRAE/USGBC/IES 189.1-2014
<b>Humidifiers</b>	International Green Construction Code™ (2015)	ICC	IGCC
	Commercial Systems Overview	ACCA	ACCA Manual CS-1993
	Residential Equipment Selection	ACCA	ANSI/ACCA 3 Manual S-2014
	Comfort, Air Quality, and Efficiency by Design	ACCA	ACCA Manual RS-1997
	Bioaerosols: Assessment and Control (1999)	ACGIH	ACGIH
	Portable Household Humidifiers	AHAM	AHAM HU-1-2016
	Central System Humidifiers for Residential Applications	AHRI	ANSI/AHRI 610-2014

<b>HVAC Load Calculations</b>	Self-Contained Humidifiers for Residential Applications	AHRI	ANSI/AHRI 620-2014
	Commercial and Industrial Humidifiers	AHRI	ANSI/AHRI 640-2017
	Method of Test for Residential Central-System Humidifiers	ASHRAE	ANSI/ASHRAE 164.1-2012
	Humidifiers	UL/CSA	C22.2 No. 104-11 (R2015)
	Residential Load Calculations	ACCA	ANSI/ACCA 2 Manual J-2016
	Commercial Load Calculations	ACCA	ACCA Manual N-2012
<b>Ice Makers</b>	Peak Cooling and Heating Load Calculations in Buildings Except Low-Rise Residential Buildings	ASHRAE/ACCA	ANSI/ASHRAE/ACCA 183-2007 (RA 2017)
	Quality Maintenance of Commercial Refrigeration Systems	ACCA	ANSI/ACCA 14 QMref-2015
	Performance Rating of Automatic Commercial Ice Makers	AHRI	ANSI/AHRI 810-2016
	Ice Storage Bins	AHRI	ANSI/AHRI 820-2017
<b>Incinerators</b>	Methods of Testing Automatic Ice Makers	ASHRAE	ANSI/ASHRAE 29-2015
	Refrigeration Equipment	CSA	C22.2 No. 120-13
	Energy Performance of Automatic Icemakers and Ice Storage Bins	CSA	CAN/CSA C742-15
	Automatic Ice Making Equipment	NSF	ANSI/NSF 12-2017
<b>Indoor Air Quality</b>	Ice Makers	UL	ANSI/UL 563-2009
	Incinerators and Waste and Linen Handling Systems and Equipment	NFPA	NFPA 82-2014
	Residential Incinerators	UL	UL 791-2006
	Good HVAC Practices for Residential and Commercial Buildings (2003)	ACCA	ACCA
	Comfort, Air Quality, and Efficiency by Design	ACCA	ACCA Manual RS-1997
	Bioaerosols: Assessment and Control (1999)	ACGIH	ACGIH
	Interactions Affecting the Achievement of Acceptable Indoor Environments	ASHRAE	ASHRAE <i>Guideline</i> 10-2016
	Ventilation for Acceptable Indoor Air Quality	ASHRAE	ANSI/ASHRAE 62.1-2016
	Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings	ASHRAE	ANSI/ASHRAE 62.2-2016
	Test Method for Determination of Volatile Organic Chemicals in Atmospheres (Canister Sampling Methodology)	ASTM	ASTM D5466-15
	Guide for Using Probability Sampling Methods in Studies of Indoor Air Quality in Buildings	ASTM	ASTM D5791-95 (2017)
	Guide for Using Indoor Carbon Dioxide Concentrations to Evaluate Indoor Air Quality and Ventilation	ASTM	ASTM D6245-12
	Guide for Placement and Use of Diffusive Samplers for Gaseous Pollutants in Indoor Air	ASTM	ASTM D6306-17
	Test Method for Determination of Metals and Metalloids in Airborne Particulate Matter by Inductively Coupled Plasma Atomic Emissions Spectrometry (ICP-AES)	ASTM	ASTM D7035-16
	Test Method for Metalworking Fluid Aerosol in Workplace Atmospheres	ASTM	ASTM D7049-17
	Practice for Emission Cells for the Determination of Volatile Organic Emissions from Indoor Materials/Products	ASTM	ASTM D7143-17
	Practice for Collection of Surface Dust by Micro-Vacuum Sampling for Subsequent Metals Determination	ASTM	ASTM D7144-05a (2016)
	Test Method for Determination of Beryllium in the Workplace by Extraction and Optical Fluorescence Detection	ASTM	ASTM D7202-15
	Practice for Referencing Suprathreshold Odor Intensity	ASTM	ASTM E544-10

	Guide for Specifying and Evaluating Performance of a Single Family Attached and Detached Dwelling—Indoor Air Quality	ASTM	ASTM E2267-04 (2013)
	Classification for Serviceability of an Office Facility for Thermal Environment and Indoor Air Conditions	ASTM	ASTM E2320-04 (2012)
	Practice for Continuous Sizing and Counting of Airborne Particles in Dust-Controlled Areas and Clean Rooms Using Instruments Capable of Detecting Single Sub-Micrometre and Larger Particles	ASTM	ASTM F50-12 (2015)
	Ambient Air—Determination of Mass Concentration of Nitrogen Dioxide—Modified Griess-Saltzman Method	ISO	ISO 6768:1998
	Air Quality—Exchange of Data—Part 1: General Data Format	ISO	ISO 7168-1:1999
	Part 2: Condensed Data Format	ISO	ISO 7168-2:1999
	Environmental Tobacco Smoke—Estimation of Its Contribution to Respirable Suspended Particles—Determination of Particulate Matter by Ultraviolet Absorbance and by Fluorescence	ISO	ISO 15593:2001
	Indoor Air—Part 3: Determination of Formaldehyde and Other Carbonyl Compounds in Indoor Air and Test Chamber Air—Active Sampling Method	ISO	ISO 16000-3:2011
	Workplace Air Quality—Sampling and Analysis of Volatile Organic Compounds by Solvent Desorption/Gas Chromatography—Part 1: Pumped Sampling Method	ISO	ISO 16200-1:2001
	Part 2: Diffusive Sampling Method	ISO	ISO 16200-2:2000
	Workplace Air Quality—Determination of Total Organic Isocyanate Groups in Air Using 1-(2-Methoxyphenyl) Piperazine and Liquid Chromatography	ISO	ISO 16702:2007
	Installation of Carbon Monoxide (CO) Detection and Warning Equipment	NFPA	NFPA 720-2015
	Indoor Air Quality—A Systems Approach, 3rd ed.	SMACNA	SMACNA 1998
	IAQ Guidelines for Occupied Buildings Under Construction, 2nd ed.	SMACNA	ANSI/SMACNA 008-2007
	Single and Multiple Station Carbon Monoxide Alarms	UL	ANSI/UL 2034-2017
Aircraft	Air Quality Within Commercial Aircraft	ASHRAE	ASHRAE <i>Guideline</i> 28-2016
	Air Quality Within Commercial Aircraft	ASHRAE	ANSI/ASHRAE 161-2018
	Guide for Selecting Instruments and Methods for Measuring Air Quality in Aircraft Cabins	ASTM	ASTM D6399-10
	Guide for Deriving Acceptable Levels of Airborne Chemical Contaminants in Aircraft Cabins Based on Health and Comfort Considerations	ASTM	ASTM D7034-11
Modeling	Guideline for Documenting Indoor Airflow and Contaminant Transport Modeling	ASHRAE	ASHRAE <i>Guideline</i> 33-2013
<b>Insulation</b>	Home Evaluation and Performance Improvement	ACCA	ANSI/ACCA 12 QH-2018
	Technician's Guide & Workbook for Home Evaluation and Performance Improvement	ACCA	ACCA 2014
	Guidelines for Use of Thermal Insulation in Agricultural Buildings	ASABE	ANSI/ASAE S401.2-1993 (R2012)
	Terminology Relating to Thermal Insulation	ASTM	ASTM C168-17
	Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus	ASTM	ASTM C177-13
	Test Method for Steady-State Heat Transfer Properties of Pipe Insulations	ASTM	ASTM C335/C335M-17
	Practice for Fabrication of Thermal Insulating Fitting Covers for NPS Piping and Vessel Lagging	ASTM	ASTM C450-17



Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus	ASTM	ASTM C518-17
Specification for Preformed Flexible Elastometric Cellular Thermal Insulation in Sheet and Tubular Form	ASTM	ASTM C534/C534M-16
Specification for Cellular Glass Thermal Insulation	ASTM	ASTM C552-17
Specification for Rigid, Cellular Polystyrene Thermal Insulation	ASTM	ASTM C578-17a
Practice for Inner and Outer Diameters of Thermal Insulation for Nominal Sizes of Pipe and Tubing	ASTM	ASTM C585-10 (2016)
Specification for Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation	ASTM	ASTM C591-17
Practice for Estimate of the Heat Gain or Loss and the Surface Temperatures of Insulated Flat, Cylindrical, and Spherical Systems by Use of Computer Programs	ASTM	ASTM C680-14
Specification for Adhesives for Duct Thermal Insulation	ASTM	ASTM C916-14
Classification of Potential Health and Safety Concerns Associated with Thermal Insulation Materials and Accessories	ASTM	ASTM C930-18
Practice for Thermographic Inspection of Insulation Installations in Envelope Cavities of Frame Buildings	ASTM	ASTM C1060-11a (2015)
Specification for Fibrous Glass Duct Lining Insulation (Thermal and Sound Absorbing Material)	ASTM	ASTM C1071-16
Specification for Faced or Unfaced Rigid Cellular Phenolic Thermal Insulation	ASTM	ASTM C1126-15
Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus	ASTM	ASTM C1363-11
Specification for Perpendicularly Oriented Mineral Fiber Roll and Sheet Thermal Insulation for Pipes and Tanks	ASTM	ASTM C1393-14
Guide for Measuring and Estimating Quantities of Insulated Piping and Components	ASTM	ASTM C1409-12
Specification for Cellular Melamine Thermal and Sound-Absorbing Insulation	ASTM	ASTM C1410-17
Guide for Selecting Jacketing Materials for Thermal Insulation	ASTM	ASTM C1423-16
Specification for Extruded Preformed Flexible Cellular Polyolefin Thermal Insulation in Sheet and Tubular Form	ASTM	ASTM C1427-16
Specification for Polyimide Flexible Cellular Thermal and Sound Absorbing Insulation	ASTM	ASTM C1482-17
Specification for Cellulosic Fiber Stabilized Thermal Insulation	ASTM	ASTM C1497-16
Test Method for Characterizing the Effect of Exposure to Environmental Cycling on Thermal Performance of Insulation Products	ASTM	ASTM C1512-10 (2015)e1
Specification for Flexible Polymeric Foam Sheet Insulation Used as a Thermal and Sound Absorbing Liner for Duct Systems	ASTM	ASTM C1534-18
Standard Guide for Development of Standard Data Records for Computerization of Thermal Transmission Test Data for Thermal Insulation	ASTM	ASTM C1558-16
Guide for Determining Blown Density of Pneumatically Applied Loose Fill Mineral Fiber Thermal Insulation	ASTM	ASTM C1574-04 (2013)
Test Method for Determining the Moisture Content of Organic and Inorganic Insulation	ASTM	ASTM C1616-07 (2012)

