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CODE®**



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PREFACE

Introduction

Internationally, code officials recognize the need for a modern, up-to-date fuel gas code addressing the design and installation of fuel gas systems and gas-fired appliances through requirements emphasizing performance. The *International Fuel Gas Code*[®], in this 2006 edition, is designed to meet these needs through model code regulations that safeguard the public health and safety in all communities, large and small.

This comprehensive fuel gas code establishes minimum regulations for fuel gas systems and gas-fired appliances using prescriptive and performance-related provisions. It is founded on broad-based principles that make possible the use of new materials and new fuel gas system and appliance designs. This 2006 edition is fully compatible with all the *International Codes*[®] (I-Codes[®]) published by the International Code Council (ICC)[®], including the *International Building Code*[®], *ICC Electrical Code*[®], *International Energy Conservation Code*[®], *International Existing Building Code*[®], *International Fire Code*[®], *International Mechanical Code*[®], *ICC Performance Code*[®], *International Plumbing Code*[®], *International Private Sewage Disposal Code*[®], *International Property Maintenance Code*[®], *International Residential Code*[®], *International Wildland-Urban Interface Code*[™] and *International Zoning Code*[®].

The *International Fuel Gas Code* provisions provide many benefits, among which is the model code development process that offers an international forum for fuel gas technology professionals to discuss performance and prescriptive code requirements. This forum provides an excellent arena to debate proposed revisions. This model code also encourages international consistency in the application of provisions.

Development

The first edition of the *International Fuel Gas Code* (1997) was the culmination of an effort initiated in 1996 by a development committee appointed by ICC and consisting of representatives of the three statutory members of the International Code Council at that time, including: Building Officials and Code Administrators International, Inc. (BOCA), International Conference of Building Officials (ICBO) and Southern Building Code Congress International (SBCCI) and the gas industry. The intent was to draft a comprehensive set of regulations for fuel gas systems and gas-fired appliances consistent with and inclusive of the scope of the existing mechanical, plumbing and gas codes. Technical content of the latest model codes promulgated by BOCA, ICBO, SBCCI and ICC and the *National Fuel Gas Code* (ANSI Z223.1) was utilized as the basis for the development. This 2006 edition presents the code as originally issued, with changes reflected in subsequent editions through 2003, and with code changes approved through the ICC Code Development Process through 2005 and standard revisions correlated with ANSI Z223.1-2006. A new edition such as this is promulgated every three years.

This code is founded on principles intended to establish provisions consistent with the scope of a fuel gas code that adequately protects public health, safety and welfare; provisions that do not unnecessarily increase construction costs; provisions that do not restrict the use of new materials, products or methods of construction; and provisions that do not give preferential treatment to particular types or classes of materials, products or methods of construction.

Format

The *International Fuel Gas Code* is segregated by section numbers into two categories — “code” and “standard” — all coordinated and incorporated into a single document. The sections that are “code” are designated by the acronym “IFGC” next to the main section number (e.g., Section 101). The sections that are “standard” are designated by the acronym “IFGS” next to the main section number (e.g., Section 304).

Adoption

The *International Fuel Gas Code* is available for adoption and use by jurisdictions internationally. Its use within a governmental jurisdiction is intended to be accomplished through adoption by reference in accordance with proceedings establishing the jurisdiction’s laws. At the time of adoption, jurisdictions should insert the appropriate information in provisions requiring specific local information, such as the name of the adopting jurisdiction. These locations are shown in bracketed words in small capital letters in the code and in the sample ordinance. The sample adoption ordinance on page v addresses several key elements of a code adoption ordinance, including the information required for insertion into the code text.

Maintenance

The *International Fuel Gas Code* is kept up to date through the review of proposed changes submitted by code enforcing officials, industry representatives, design professionals and other interested parties. Proposed changes are carefully considered through an

open code development process in which all interested and affected parties may participate. The code development process of the *International Fuel Gas Code* is slightly different than the process for the other *International Codes*.