	Materials by Weight		
	Classification for Rating Sound Insulation	ASTM	ASTM E413-16
	Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad Wall Assemblies	ASTM	ASTM E2273-03 (2011)
	Practice for Use of Test Methods E96/E96M for Determining the Water Vapor Transmission (WVT) of Exterior Insulation and Finish Systems	ASTM	ASTM E2321-03 (2011)
	Thermal Insulation—Vocabulary	ISO	ISO 9229:2007
	National Commercial and Industrial Insulation Standards, 8th ed.	MICA	MICA
	Accepted Industry Practices for Sheet Metal Lagging, 1st ed.	SMACNA	SMACNA 2002
	<b>Legionellosis</b> Minimizing the Risk of Legionellosis Associated with Building Water Systems	ASHRAE	ASHRAE <i>Guideline</i> 12-2000
	Legionellosis: Risk Management for Building Water Systems	ASHRAE	ANSI/ASHRAE 188-2015
	<b>Louvers</b> Laboratory Methods of Testing Dampers for Rating	AMCA	AMCA 500-D-12
	Laboratory Methods of Testing Louvers for Rating	AMCA	AMCA 500-L-12 (R2015)
	<b>Lubricants</b> Methods of Testing the Floc Point of Refrigeration Grade Oils	ASHRAE	ANSI/ASHRAE 86-2013
	Refrigeration Oil Description	ASHRAE	ANSI/ASHRAE 99-2006
	Test Method for Pour Point of Petroleum Products	ASTM	ASTM D97-17b
	Classification of Industrial Fluid Lubricants by Viscosity System	ASTM	ASTM D2422-97 (2013)
	Test Method for Relative Molecular Weight (Relative Molecular Mass) of Hydrocarbons by Thermoelectric Measurement of Vapor Pressure	ASTM	ASTM D2503-92 (2016)
	Test Method for Determination of Moderately High Temperature Piston Deposits by Thermo-Oxidation Engine Oil Simulation Test—TEOST MHT	ASTM	ASTM D7097-16a
	Petroleum Products—Corrosiveness to Copper—Copper Strip Test	ISO	ISO 2160:1998
	<b>Measurement</b> Industrial Ventilation: A Manual of Recommended Practice, 29th ed. (2016)	ACGIH	ACGIH
	Engineering Analysis of Experimental Data	ASHRAE	ASHRAE <i>Guideline</i> 2-2010 (R2014)
	Instrumentation for Monitoring Central Chilled Water Plant Efficiency	ASHRAE	ASHRAE <i>Guideline</i> 22-2012
	Standard Method for Measuring the Proportion of Lubricant in Liquid Refrigerant	ASHRAE	ANSI/ASHRAE 41.4-2015
	Standard Method for Measurement of Moist Air Properties	ASHRAE	ANSI/ASHRAE 41.6-2014
	Methods of Determining, Expressing, and Comparing Building Energy Performance and Greenhouse Gas Emissions	ASHRAE	ANSI/ASHRAE 105-2014
	Method for Establishing Installation Effects on Flowmeters	ASME	ASME MFC-10M-2000 (R2011)
	Test Uncertainty	ASME	ASME PTC 19.1-2013
	Measurement of Industrial Sound	ASME	ANSI/ASME PTC 36-2004 (R2013)
	Test Methods for Water Vapor Transmission of Materials	ASTM	ASTM E96/E96M-16
	Specification and Temperature-Electromotive Force (emf) Tables for Standardized Thermocouples	ASTM	ASTM E230/E230M-17
	Practice for Continuous Sizing and Counting of Airborne Particles in Dust-Controlled Areas and Clean Rooms Using Instruments Capable of	ASTM	ASTM F50-12 (2015)

	Detecting Single Sub-Micrometre and Larger Particles		
	Ergonomics of the Thermal Environment—Instruments for Measuring Physical Quantities	ISO	ISO 7726:1998
	Ergonomics of the Thermal Environment—Determination of Metabolic Rate	ISO	ISO 8996:2004
	Ergonomics of the Thermal Environment—Estimation of the Thermal Insulation and Water Vapour Resistance of a Clothing Ensemble	ISO	ISO 9920:2007
Energy	Measurement of Energy and Demand Savings	ASHRAE	ASHRAE <i>Guideline</i> 14-2014
Fluid Flow	Standard Methods for Liquid in Flow Measurement	ASHRAE	ANSI/ASHRAE 41.8-2016
	Methods for Volatile-Refrigerant Mass Flow Measurements Using Calorimeters	ASHRAE	ANSI/ASHRAE 41.9-2011
	Flow Measurement	ASME	ASME PTC 19.5-2004 (R2013)
	Glossary of Terms Used in the Measurement of Fluid Flow in Pipes	ASME	ASME MFC-1M-2014
	Measurement Uncertainty for Fluid Flow in Closed Conduits	ASME	ANSI/ASME MFC-2M-1983 (R2013)
	Measurement of Fluid Flow in Pipes Using Orifice, Nozzle, and Venturi	ASME	ASME MFC-3M-2004 (R2017)
	Measurement of Fluid Flow in Pipes Using Vortex Flowmeters	ASME	ASME MFC-6M-2013
	Fluid Flow in Closed Conduits: Connections for Pressure Signal Transmissions Between Primary and Secondary Devices	ASME	ASME MFC-8M-2001 (R2016)
	Measurement of Liquid Flow in Closed Conduits by Weighing Method	ASME	ASME MFC-9M-1988 (R2011)
	Measurement of Fluid Flow Using Small Bore Precision Orifice Meters	ASME	ASME MFC-14M-2003 (R2008)
	Measurement of Fluid Flow in Closed Conduits by Means of Electromagnetic Flowmeters	ASME	ASME MFC-16-2014
	Measurement of Fluid Flow Using Variable Area Meters	ASME	ASME MFC-18M-2001 (R2016)
	Test Method for Determining the Moisture Content of Inorganic Insulation Materials by Weight	ASTM	ASTM C1616-07 (2012)
	Test Method for Indicating Wear Characteristics of Petroleum Hydraulic Fluids in a High Pressure Constant Volume Vane Pump	ASTM	ASTM D6973-14
	Test Method for Dynamic Viscosity and Density of Liquids by Stabinger Viscometer (and the Calculation of Kinematic Viscosity)	ASTM	ASTM D7042-16e3
	Test Method for Indicating Wear Characteristics of Non-Petroleum and Petroleum Hydraulic Fluids in a Constant Volume Vane Pump	ASTM	ASTM D7043-17
	Practice for Calculating Viscosity of a Blend of Petroleum Products	ASTM	ASTM D7152-11 (2016)
	Test Method for Same-Different Test	ASTM	ASTM E2139-05 (2011)
	Practice for Field Use of Pyranometers, Pyrhemometers, and UV Radiometers	ASTM	ASTM G183-15
Gas Flow	Standard Methods for Laboratory Airflow Measurement	ASHRAE	ANSI/ASHRAE 41.2-1987 (R1992)
	Method of Test for Measurement of Flow of Gas	ASHRAE	ANSI/ASHRAE 41.7-2015
	Measurement of Gas Flow by Turbine Meters	ASME	ANSI/ASME MFC-4M-1986 (R2016)
	Measurement of Gas Flow by Means of Critical Flow Venturi Nozzles	ASME	ANSI/ASME MFC-7M-2016
Pressure	Standard Method for Pressure Measurement	ASHRAE	ANSI/ASHRAE 41.3-2014
	Pressure Gauges and Gauge Attachments	ASME	ASME B40.100-2013

	Pressure Measurement	ASME	ANSI/ASME PTC 19.2-2010 (R2015)
Temperature	Standard Method for Temperature Measurement	ASHRAE	ANSI/ASHRAE 41.1-2013
	Thermometers, Direct Reading and Remote Reading	ASME	ASME B40.200-2008 (R2013)
	Temperature Measurement	ASME	ASME PTC 19.3-1974 (R2004)
Thermal	Total Temperature Measuring Instruments (Turbine Powered Subsonic Aircraft)	SAE	SAE AS793A-2001 (R2008)
	Method of Testing Thermal Energy Meters for Liquid Streams in HVAC Systems	ASHRAE	ANSI/ASHRAE 125-2016
	Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus	ASTM	ASTM C177-13
	Test Method for Steady-State Heat Flux Measurements Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus	ASTM	ASTM C518-17
	Practice for In-Situ Measurement of Heat Flux and Temperature on Building Envelope Components	ASTM	ASTM C1046-95 (2013)
	Practice for Determining Thermal Resistance of Building Envelope Components from In-Situ Data	ASTM	ASTM C1155-95 (2013)
	Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus	ASTM	ASTM C1363-11
<b>Mobile Homes and Recreational Vehicles</b>	Residential Load Calculation, 8th ed.	ACCA	ANSI/ACCA Manual J-2016
	Recreational Vehicle Cooking Gas Appliances	CSA	ANSI Z21.57-2010
	Oil-Fired Warm Air Heating Appliances for Mobile Housing and Recreational Vehicles	CSA	B140.10-06 (R2015)
	Manufactured Homes	CSA	CAN/CSA Z240 MH Series-16
	Recreational Vehicles	CSA	CAN/CSA Z240 RV Series-14
	Gas Supply Connectors for Manufactured Homes	IAPMO	IAPMO TS 9-2003
	Fuel Supply: Manufactured/Mobile Home Parks & Recreational Vehicle Parks	IAPMO	Chapter 13, Part II
	Manufactured Housing Construction and Safety Standards	ICC/ANSI	HUD 24 CFR Part 3280 (2008)
	Manufactured Housing	NFPA	NFPA 501-2017
	Recreational Vehicles	NFPA	NFPA 1192-2018
	Plumbing System Components for Recreational Vehicles	NSF	ANSI/NSF 24-2016
	Low Voltage Lighting Fixtures for Use in Recreational Vehicles	UL	ANSI/UL 234-2005
	Liquid Fuel-Burning Heating Appliances for Manufactured Homes and Recreational Vehicles	UL	ANSI/UL 307A-2009
	Gas-Burning Heating Appliances for Manufactured Homes and Recreational Vehicles	UL	UL 307B-2006
<b>Motors and Generators</b>	Installation and Maintenance of Farm Standby Electric Power	ASABE	ANSI/ASABE EP364.4-2013
	Nuclear Power Plant Air-Cleaning Units and Components	ASME	ASME N509-2002 (R2008)
	In-Service Testing of Nuclear Air Treatment Systems	ASME	ASME N511-2007 (R2013)
	Fired Steam Generators	ASME	ASME PTC 4-2013
	Gas Turbine Heat Recovery Steam Generators	ASME	ASME PTC 4.4-2008 (R2013)
	Test Methods for Film-Insulated Magnet Wire	ASTM	ASTM D1676-17
	Test Method for Evaluation of Engine Oils in a High Speed, Single-Cylinder Diesel Engine—Caterpillar 1R Test Procedure	ASTM	ASTM D6923-17
	Test Method for Evaluation of Diesel Engine Oils in the T-11 Exhaust Gas Recirculation Diesel Engine	ASTM	ASTM D7156-17

<b>Operation and Maintenance</b>	Test Methods, Marking Requirements, and Energy Efficiency Levels for Three-Phase Induction Motors	CSA	CSA C390-10 (R2015)
	Motors and Generators	CSA	C22.2 No. 100-14
	Emergency Electrical Power Supply for Buildings	CSA	CSA C282-15
	Energy Efficiency Test Methods for Small Motors	CSA	CAN/CSA C747-09 (R2014)
	Standard Test Procedure for Polyphase Induction Motors and Generators	IEEE	IEEE 112-2017
	Motors and Generators	NEMA	NEMA MG 1-2016
	Energy Management Guide for Selection and Use of Fixed Frequency Medium AC Squirrel-Cage Polyphase Industrial Motors	NEMA	NEMA MG 10-2017
	Energy Management Guide for Selection and Use of Single-Phase Motors	NEMA	NEMA MG 11-1977 (R2012)
	Magnet Wire	NEMA	ANSI/NEMA MW 1000-2016
	Motion/Position Control Motors, Controls, and Feedback Devices	NEMA	NEMA ICS 16-2001
	Rotating Electrical Machines—General Requirements	UL	UL 1004-1-2012
	Electric Motors and Generators for Use in Hazardous (Classified) Locations	UL	ANSI/UL 674-2011
	Overheating Protection for Motors	UL	ANSI/UL 2111-1997
	Maintenance of Residential HVAC Systems	ACCA	ANSI/ACCA 4 QM-2013
	Preparation of Operating and Maintenance Documentation for Building Systems	ASHRAE	ASHRAE <i>Guideline</i> 4-2008 (RA13)
	Sustainable, High Performance Operations and Maintenance	ASHRAE	ASHRAE <i>Guideline</i> 32-2012
	Inspection and Maintenance of Commercial-Building HVAC Systems	ASHRAE/ACCA	ANSI/ASHRAE/ACCA 180-2012
	International Property Maintenance Code® (2018)	ICC	IPMC
	Method of Testing for Rating Ceiling Panels for Sensible Heating and Cooling	ASHRAE	ANSI/ASHRAE 138-2013
	Scheme for the Identification of Piping Systems	ASME	ASME A13.1-2015
<b>Panel Heating and Cooling</b> <b>Pipe, Tubing, and Fittings</b>	Pipe Threads, General Purpose (Inch)	ASME	ANSI/ASME B1.20.1-2013
	Wrought Copper and Copper Alloy Braze-Joint Pressure Fittings	ASME	ASME B16.50-2013
	Power Piping	ASME	ASME B31.1-2016
	Process Piping	ASME	ASME B31.3-2016
	Refrigeration Piping and Heat Transfer Components	ASME	ASME B31.5-2016
	Building Services Piping	ASME	ASME B31.9-2017
	Practice for Obtaining Hydrostatic or Pressure Design Basis for "Fiberglass" (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe and Fittings	ASTM	ASTM D2992-12
	Specification for Welding of Austenitic Stainless Steel Tube and Piping Systems in Sanitary Applications	AWS	AWS D18.1:2009
	Standards of the Expansion Joint Manufacturers Association, 10th ed.	EJMA	EJMA
	Pipe Hangers and Supports—Materials, Design and Manufacture	MSS	ANSI/MSS SP-58-2009
	Pipe Hangers and Supports—Selection and Application	MSS	ANSI/MSS SP-69-2003
	General Welding Guidelines (2009)	NCPWB	NCPWB
	National Fuel Gas Code	AGA/NFPA	ANSI Z223.1/NFPA 54-2018
	Refrigeration Tube Fittings—General Specifications	SAE	SAE J513-1999

Plastic	Seismic Restraint Manual—Guidelines for Mechanical Systems, 3rd ed.	SMACNA	ANSI/SMACNA 001-2008
	Tube Fittings for Flammable and Combustible Fluids, Refrigeration Service, and Marine Use	UL	ANSI/UL 109-1997
	Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120	ASTM	ASTM D1785-12
	Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials or Pressure Design Basis for Thermoplastic Pipe Products	ASTM	ASTM D2837-13e1
	Specification for Perfluoroalkoxy (PFA)-Fluoropolymer Tubing	ASTM	ASTM D6867-03 (2014)
	Specification for Polyethylene Stay in Place Form System for End Walls for Drainage Pipe	ASTM	ASTM D7082-15
	Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe, Schedules 40 and 80	ASTM	ASTM F441/F441M-15
	Test Method for Evaluating the Oxidative Resistance of Polyethylene (PE) Pipe to Chlorinated Water	ASTM	ASTM F2263-14
	Specification for 12 to 60 in. [300 to 1500 mm] Annular Corrugated Profile-Wall Polyethylene (PE) Pipe and Fittings for Gravity-Flow Storm Sewer and Subsurface Drainage Applications	ASTM	ASTM F2306/F2306M-14
	Test Method for Determining Chemical Compatibility of Substances in Contact with Thermoplastic Pipe and Fittings Materials	ASTM	ASTM F2331-11 (2016)
	Test Method for Determining Thermoplastic Pipe Wall Stiffness	ASTM	ASTM F2433-05 (2013)
	Specification for Steel Reinforced Polyethylene (PE) Corrugated Pipe	ASTM	ASTM F2435-15
	Electrical Polyvinyl Chloride (PVC) Tubing and Conduit	NEMA	NEMA TC 2-2013
	PVC Plastic Utilities Duct for Underground Installation	NEMA	NEMA TC 6 and 8-2013
	Smooth Wall Coilable Polyethylene Electrical Plastic Duct	NEMA	NEMA TC 7-2016
	Fittings for PVC Plastic Utilities Duct for Underground Installation	NEMA	NEMA TC 9-2004 (R2012)
	Electrical Nonmetallic Tubing (ENT)	NEMA	NEMA TC 13-2014
	Plastics Piping System Components and Related Materials	NSF	ANSI/NSF 14-2016b
	Rubber Gasketed Fittings	UL	ANSI/UL 213-2004
Metal	Welded and Seamless Wrought Steel Pipe	ASME	ASME B36.10M-2015
	Stainless Steel Pipe	ASME	ASME B36.19M-2004 (R2015)
	Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless	ASTM	ASTM A53/53M-12
	Specification for Seamless Carbon Steel Pipe for High-Temperature Service	ASTM	ASTM A106/A106M-15
	Specification for Seamless Copper Pipe, Standard Sizes	ASTM	ASTM B42-15a
	Specification for Seamless Copper Tube	ASTM	ASTM B75/B75M-11
	Specification for Seamless Copper Water Tube	ASTM	ASTM B88-16
	Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service	ASTM	ASTM B280-16
	Specification for Hard-Drawn Copper Capillary Tube for Restrictor Applications	ASTM	ASTM B360-15
	Specification for Welded Copper Tube for Air Conditioning and Refrigeration Service	ASTM	ASTM B640-12a
	Specification for Copper-Beryllium Seamless Tube (UNS Nos. C17500 and C17510)	ASTM	ASTM B937-15
	Test Method for Rapid Determination of Corrosiveness to Copper from Petroleum Products	ASTM	ASTM D7095-17