Proposed changes to text designated “IFGC” are subject to the ICC Code Development Process. For more information regarding the code development process, contact the Code and Standard Development Department of the International Code Council.

Proposed changes to text designated as “IFGS” are subject to the standards development process which maintains the *National Fuel Gas Code* (ANSI Z223.1). For more information regarding the standard development process, contact the American Gas Association (AGA) at 400 N. Capitol Street, N.W., Washington, DC 20001.

While the development procedure of the *International Fuel Gas Code* assures the highest degree of care, the ICC, its members, the AGA and those participating in the development of this code do not accept any liability resulting from compliance or noncompliance with the provisions because the ICC, its founding members and the AGA do not have the power or authority to police or enforce compliance with the contents of this code. Only the governmental body that enacts the code into law has such authority.

Letter Designations in Front of Section Numbers

In each code development cycle, proposed changes to the code are considered at the Code Development Hearings by the ICC Fuel Gas Code Development Committee, whose action constitutes a recommendation to the voting membership for final action on the proposed change. Proposed changes to a code section that has a number beginning with a letter in brackets are considered by a different code development committee. For example, proposed changes to code sections that have [B] in front of them (e.g., [B]302.1) are considered by the International Building Code Development Committee at the code development hearings.

The content of sections in this code that begin with a letter designation are maintained by another code development committee in accordance with the following:

[B] = International Building Code Development Committee;

[M] = International Mechanical Code Development Committee; and

[F] = International Fire Code Development Committee.

Marginal Markings

Solid vertical lines in the margins within the body of the code indicate a technical change from the requirements of the 2003 edition. Deletion indicators in the form of an arrow (➡) are provided in the margin where an entire section, paragraph, exception or table has been deleted or item in a list of items or in a table has been deleted.

ORDINANCE

The *International Codes* are designed and promulgated to be adopted by reference by ordinance. Jurisdictions wishing to adopt the 2006 *International Fuel Gas Code* as an enforceable regulation governing fuel gas systems and gas-fired appliances should ensure that certain factual information is included in the adopting ordinance at the time adoption is being considered by the appropriate governmental body. The following sample adoption ordinance addresses several key elements of a code adoption ordinance, including the information required for insertion into the code text.

SAMPLE ORDINANCE FOR ADOPTION OF THE *INTERNATIONAL FUEL GAS CODE* ORDINANCE NO. _____

An ordinance of the [JURISDICTION] adopting the 2006 edition of the *International Fuel Gas Code*, regulating and governing fuel gas systems and gas-fired appliances in the [JURISDICTION]; providing for the issuance of permits and collection of fees therefor; repealing Ordinance No. _____ of the [JURISDICTION] and all other ordinances and parts of the ordinances in conflict therewith.

The [GOVERNING BODY] of the [JURISDICTION] does ordain as follows:

Section 1. That a certain document, three (3) copies of which are on file in the office of the [TITLE OF JURISDICTION'S KEEPER OF RECORDS] of [NAME OF JURISDICTION], being marked and designated as the *International Fuel Gas Code*, 2006 edition, including Appendix Chapters [FILL IN THE APPENDIX CHAPTERS BEING ADOPTED] (see *International Fuel Gas Code* Section 101.3, 2006 edition), as published by the International Code Council, be and is hereby adopted as the Fuel Gas Code of the [JURISDICTION], in the State of [STATE NAME] for regulating and governing fuel gas systems and gas-fired appliances as herein provided; providing for the issuance of permits and collection of fees therefor; and each and all of the regulations, provisions, penalties, conditions and terms of said Fuel Gas Code on file in the office of the [JURISDICTION] are hereby referred to, adopted, and made a part hereof, as if fully set out in this ordinance, with the additions, insertions, deletions and changes, if any, prescribed in Section 2 of this ordinance.