## Using a Disposable Copper Foil Strip

<b>Plumbing</b>	Thickness Design of Ductile-Iron Pipe	AWWA	ANSI/AWWA C150/A21.50-14
	Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable	NEMA	NEMA FB 1-2014
	Polyvinyl-Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit	NEMA	NEMA RN 1-2005 (R2013)
	Backwater Valves	ASME	ASME A112.14.1-2003 (R2017)
	Plumbing Supply Fittings	ASME	ASME A112.18.1-2012 (R2017)
	Plumbing Waste Fittings	ASME	ASME A112.18.2-2015
	Performance Requirements for Backflow Protection Devices and Systems in Plumbing Fixture Fittings	ASME	ASME A112.18.3-2002 (R2017)
	Uniform Plumbing Code (2018)	IAPMO	IAPMO
	International Plumbing Code® (2018)	ICC	IPC
	International Private Sewage Disposal Code® (2018)	ICC	IPSDC
<b>Pumps</b>	2018 National Standard Illustrated Plumbing Code—Illustrated	PHCC	PHCC 2012
	Standard Plumbing Code (1997)	SBCCI	SPC
	Balancing and Testing Air and Hydronic Systems	ACCA	ACCA Manual B-2009
	Centrifugal Pumps	ASME	ASME PTC 8.2-1990
	Specification for Horizontal End Suction Centrifugal Pumps for Chemical Process	ASME	ASME B73.1-2012
	Specification for Vertical-in-Line Centrifugal Pumps for Chemical Process	ASME	ASME B73.2-2016
	Specification for Sealless Horizontal End Suction Metallic Centrifugal Pumps for Chemical Process	ASME	ASME B73.3-2015
	Specification for Thermoplastic and Thermoset Polymer Material Horizontal End Suction Centrifugal Pumps for Chemical Process	ASME	ASME B73.5M-1995 (R2007)
	Liquid Pumps	CSA	CAN/CSA C22.2 No. 108-14
	Performance Standard for Liquid Ring Vacuum Pumps, 5th ed. (2017)	HEI	HEI 119
	Rotodynamic (Centrifugal) Pumps for Nomenclature and Definitions	HI	ANSI/HI 1.1-1.2-2014
	Rotodynamic (Centrifugal) Pumps for Design and Application	HI	ANSI/HI 1.3-2013
	Rotodynamic (Centrifugal) Pumps for Manuals Describing Installation, Operation and Maintenance	HI	ANSI/HI 1.4-2014
	Rotodynamic (Vertical) Nomenclature	HI	ANSI/HI 2.1-2.2-2014
	Rotodynamic (Vertical) Application	HI	ANSI/HI 2.3-2013
	Rotodynamic (Vertical) Operations	HI	ANSI/HI 2.4-2014
	Rotary Pumps for Nomenclature, Definitions, Application, and Operation	HI	ANSI/HI 3.1-3.5-2015
	Sealless, Magnetically Driven Rotary Pumps for Nomenclature, Definitions, Application, Operation, and Test	HI	ANSI/HI 4.1-4.6-2017
	Sealless Rotodynamic Pumps for Nomenclature, Definitions, Application, Operation, and Test	HI	ANSI/HI 5.1-5.6-2016
	Reciprocating Pumps for Nomenclature, Definitions, Application, and Operation	HI	ANSI/HI 6.1-6.5-2015
	Direct Acting (Steam) Pumps for Nomenclature, Definitions, Application, and Operation	HI	ANSI/HI 8.1-8.5-2015
	Pumps—General Guidelines for Types, Definitions, Application, Sound Measurement and Decontamination	HI	ANSI/HI 9.1-9.5-2015

	Rotodynamic Pumps for Assessment of Allowable Nozzle Loads	HI	ANSI/HI 9.6.2-2015
	Centrifugal and Vertical Pumps for Allowable Operating Region	HI	ANSI/HI 9.6.3-2017
	Rotodynamic Pumps for Vibration Measurements and Allowable Values	HI	ANSI/HI 9.6.4-2016
	Rotodynamic (Centrifugal and Vertical) Pumps Guideline for Condition Monitoring	HI	ANSI/HI 9.6.5-2016
	Intake Design for Rotodynamic Pumps	HI	ANSI/HI 9.8-2016
	Engineering Data Book, 2nd ed.	HI	HI (1990)
	Equipment for Swimming Pools, Spas, Hot Tubs and Other Recreational Water Facilities	NSF	ANSI/NSF 50-2016a
	Pumps for Oil-Burning Appliances	UL	UL 343-2008
	Motor-Operated Water Pumps	UL	ANSI/UL 778-2016
	Swimming Pool Pumps, Filters, and Chlorinators	UL	ANSI/UL 1081-2016
<b>Radiators</b>	Balancing and Testing Air and Hydronic Systems	ACCA	ACCA Manual B-2009
	Testing and Rating Standard for Baseboard Radiation, 8th ed. (2005)	HYDI	IBR
	Testing and Rating Standard for Finned Tube (Commercial) Radiation, 6th ed. (2005)	HYDI	IBR
<b>Receivers</b>	Refrigerant Liquid Receivers	AHRI	ANSI/AHRI 495-2005
	Refrigerant-Containing Components and Accessories, Nonelectrical	UL	ANSI/UL 207-2009
<b>Refrigerants</b>	Threshold Limit Values for Chemical Substances (updated annually)	ACGIH	ACGIH
	Specifications for Refrigerants	AHRI	AHRI 700-2017
	Refrigerant Recovery Equipment and Recovery/Recycling Equipment	AHRI	AHRI 740-2016
	Refrigerant Information Recommended for Product Development and Standards	ASHRAE	ASHRAE <i>Guideline</i> 6-2015
	Method of Testing Flow Capacity of Refrigerant Capillary Tubes	ASHRAE	ANSI/ASHRAE 28-1996 (RA10)
	Designation and Safety Classification of Refrigerants	ASHRAE	ANSI/ASHRAE 34-2016
	Sealed Glass Tube Method to Test the Chemical Stability of Materials for Use Within Refrigerant Systems	ASHRAE	ANSI/ASHRAE 97-2007 (RA 2017)
	Refrigeration Oil Description	ASHRAE	ANSI/ASHRAE 99-2006
	Reducing the Release of Halogenated Refrigerants from Refrigerating and Air-Conditioning Equipment and Systems	ASHRAE	ANSI/ASHRAE 147-2013
	Methods of Testing Capacity for Refrigerant Pressure Regulators	ASHRAE	ANSI/ASHRAE 158.2-2011
	Method of Test to Determine the Performance of Halocarbon Refrigerant Leak Detectors	ASHRAE	ANSI/ASHRAE 173-2012
	Test Method for Acid Number of Petroleum Products by Potentiometric Titration	ASTM	ASTM D664-17
	Test Method for Concentration Limits of Flammability of Chemical (Vapors and Gases)	ASTM	ASTM E681-09 (2015)
	Refrigerant-Containing Components for Use in Electrical Equipment	CSA	C22.2 No. 140.3-15
	Refrigerants—Designation System	ISO	ISO 817:2014
	Procedure Retrofitting CFC-12 (R-12) Mobile Air-Conditioning Systems to HFC-134a (R-134a)	SAE	SAE J1661-2011
	Recommended Service Procedure for the Containment of CFC-12 (R-12)	SAE	SAE J1989-2011
	Standard of Purity for Recycled R-134a (HFC-134a) and R-1234yf (HFO-1234yf) for Use in Mobile Air-Conditioning Systems	SAE	SAE J2099-2012



	HFC-134a (R-134a) Service Hose Fittings for Automotive Air-Conditioning Service Equipment	SAE	SAE J2197-2011
	CFC-12 (R-12) Refrigerant Recovery Equipment for Mobile Automotive Air-Conditioning Systems	SAE	SAE J2209-2011
	Recommended Service Procedure for the Containment of HFC-134a	SAE	SAE J2211-2011
	Refrigerant-Containing Components and Accessories, Nonelectrical	UL	ANSI/UL 207-2009
	Refrigerant Recovery/Recycling Equipment	UL	ANSI/UL 1963-2011
	Refrigerants	UL	ANSI/UL 2182-2006
<b>Refrigeration</b>	Quality Maintenance of Commercial Refrigeration Systems	ACCA	ANSI/ACCA 14 QMref-2015
	Safety Standard for Refrigeration Systems	ASHRAE	ANSI/ASHRAE 15-2016
	Mechanical Refrigeration Code	CSA	B52-13
	Refrigeration Equipment	CSA	CAN/CSA C22.2 No. 120-13
	Safe Design of Closed-Circuit Ammonia Refrigeration Systems	IIAR	ANSI/IIAR 2-2014
	Refrigerated Medical Equipment	UL	ANSI/UL 416-1993
<b>Refrigeration Systems</b>	Ejectors	ASME	ASME PTC 24-1976 (R1982)
	Safety Standard for Refrigeration Systems	ASHRAE	ANSI/ASHRAE 15-2016
	Designation and Safety Classification of Refrigerants	ASHRAE	ANSI/ASHRAE 34-2016
	Reducing the Release of Halogenated Refrigerants from Refrigerating and Air-Conditioning Equipment and Systems	ASHRAE	ANSI/ASHRAE 147-2013
	Testing of Refrigerating Systems	ISO	ISO 916-1968
	Standards for Steam Jet Vacuum Systems, 7th ed. (2012)	HEI	HEI 125
Transport	Mechanical Transport Refrigeration Units	AHRI	ANSI/AHRI 1110-2013
	Mechanical Refrigeration and Air-Conditioning Installations Aboard Ship	ASHRAE	ANSI/ASHRAE 26-2010
	General Requirements for Application of Vapor Cycle Refrigeration Systems for Aircraft	SAE	SAE ARP731C-2003 (R2015)
	Safety Standard for Motor Vehicle Refrigerant Vapor Compression Systems	SAE	SAE J639-2011
<b>Refrigerators</b>			
Commercial	Quality Maintenance of Commercial Refrigeration Systems	ACCA	ANSI/ACCA 14 QMref-2015
	Method of Testing Commercial Refrigerators and Freezers	ASHRAE	ANSI/ASHRAE 72-2014
	Energy Performance Standard for Commercial Refrigeration Equipment	CSA	CAN/CSA C657-15
	Energy Performance of Food Service Refrigerators and Freezers	CSA	C827-10 (R2015)
	Gas Food Service Equipment	CSA	ANSI Z83.11-2016/CSA 1.8-2016
	Food Equipment	NSF	ANSI/NSF 2-2015
	Commercial Refrigerators and Freezers	NSF	ANSI/NSF 7-2016
	Mobile Food Carts	NSF	ANSI/NSF 59-2012
	Refrigeration Unit Coolers	UL	ANSI/UL 412-2011
	Refrigerating Units	UL	ANSI/UL 427-2011
	Commercial Refrigerators and Freezers	UL	ANSI/UL 471-2010
Household	Energy and Volume Refrigerating Appliances	AHAM	ANSI/AHAM HRF-1-2016
	Refrigerators Using Gas Fuel	CSA	ANSI Z21.19-2014/CSA1.4-2014
	Energy Performance and Capacity of Household Refrigerators, Refrigerator-Freezers, Freezers, and Wine Chillers	CSA	C300-15

**Retrofitting**

Building	Home Evaluation and Performance Improvement	ACCA	ANSI/ACCA 12 QH-2018
	Technician's Guide & Workbook for Home Evaluation and Performance Improvement	ACCA	ACCA 2015
	Technician's Guide & Workbook for Duct Diagnostics and Repair	ACCA	ACCA 2016
	Bob's House	ACCA	ACCA 2008
	Good HVAC Practices for Residential and Commercial Buildings	ACCA	ACCA 2003
	Building Systems Analysis and Retrofit Manual, 2nd ed.	SMACNA	SMACNA 2011
Refrigerant	Procedure for Retrofitting CFC-12 (R-12) Mobile Air Conditioning Systems to HFC-134a (R-134a)	SAE	SAE J1661-2011

**Roof Ventilators**

Commercial Low Pressure, Low Velocity Duct System Design	ACCA	ACCA Manual Q-1990
Power Ventilators	UL	ANSI/UL 705-2017

**Safety**

Guideline for Risk Management of Public Health and Safety in Buildings	ASHRAE	ASHRAE <i>Guideline</i> 29-2009
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**Seismic Restraint**

Method of Test of Seismic Restraint Devices for HVAC&R Equipment	ASHRAE	ANSI/ASHRAE 171-2017
Seismic Restraint Manual—Guidelines for Mechanical Systems, 3rd ed.	SMACNA	ANSI/SMACNA 001-2008

**Smoke Control Systems**

The Commissioning Process for Smoke Management Systems	ASHRAE	ASHRAE <i>Guideline</i> 1.5-2012
Laboratory Methods of Testing Fans Used to Exhaust Smoke in Smoke Management Systems	ASHRAE	ANSI/ASHRAE 149-2013
Smoke-Control Systems Utilizing Barriers and Pressure Differences	NFPA	NFPA 92A-2009
Smoke Management Systems in Malls, Atria, and Large Spaces	NFPA	NFPA 92B-2009
Ceiling Dampers	UL	ANSI/UL 555C-2014
Smoke Dampers	UL	ANSI/UL 555S-2014

**Solar Equipment**

Thermal Performance Testing of Solar Ambient Air Heaters	ASABE	ANSI/ASAE S423-1991 (R2012)
Testing and Reporting Solar Cooker Performance	ASABE	ASAE S580.1-2013
Method of Measuring Solar-Optical Properties of Materials	ASHRAE	ASHRAE 74-1988
Methods of Testing to Determine the Thermal Performance of Solar Collectors	ASHRAE	ANSI/ASHRAE 93-2010 (RA14)
Methods of Testing to Determine the Thermal Performance of Solar Domestic Water Heating Systems	ASHRAE	ANSI/ASHRAE 95-1981 (RA87)
Methods of Testing to Determine the Thermal Performance of Unglazed Flat-Plate Liquid-Type Solar Collectors	ASHRAE	ANSI/ASHRAE 96-1980 (RA89)
Practice for Installation and Service of Solar Space Heating Systems for One and Two Family Dwellings	ASTM	ASTM E683-91 (2013)
Practice for Evaluating Thermal Insulation Materials for Use in Solar Collectors	ASTM	ASTM E861-13
Practice for Installation and Service of Solar Domestic Water Heating Systems for One and Two Family Dwellings	ASTM	ASTM E1056-13
Reference Solar Spectral Irradiance at the Ground at Different Receiving Conditions—Part 1: Direct Normal and Hemispherical Solar Irradiance for Air Mass 1.5	ISO	ISO 9845-1:1992
Solar Collectors	CSA	CAN/CSA F378 Series-11 (R2016)
Packaged Solar Domestic Hot Water Systems (Liquid to Liquid Heat Transfer)	CSA	CAN/CSA F379 Series-09 (R2013)

	Installation Code for Solar Domestic Hot Water Systems	CSA	CAN/CSA F383-08 (R2013)
	Solar Heating—Domestic Water Heating Systems—Part 2: Outdoor Test Methods for System Performance Characterization and Yearly Performance Prediction of Solar-Only Systems	ISO	ISO 9459-2:1995
	Solar Energy—Solar Thermal Collectors—Test Methods	ISO	ISO 9806:2017
	Solar Water Heaters—Elastomeric Materials for Absorbers, Connecting Pipes and Fittings—Method of Assessment	ISO	ISO 9808:1990
	Solar Energy—Calibration of a Pyranometer Using a Pyrhelimeter	ISO	ISO 9846:1993
<b>Solenoid Valves</b>	Solenoid Valves for Use with Volatile Refrigerants	AHRI	ANSI/AHRI 760-2014
	Methods of Testing Capacity of Refrigerant Solenoid Valves	ASHRAE	ANSI/ASHRAE 158.1-2012
	Electrically Operated Valves	UL	UL 429-2013
<b>Sound Measurement</b>	Threshold Limit Values for Physical Agents (updated annually)	ACGIH	ACGIH
	Electroacoustics—Sound Level Meters—Part 3: Periodic Tests	ASA	ANSI/ASA S1.4 Part 3-2014
	Specification for Octave-Band and Fractional-Octave-Band Analog and Digital Filters	ASA	ANSI S1.11-2014
	Microphones, Part 1: Specifications for Laboratory Standard Microphones	ASA	ANSI S1.15-1997/Part 1 (R2016)
	Part 2: Primary Method for Pressure Calibration of Laboratory Standard Microphones by the Reciprocity Technique	ASA	ANSI S1.15-2005/Part 2 (R2015)
	Specification for Acoustical Calibrators	ASA	ANSI S1.40-2006 (R2016)
	Measurement of Industrial Sound	ASME	ASME PTC 36-2004 (RA13)
	Test Method for Measuring Acoustical and Airflow Performance of Duct Liner Materials and Prefabricated Silencers	ASTM	ASTM E477-13
	Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods	ASTM	ASTM E2235-04 (2012)
	Procedural Standards for the Measurement of Sound and Vibration, 2nd ed. (2006)	NEBB	NEBB
	HVAC Systems Sound and Vibration Procedural Guide, 1st ed.	SMACNA	SMACNA 2013
Fans	Reverberant Room Method for Sound Testing of Fans	AMCA	AMCA 300-14
	Methods for Calculating Fan Sound Ratings from Laboratory Test Data	AMCA	AMCA 301-14
	Application of Sone Ratings for Non-Ducted Air Moving Devices	AMCA	AMCA 302-73 (R2008)
	Application of Sound Power Level Ratings for Fans	AMCA	AMCA 303-79 (R2008)
	Acoustics—Measurement of Airborne Noise Emitted and Structure-Borne Vibration Induced by Small Air-Moving Devices—Part 1: Airborne Noise Measurement	ASA	ANSI/ASA S12.11-1-2013/ISO 10302-1:2013
	Part 2: Structure-Borne Vibration	ASA	ANSI/ASA S12.11-2-2013/ISO 10302-2:2013
Other Equipment	Sound Rating of Outdoor Unitary Equipment	AHRI	AHRI 270-2015
	Application of Sound Rating Levels of Outdoor Unitary Equipment	AHRI	ANSI/AHRI 275-2010
	Sound Rating and Sound Transmission Loss of Packaged Terminal Equipment	AHRI	ANSI/AHRI 300-2015
	Sound Rating of Non-Ducted Indoor Air-Conditioning Equipment	AHRI	ANSI/AHRI 350-2015
	Sound Rating of Large Air-Cooled Outdoor Refrigerating and Air-Conditioning Equipment	AHRI	ANSI/AHRI 370-2015

Techniques	Method of Rating Sound and Vibration of Refrigerant Compressors	AHRI	ANSI/AHRI 530-2011
	Method of Measuring Machinery Sound Within an Equipment Space	AHRI	ANSI/AHRI 575-2017
	Statistical Methods for Determining and Verifying Stated Noise Emission Values of Machinery and Equipment	ASA	ANSI S12.3-1985 (R2016)
	Sound Level Prediction for Installed Rotating Electrical Machines	NEMA	NEMA MG 3-1974 (R2014)
	Preferred Frequencies and Filter Band Frequencies for Acoustical Measurements	ASA	ANSI/ASA S1.6-2016
	Reference Values for Levels Used in Acoustics and Vibrations	ASA	ANSI/ASA S1.8-2016
	Measurement of Sound Pressure Levels in Air	ASA	ANSI/ASA S1.13-2005 (R2010)
	Procedure for the Computation of Loudness of Steady Sound	ASA	ANSI/ASA S3.4-2007 (R2017)
	Criteria for Evaluating Room Noise	ASA	ANSI/ASA S12.2-2008
	Methods for Determining the Insertion Loss of Outdoor Noise Barriers	ASA	ANSI/ASA S12.8-1998 (R2013)
	Engineering Method for the Determination of Sound Power Levels of Noise Sources Using Sound Intensity	ASA	ANSI/ASA S12.12-1992 (R2017)
	Procedures for Outdoor Measurement of Sound Pressure Level	ASA	ANSI/ASA S12.18-1994 (R2009)
	Methods for Measurement of Sound Emitted by Machinery and Equipment at Workstations and Other Specified Positions	ASA	ANSI/ASA S12.43-1997 (R2017)
	Methods for Calculation of Sound Emitted by Machinery and Equipment at Workstations and Other Specified Positions from Sound Power Level	ASA	ANSI/ASA S12.44-1997 (R2017)
	Acoustics—Determination of Sound Power Levels and Sound Energy Levels of Noise Sources Using Sound Pressure—Precision Method for Reverberation Test Rooms	ASA	ANSI/ASA S12.51-2012/ISO 3741:2012 (R2017)
	Acoustics—Determination of Sound Power Levels of Noise Sources Using Sound Pressure—Engineering Methods for Small, Movable Sources in Reverberant Fields—Part 1: Comparison Method for Hard-Walled Test Rooms	ASA	ANSI/ASA S12.53/Part 1-2011/ISO 3743-1:2011 (R2016)
	Part 2: Methods for Special Reverberation Test Rooms	ASA	ANSI/ASA S12.53/Part 2-1999 (R2015)/ISO 3743-2:1999 (R2015)
	Acoustics—Determination of Sound Power Levels and Sound Energy Levels of Noise Sources Using Sound Pressure—Engineering Methods for an Essentially Free Field over a Reflecting Plane	ASA	ANSI/ASA S12.54-2011/ISO 3744:2011 (R2016)
	Acoustics—Determination of Sound Power Levels and Sound Energy Levels of Noise Sources Using Sound Pressure—Survey Method Using an Enveloping Measurement Surface over a Reflecting Plane	ASA	ANSI/ASA S12.56-2011/ISO 3746:2011 (R2016)
	Test Method for Impedance and Absorption of Acoustical Materials by the Impedance Tube Method	ASTM	ASTM C384-04 (2016)
	Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method	ASTM	ASTM C423-17
	Test Method for Measurement of Airborne Sound Attenuation Between Rooms in Buildings	ASTM	ASTM E336-17a
	Test Method for Impedance and Absorption of Acoustical Materials Using a Tube, Two Microphones and a Digital Frequency Analysis System	ASTM	ASTM E1050-12

	Test Method for Measurement and Reporting of Masking Sound Levels Using A-Weighted and One-Third-Octave-Band Sound Pressure Levels	ASTM	ASTM E1573-18
	Test Method for Measurement of Sound in Residential Spaces	ASTM	ASTM E1574-98 (2014)
	Acoustics—Methods for Calculating Loudness—Part 1: Zwicker method	ISO	ISO 532:2017
	Part 2: Moore-Glasberg method		ISO 532-2:2017
	Acoustics—Determination of Sound Power Levels of Noise Sources Using Sound Intensity; Part 1: Measurement at Discrete Points	ISO	ISO 9614-1:1993
	Part 2: Measurement by Scanning	ISO	ISO 9614-2:1996
	Procedural Standards for the Measurement of Sound and Vibration, 2nd ed. (2006)	NEBB	NEBB
Terminology	Acoustical Terminology	ASA	ANSI S1.1-2013
	Terminology Relating to Building and Environmental Acoustics	ASTM	ASTM C634-13
<b>Space Heaters</b>	Methods of Testing for Rating Combination Space-Heating and Water-Heating Appliances	ASHRAE	ANSI/ASHRAE 124-2007
	Gas-Fired Room Heaters, Vol. II, Unvented Room Heaters	CSA	ANSI Z21.11.2-2016
	Vented Gas-Fired Space Heating Appliances	CSA	ANSI Z21.86-2016/CSA 2.32-2016
	Movable and Wall- or Ceiling-Hung Electric Room Heaters	UL	UL 1278-2014
	Fixed and Location-Dedicated Electric Room Heaters	UL	UL 2021-2015
<b>Sustainability</b>	Sustainable, High Performance Operations and Maintenance	ASHRAE	ASHRAE <i>Guideline</i> 32-2012
	Standard for the Design of High-Performance, Green Buildings Except Low-Rise Residential Buildings	ASHRAE/USGBC	ANSI/ASHRAE/USGBC/IES 189.1-2014
<b>Symbols</b>	International Green Construction Code™ (2015)	ICC	IGCC
	Graphic Symbols for Heating, Ventilating, Air-Conditioning, and Refrigerating Systems	ASHRAE	ANSI/ASHRAE 134-2005 (RA14)
	Graphical Symbols for Plumbing Fixtures for Diagrams Used in Architecture and Building Construction	ASME	ANSI/ASME Y32.4-1977 (RA04)
	Symbols for Mechanical and Acoustical Elements as Used in Schematic Diagrams	ASME	ANSI/ASME Y32.18-1972 (RA13)
	Practice for Mechanical Symbols, Shipboard Heating, Ventilation, and Air Conditioning (HVAC)	ASTM	ASTM F856-97 (2014)
	Standard Symbols for Welding, Brazing, and Nondestructive Examination	AWS	AWS A2.4:2012
	Graphic Symbols for Electrical and Electronics Diagrams	IEEE	ANSI/CSA/IEEE 315-1975 (R1993)
	Standard for Logic Circuit Diagrams	IEEE	IEEE 991-1986 (R1994)
	American National Standard for Metric Practice	IEEE/ASTM	IEEE/ASTM SI 10-2016
	Abbreviations and Acronyms for Use on Drawings and Related Documents	ASME	ASME Y14.38-2007 (R2013)
	Engineering Drawing Practices	ASME	ASME Y14.100-2017
	American National Standard for Safety Colors	NEMA	ANSI/NEMA Z535.1-2006 (R2011)
<b>Terminals, Wiring</b>	Electrical Quick-Connect Terminals	UL	ANSI/UL 310-2014
	Wire Connectors	UL	ANSI/UL 486A-486B-2013
	Splicing Wire Connectors	UL	ANSI/UL 486C-2018
	Equipment Wiring Terminals for Use with Aluminum and/or Copper Conductors	UL	ANSI/UL 486E-2015
<b>Testing and Balancing</b>	AABC National Standards for Total System Balance (2002)	AABC	AABC

	Balancing and Testing Air and Hydronic Systems	ACCA	ACCA Manual B-2009
	Industrial Process/Power Generation Fans: Site Performance Test Standard	AMCA	AMCA 803-02 (R2008)
	Guidelines for Measuring and Reporting Environmental Parameters for Plant Experiments in Growth Chambers	ASABE	ANSI/ASAE EP411.5-2012
	HVAC&R Technical Requirements for the Commissioning Process	ASHRAE	ASHRAE <i>Guideline</i> 1.1-2007
	Measurement, Testing, Adjusting, and Balancing of Building HVAC Systems	ASHRAE	ANSI/ASHRAE 111-2008 (RA 2017)
	Rotary Pump Tests	HI	ANSI/HI 3.6-2016
	Air-Operated Pump Tests	HI	ANSI/HI 10.6-2016
	Pumps—General Guidelines for Types, Definitions, Application, Sound Measurement and Decontamination	HI	HI 9.1-9.5-2015
	Rotodynamic Submersible Pumps: for Hydraulic Performance, Hydrostatic Pressure, Mechanical and Electrical Acceptance Tests	HI	ANSI/HI 11.6-2017
	Procedural Standards for Certified Testing of Cleanrooms, 3rd ed. (2009)	NEBB	NEBB
	Procedural Standards for TAB Environmental Systems, 8th ed. (2015)	NEBB	NEBB
	HVAC Systems Testing, Adjusting and Balancing, 3rd ed.	SMACNA	SMACNA 2002
<b>Thermal Storage</b>	Thermal Energy Storage: A Guide for Commercial HVAC Contractors	ACCA	ACCA 2005
	Method of Testing Thermal Storage Devices with Electrical Input and Thermal Output Based on Thermal Performance	ASHRAE	ANSI/ASHRAE 94.2-2010
	Measurement, Testing, Adjusting, and Balancing of Building HVAC Systems	ASHRAE	ANSI/ASHRAE 111-2008 (R2017)
	Method of Testing the Performance of Cool Storage Systems	ASHRAE	ANSI/ASHRAE 150-2000 (R2014)
<b>Transformers</b>	Minimum Efficiency Values for Liquid-Filled Distribution Transformers	CSA	CAN/CSA C802.1-13
	Minimum Efficiency Values for Dry-Type Transformers	CSA	CAN/CSA C802.2-12 (R2017)
	Minimum Efficiency Values for Power Transformers	CSA	CAN/CSA C802.3-15
	Guide for Determining Energy Efficiency of Distribution Transformers	NEMA	NEMA TP-1-2002
<b>Turbines</b>	Steam Turbines	ASME	ASME PTC 6-2004 (R2014)
	Steam Turbines in Combined Cycle	ASME	ASME PTC 6.2-2011 (R2016)
	Hydraulic Turbines and Pump-Turbines	ASME	ASME PTC 18-2011
	Gas Turbines	ASME	ASME PTC 22-2014
	Wind Turbines	ASME	ASME PTC 42-1988 (R2004)
	Specification for Stainless Steel Bars for Compressor and Turbine Airfoils	ASTM	ASTM A1028-03 (2015)
	Specification for Gas Turbine Fuel Oils	ASTM	ASTM D2880-15
	Steam Turbines for Mechanical Drive Service	NEMA	NEMA SM 23-1991 (R2002)
	Land Based Steam Turbine Generator Sets, 0 to 33,000 kW	NEMA	NEMA SM 24-1991 (R2002)
<b>Valves</b>	Face-to-Face and End-to-End Dimensions of Valves	ASME	ASME B16.10-2017
	Valves—Flanged, Threaded, and Welding End	ASME	ASME B16.34-2017
	Manually Operated Metallic Gas Valves for Use in Aboveground Piping Systems up to 5 psi	ASME	ASME B16.44-2012
	Pressure Relief Devices	ASME	ASME PTC 25-2014
	Methods of Testing Capacity of Refrigerant Solenoid Valves	ASHRAE	ANSI/ASHRAE 158.1-2012

	Relief Valves for Hot Water Supply Systems	CSA	ANSI Z21.22-2015/CSA 4.4-2015
	Control Valve Capacity Test Procedures	ISA	ANSI/ISA-S75.02.01-2008
	Metal Valves for Use in Flanged Pipe Systems— Face-to-Face and Centre-to-Face Dimensions	ISO	ISO 5752:1982
	Safety Valves for Protection Against Excessive Pressure, Part 1: Safety Valves	ISO	ISO 4126-1:2013
	Oxygen System Fill/Check Valve	SAE	SAE AS1225A-1997 (R2017)
	Flow Control Valves for Anhydrous Ammonia and LP-Gas	UL	ANSI/UL 125-2014
	Safety Relief Valves for Anhydrous Ammonia and LP-Gas	UL	ANSI/UL 132-2015
	LP-Gas Regulators	UL	ANSI/UL 144-2012
	Electrically Operated Valves	UL	UL 429-2013
	Valves for Flammable Fluids	UL	ANSI/UL 842-2015
Gas	Manually Operated Metallic Gas Valves for Use in Gas Piping Systems up to 175 psig (Sizes NPS 1/2 through 2)	ASME	ASME B16.33-2012
	Large Metallic Valves for Gas Distribution (Manually Operated, NPS-2 1/2 to 12, 125 psig Maximum)	ASME	ANSI/ASME B16.38-2012
	Manually Operated Thermoplastic Gas Shutoffs and Valves in Gas Distribution Systems	ASME	ASME B16.40-2013
	Manually Operated Gas Valves for Appliances, Appliance Connection Valves, and Hose End Valves	CSA	ANSI Z21.15-2009/CGA 9.1- 2009 (R2014)
	Automatic Valves for Gas Appliances	CSA	ANSI Z21.21-2015/CSA 6.5- 2015
	Combination Gas Controls for Gas Appliances	CSA	ANSI Z21.78-2010/CGA 6.20- 2010 (R2015)
	Gas Convenience Outlets and Optional Enclosures	CSA	ANSI Z21.90-2015/CSA 6.24- 2015
Refrigerant	Thermostatic Refrigerant Expansion Valves	AHRI	ANSI/AHRI 750-2016
	Solenoid Valves for Use with Volatile Refrigerants	AHRI	ANSI/AHRI 760-2014
	Refrigerant Pressure Regulating Valves	AHRI	ANSI/AHRI 770-2014
	Method of Testing Thermostatic Refrigerant Expansion Valves	ASHRAE	ANSI/ASHRAE 17-2008
	Methods of Testing Capacity of Refrigerant Solenoid Valves	ASHRAE	ANSI/ASHRAE 158.1-2012
<b>Vapor Retarders</b>	Practice for Selection of Water Vapor Retarders for Thermal Insulation	ASTM	ASTM C755-10 (2015)e1
	Practice for Determining the Properties of Jacketing Materials for Thermal Insulation	ASTM	ASTM C921-10 (2015)
	Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation	ASTM	ASTM C1136-17a
<b>Vending Machines</b>	Methods of Testing for Rating Vending Machines for Sealed Beverages	ASHRAE	ANSI/ASHRAE 32.1-2017
	Methods of Testing for Rating Pre-Mix and Post- Mix Beverage Dispensing Equipment	ASHRAE	ANSI/ASHRAE 32.2-2003 (RA11)
	Vending Machines	CSA	C22.2 No. 128-16
	Energy Performance of Vending Machines	CSA	CAN/CSA C804-09 (R2014)
	Vending Machines for Food and Beverages	NSF	ANSI/NSF 25-2012
	Refrigerated Vending Machines	UL	ANSI/UL 541-2016
	Vending Machines	UL	ANSI/UL 751-2016
<b>Vent Dampers</b>	Automatic Damper Devices for Use with Gas- Fired Appliances	CSA	ANSI Z21.66-2015/CSA 6.14- 2015
	Vent or Chimney Connector Dampers for Oil- Fired Appliances	UL	ANSI/UL 17-2008
<b>Ventilation</b>	Commercial Systems Overview	ACCA	ACCA Manual CS-1993
	Residential Equipment Selection	ACCA	ANSI/ACCA 3 Manual S-2014

Residential Duct Systems	ACCA	ANSI/ACCA 1 Manual D-2016
Commercial Low Pressure, Low Velocity Duct System Design	ACCA	ACCA Manual Q-1990
Comfort, Air Quality, and Efficiency by Design	ACCA	ACCA Manual RS-1997
Guide for Testing Ventilation Systems (1991)	ACGIH	ACGIH
Industrial Ventilation: A Manual of Recommended Practice, 29th ed. (2016)	ACGIH	ACGIH
Design of Ventilation Systems for Poultry and Livestock Shelters	ASABE	ASAE EP270.5-1986 (R2012)
Design Values for Emergency Ventilation and Care of Livestock and Poultry	ASABE	ANSI/ASAE EP282.2-1993 (R2013)
Heating, Ventilating and Cooling Greenhouses	ASABE	ANSI/ASAE EP406.4-2003 (R2008)
Guidelines for Selection of Energy Efficient Agricultural Ventilation Fans	ASABE	ASAE EP566.2-2012
Uniform Terminology for Livestock Production Facilities	ASABE	ASAE S501-1990 (R2011)
Agricultural Ventilation Constant Speed Fan Test Standard	ASABE	ASABE S565-2005 (R2011)
Guide for the Ventilation and Thermal Management of Batteries for Stationary Applications	ASHRAE/IEEE	ASHRAE <i>Guideline</i> 21-2012/IEEE 1635-2012
Ventilation for Acceptable Indoor Air Quality	ASHRAE	ANSI/ASHRAE 62.1-2016
Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings	ASHRAE	ANSI/ASHRAE 62.2-2016
Method of Testing for Room Air Diffusion	ASHRAE	ANSI/ASHRAE 113-2013
Measuring Air Change Effectiveness	ASHRAE	ANSI/ASHRAE 129-1997 (RA02)
Ventilation for Commercial Cooking Operations	ASHRAE	ANSI/ASHRAE 154-2016
Ventilation of Health Care Facilities	ASHRAE/ASHE	ANSI/ASHRAE/ASHE 170-2017
Residential Mechanical Ventilation Systems	CSA	CAN/CSA F326-M91 (R2014)
Parking Structures	NFPA	NFPA 88A-2015
Installation of Air-Conditioning and Ventilating Systems	NFPA	NFPA 90A-2018
Ventilation Control and Fire Protection of Commercial Cooking Operations	NFPA	NFPA 96-2017
Food Equipment	NSF	ANSI/NSF 2-2015
Biosafety Cabinetry: Design, Construction, Performance, and Field Certification	NSF	ANSI/NSF 49-2016
Aerothermodynamic Systems Engineering and Design	SAE	SAE AIR1168/3-1989 (R2011)
Heater, Airplane, Engine Exhaust Gas to Air Heat Exchanger Type	SAE	SAE ARP86-2011
Test Procedure for Battery Flame Retardant Venting Systems	SAE	SAE J1495-2013
<b>Venting</b>		
Commercial Systems Overview	ACCA	ACCA Manual CS-1993
Draft Hoods	CSA	ANSI Z21.12-1990 (R2015)
National Fuel Gas Code	AGA/NFPA	ANSI Z223.1/NFPA 54-2018
Explosion Prevention Systems	NFPA	NFPA 69-2014
Smoke and Heat Venting	NFPA	NFPA 204-2018
Chimneys, Fireplaces, Vents and Solid Fuel-Burning Appliances	NFPA	NFPA 211-2016
Guide for Free Standing Steel Stack Construction, 2nd ed.	SMACNA	SMACNA 2011
Guyed Steel Stacks	SMACNA	SMACNA 2011
Draft Equipment	UL	UL 378-2006
Gas Vents	UL	ANSI/UL 441-2016
Type L Low-Temperature Venting Systems	UL	ANSI/UL 641-2010



**Vibration**

Balance Quality and Vibration Levels for Fans	AMCA	ANSI/AMCA 204-05 (R2012)
Techniques of Machinery Vibration Measurement	ASA	ANSI/ASA S2.17-1980 (R2004)
Mechanical Vibration and Shock—Resilient Mounting Systems—Part 1: Technical Information to Be Exchanged for the Application of Isolation Systems	ISO	ISO 2017-1:2005
Evaluation of Human Exposure to Whole-Body Vibration—Part 2: Vibration in Buildings (1 Hz to 80 Hz)	ISO	ISO 2631-2:2003
Guidelines for the Evaluation of the Response of Occupants of Fixed Structures, Especially Buildings and Off-Shore Structures, to Low-Frequency Horizontal Motion (0.063 to 1 Hz)	ISO	ISO 6897:1984
Procedural Standards for the Measurement of Sound and Vibration, 2nd ed. (2006)	NEBB	NEBB
HVAC Systems Sound and Vibration Procedural Guide, 1st ed.	SMACNA	SMACNA 2013

**Water Heaters**

Desuperheater/Water Heaters	AHRI	ANSI/AHRI 470-2006
Safety for Electrically Heated Livestock Waterers	ASABE	ASAE EP342.3-2010
Methods of Testing to Determine the Thermal Performance of Solar Domestic Water Heating Systems	ASHRAE	ANSI/ASHRAE 95-1981 (RA87)
Method of Testing for Rating Commercial Gas, Electric, and Oil Service Water Heating Equipment	ASHRAE	ANSI/ASHRAE 118.1-2012
Method of Testing for Rating Residential Water Heaters	ASHRAE	ANSI/ASHRAE 118.2-2006 (RA15)
Methods of Testing for Rating Combination Space-Heating and Water-Heating Appliances	ASHRAE	ANSI/ASHRAE 124-2007
Methods of Testing for Efficiency of Space-Conditioning/Water-Heating Appliances That Include a Desuperheater Water Heater	ASHRAE	ANSI/ASHRAE 137-2013 (RA 2017)
Method of Testing Absorption Water-Chilling and Water-Heating Packages	ASHRAE	ANSI/ASHRAE 182-2008 (RA13)
Legionellosis: Risk Management for Building Water Systems	ASHRAE	ANSI/ASHRAE 188-2015
Boiler and Pressure Vessel Code—Section IV: Heating Boilers	ASME	BPVC-2017
Section VI: Recommended Rules for the Care and Operation of Heating Boilers	ASME	BPVC-2017
Gas Water Heaters—Vol. I: Storage Water Heaters with Input Ratings of 75,000 Btu per Hour or Less	CSA	ANSI Z21.10.1-2017/CSA 4.1-2017
Vol. III: Storage Water Heaters with Input Ratings Above 75,000 Btu per Hour, Circulating and Instantaneous	CSA	ANSI Z21.10.3-2017/CSA 4.3-2017
Oil Burning Stoves and Water Heaters	CSA	B140.3-1962 (R2015)
Oil-Fired Service Water Heaters and Swimming Pool Heaters	CSA	B140.12-03 (R2013)
Construction and Test of Electric Storage-Tank Water Heaters	CSA	CAN/CSA C22.2 No. 110-94 (R2014)
Performance of Electric Storage Tank Water Heaters for Domestic Hot Water Service	CSA	CSA C191-13
Energy Efficiency of Electric Storage Tank Water Heaters and Heat Pump Water Heaters	CSA	CSA C745-03 (R2014)
Water Heaters, Hot Water Supply Boilers, and Heat Recovery Equipment	NSF	ANSI/NSF 5-2016
Household Electric Storage Tank Water Heaters	UL	ANSI/UL 174-2004
Oil-Fired Storage Tank Water Heaters	UL	ANSI/UL 732-2018
Commercial-Industrial Gas Heating Equipment	UL	UL 795-2016
Electric Booster and Commercial Storage Tank Water Heaters	UL	ANSI/UL 1453-2016

**Welding and  
Brazing**

Boiler and Pressure Vessel Code—Section IX: Welding and Brazing Qualifications	ASME	BPVC-2017
Structural Welding Code—Steel	AWS	AWS D1.1M/D1.1:2015
Specification for Welding of Austenitic Stainless Steel Tube and Piping Systems in Sanitary Applications	AWS	AWS D18.1:2009

**Wood-Burning  
Appliances**

Threshold Limit Values for Chemical Substances (updated annually)	ACGIH	ACGIH
Specification for Room Heaters, Pellet Fuel Burning Type	ASTM	ASTM E1509-12 (2017)
Guide for Construction of Solid Fuel Burning Masonry Heaters	ASTM	ASTM E1602-03 (2017)
Installation Code for Solid-Fuel-Burning Appliances and Equipment	CSA	CAN/CSA B365-10 (R2015)
Solid-Fuel-Fired Central Heating Appliances	CSA	CAN/CSA B366.1-11 (R2015)
Chimneys, Fireplaces, Vents, and Solid Fuel- Burning Appliances	NFPA	ANSI/NFPA 211-2016
Commercial Cooking, Rethermalization and Powered Hot Food Holding and Transport Equipment	NSF	ANSI/NSF 4-2016

**ORGANIZATIONS**

<b>Abbrev.</b>	<b>Organization</b>	<b>Address</b>	<b>Telephone</b>	<b>URL</b>
AABC	Associated Air Balance Council	1518 K Street NW, Suite 503 Washington, D.C. 20005	(202) 737- 0202	<a href="http://aabc.com">aabc.com</a>
ABMA	American Boiler Manufacturers Association	8221 Old Courthouse Road, Suite 202 Vienna, VA 22182	(703) 356- 7172	<a href="http://abma.com">abma.com</a>
ACCA	Air Conditioning Contractors of America	2800 S. Shirlington Road, Suite 300 Arlington, VA 22206	(703) 575- 4477	<a href="http://acca.org">acca.org</a>
ACGIH	American Conference of Governmental Industrial Hygienists	1330 Kemper Meadow Drive Cincinnati, OH 45240	(513) 742- 2020	<a href="http://acgih.org">acgih.org</a>
ADC	Air Diffusion Council	1901 N. Roselle Road, Suite 800 Schaumburg, IL 60195	(847) 706- 6750	<a href="http://flexibleduct.org">flexibleduct.org</a>
AGA	American Gas Association	400 N. Capitol Street NW Washington, D.C. 20001	(202) 824- 7000	<a href="http://aga.org">aga.org</a>
AHAM	Association of Home Appliance Manufacturers	1111 19th Street NW, Suite 402 Washington, D.C. 20036	(202) 872- 5955	<a href="http://aham.org">aham.org</a>
AHRI	Air-Conditioning, Heating, and Refrigeration Institute	2111 Wilson Boulevard, Suite 500 Arlington, VA 22201	(703) 524- 8800	<a href="http://ahrinet.org">ahrinet.org</a>
AIHA	American Industrial Hygiene Association	3141 Fairview Park Dr, Suite 777 Falls Church, VA 22042	(703) 207- 3561	<a href="http://aiha.org">aiha.org</a>
AMCA	Air Movement and Control Association International	30 West University Drive Arlington Heights, IL 60004	(847) 394- 0150	<a href="http://amca.org">amca.org</a>
ANSI	American National Standards Institute	1899 L Street NW, 11th Floor Washington, D.C. 20036	(202) 293- 8020	<a href="http://ansi.org">ansi.org</a>
ASA	Acoustical Society of America	1305 Walt Whitman Road, Suite 300 Melville, NY 11747-4502	(516) 576- 2360	<a href="http://acousticalsociety.org">acousticalsociety.org</a>
ASABE	American Society of Agricultural and Biological Engineers	2950 Niles Road St. Joseph, MI 49085	(269) 429- 0300	<a href="http://asabe.org">asabe.org</a>
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers	1791 Tullie Circle, NE	(404) 636- 8400	<a href="http://ashrae.org">ashrae.org</a>

		Atlanta, GA 30329		
ASME	American Society of Mechanical Engineers	Two Park Avenue New York, NY 10016-5990	(973) 882-1170	<a href="https://www.asme.org">asme.org</a>
ASTM	ASTM International	100 Barr Harbor Drive West Conshohocken, PA 19428-2959	(610) 832-9585	<a href="https://www.astm.org">astm.org</a>
AWS	American Welding Society	8669 NW 36 Street, #130 Miami, FL 33166	(305) 443-9353	<a href="https://www.aws.org">aws.org</a>
AWWA	American Water Works Association	6666 W. Quincy Avenue Denver, CO 80235	(303) 794-7711	<a href="https://www.awwa.org">awwa.org</a>
BOCA	Building Officials and Code Administrators International	(see ICC)		
BSI	British Standards Institution	389 Chiswick High Road London W4 4AL, UK	44 020 8996 9000	<a href="https://www.bsigroup.com">bsigroup.com</a>
CAGI	Compressed Air and Gas Institute	1300 Sumner Avenue Cleveland, OH 44115	(216) 241-7333	<a href="https://www.cagi.org">cagi.org</a>
CSA	Canadian Standards Association International	178 Rexdale Boulevard Toronto, ON M9W 1R3, Canada	(416) 747-4000	<a href="https://www.csagroup.org">csagroup.org</a>
CTI	Cooling Technology Institute	P.O. Box 681807 Houston, TX 77268	(281) 583-4087	<a href="https://www.cti.org">cti.org</a>
EJMA	Expansion Joint Manufacturers Association	25 North Broadway Tarrytown, NY 10591	(914) 332-0040	<a href="https://www.ejma.org">ejma.org</a>
HEI	Heat Exchange Institute	1300 Sumner Avenue Cleveland, OH 44115	(216) 241-7333	<a href="https://www.heatexchange.org">heatexchange.org</a>
HI	Hydraulic Institute	6 Campus Drive, First Floor North Parsippany, NJ 07054-4406	(973) 267-9700	<a href="https://www.pumps.org">pumps.org</a>
HYDI	Hydronics Institute Division of AHRI	(see AHRI)		
IAPMO	International Association of Plumbing and Mechanical Officials	4755 E. Philadelphia Street Ontario, CA 91761	(909) 472-4100	<a href="https://www.iapmo.org">iapmo.org</a>
ICBO	International Conference of Building Officials	(see ICC)		
ICC	International Code Council	500 New Jersey Ave NW, 6th Floor Washington, D.C. 20001	(888) 422-7233	<a href="https://www.iccsafe.org">iccsafe.org</a>
IEEE	Institute of Electrical and Electronics Engineers	3 Park Avenue, 17th Floor New York, NY 10016-5997	(732) 981-0060	<a href="https://www.ieee.org">ieee.org</a>
IES	Illuminating Engineering Society	120 Wall Street, Floor 17 New York, NY 10005-4001	(212) 248-5000	<a href="https://www.ies.org">ies.org</a>
IFCI	International Fire Code Institute	(see ICC)		
IIAR	International Institute of Ammonia Refrigeration	1001 N. Fairfax St, Suite 503 Alexandria, VA 22314	(703) 312-4200	<a href="https://www.iiar.org">iiar.org</a>
ISA	International Society of Automation	67 T.W. Alexander Drive, P.O. Box 12277 Research Triangle Park, NC 27709	(919) 549-8411	<a href="https://www.isa.org">isa.org</a>
ISO	International Organization for Standardization	Chemin de Blandonnet 8, CP 401 1214 Vernier, Geneva, Switzerland	41 22 749 01 11	<a href="https://www.iso.org">iso.org</a>
MCAA	Mechanical Contractors Association of America	1385 Piccard Drive Rockville, MD 20850	(301) 869-5800	<a href="https://www.mcaa.org">mcaa.org</a>
MICA	Midwest Insulation Contractors Association	16712 Elm Circle Omaha, NE 68130	(402) 342-3463	<a href="https://www.micainsulation.org">micainsulation.org</a>
MSS	Manufacturers Standardization Society of the Valve and Fittings Industry	127 Park Street NE Vienna, VA 22180-4602	(703) 281-6613	<a href="https://www.mss-hq.com">mss-hq.com</a>
NAIMA	North American Insulation Manufacturers Association	11 Canal Center Plaza, Suite 103 Alexandria, VA 22314	(703) 684-0084	<a href="https://www.insulationinstitute.org">insulationinstitute.org</a>

NCPWB	National Certified Pipe Welding Bureau	1385 Piccard Drive Rockville, MD 20850	(301) 869-5800	<a href="https://mcaa.org/ncpwb">mcaa.org/ncpwb</a>
NEBB	National Environmental Balancing Bureau	8575 Grovemont Circle Gaithersburg, MD 20877	(301) 977-3698	<a href="https://nebb.org">nebb.org</a>
NEMA	Association of Electrical and Medical Imaging Equipment Manufacturers	1300 North 17th Street, Suite 900 Arlington, VA 22209	(703) 841-3200	<a href="https://nema.org">nema.org</a>
NFPA	National Fire Protection Association	1 Batterymarch Park Quincy, MA 02169-7471	(617) 770-3000	<a href="https://nfpa.org">nfpa.org</a>
NRC	National Research Council of Canada, Institute for Research in Construction	1200 Montreal Road, Bldg M-58 Ottawa, ON K1A 0R6, Canada	(613) 993-9101	<a href="https://nrc-cnrc.ca">nrc-cnrc.ca</a>
NSF	NSF International	P.O. Box 130140, 789 N. Dixboro Road Ann Arbor, MI 48105	(734) 769-8010	<a href="https://nsf.org">nsf.org</a>
PHCC	Plumbing-Heating-Cooling Contractors Association	180 S. Washington Street, Suite 100 Falls Church, VA 22046	(703) 237-8100	<a href="https://phccweb.org">phccweb.org</a>
SAE	SAE International	400 Commonwealth Drive Warrendale, PA 15096	(724) 776-4841	<a href="https://sae.org">sae.org</a>
SBCCI	Southern Building Code Congress International	(see ICC)		
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association	4201 Lafayette Center Drive Chantilly, VA 20151-1219	(703) 803-2980	<a href="https://smacna.org">smacna.org</a>
TEMA	Tubular Exchanger Manufacturers Association	25 North Broadway Tarrytown, NY 10591	(914) 332-0040	<a href="https://tema.org">tema.org</a>
UL	Underwriters Laboratories	333 Pfingsten Road Northbrook, IL 60062-2096	(847) 272-8800	<a href="https://ul.com">ul.com</a>
USGBC	U.S. Green Building Council	2101 L Street NW, Suite 500 Washington, D.C. 20037	(202) 742-3792	<a href="https://usgbc.org">usgbc.org</a>