Section 2. The following sections are hereby revised:

Section 101.1. Insert: [NAME OF JURISDICTION]

Section 106.5.2. Insert: [APPROPRIATE SCHEDULE]

Section 106.5.3. Insert: [PERCENTAGES IN TWO LOCATIONS]

Section 108.4. Insert: [SPECIFY OFFENSE] [AMOUNT] [NUMBER OF DAYS]

Section 108.5. Insert: [AMOUNTS IN TWO LOCATIONS]

Section 3. That Ordinance No. _____ of [JURISDICTION] entitled [FILL IN HERE THE COMPLETE TITLE OF THE ORDINANCE OR ORDINANCES IN EFFECT AT THE PRESENT TIME SO THAT THEY WILL BE REPEALED BY DEFINITE MENTION] and all other ordinances or parts of ordinances in conflict herewith are hereby repealed.

Section 4. That if any section, subsection, sentence, clause or phrase of this ordinance is, for any reason, held to be unconstitutional, such decision shall not affect the validity of the remaining portions of this ordinance. The [GOVERNING BODY] hereby declares that it would have passed this ordinance, and each section, subsection, clause or phrase thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses and phrases be declared unconstitutional.

Section 5. That nothing in this ordinance or in the Fuel Gas Code hereby adopted shall be construed to affect any suit or proceeding impending in any court, or any rights acquired, or liability incurred, or any cause or causes of action acquired or existing, under any act or ordinance hereby repealed as cited in Section 3 of this ordinance; nor shall any just or legal right or remedy of any character be lost, impaired or affected by this ordinance.

Section 6. That the [JURISDICTION'S KEEPER OF RECORDS] is hereby ordered and directed to cause this ordinance to be published. (An additional provision may be required to direct the number of times the ordinance is to be published and to specify that it is to be in a newspaper in general circulation. Posting may also be required.)

Section 7. That this ordinance and the rules, regulations, provisions, requirements, orders and matters established and adopted hereby shall take effect and be in full force and effect [TIME PERIOD] from and after the date of its final passage and adoption.

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REFERENCED STANDARDS

This chapter lists the standards that are referenced in various sections of this document. The standards are listed herein by the promulgating agency of the standard, the standard identification, the effective date and title, and the section or sections of this document that reference the standard. The application of the referenced standards shall be as specified in Section 102.8.

ANSI	American National Standards Institute 25 West 43rd Street Fourth Floor New York, NY 10036
-------------	--

Standard reference number	Title	Referenced in code section number
ANSI A13.1-96	Scheme for the Identification of piping systems	704.1.2.2
ANSI CSA-America FC 1-03	Stationery Fuel Cell Power Systems . . . . .	.633.1
LC 1—97	Interior Gas Piping Systems Using Corrugated Stainless Steel Tubing with Addenda LC1a-1999 and LC1b-2001	403.5.4
Z21.1—03	Household Cooking Gas Appliances with Addenda Z21.1a-2003 and Z21.1b-2003 . . . . .	.623.1
Z21.5.1—02	Gas Clothes Dryers - Volume I -Type 1 Clothes Dryers with Addenda Z21.5.1a-2003 . . . . .	.613.1
Z21.5.2—01	Gas Clothes Dryers - Volume II- Type 2 Clothes Dryers with Addenda Z21.5.2a-2003 and Z21.5.2b-2003 . . . . .	.613.1, 614.3
Z21.8—94 (R2002)	Installation of Domestic Gas Conversion Burners . . . . .	.619.1
Z21.10.1—04	Gas Water Heaters - Volume I - Storage, Water Heaters with Input Ratings of 75,000 Btu per Hour or Less - with Addenda Z21.10.1a-2002 . . . . .	.624.1
Z21.10.3—01	Gas Water Heaters - Volume III - Storage, Water Heaters with Input Ratings Above 75,000 Btu per hour, Circulating and Instantaneous – with Addenda Z21.10.3a-2003 and Z21.10.3b-2004 . . . . .	.624.1
Z21.11.2—02	Gas-fired Room Heaters - Volume II - Unvented Room Heaters with Addenda Z21.11.2a-2003 . . . . .	.621.1
Z21.13—04	Gas-fired Low-Pressure Steam and Hot Water Boilers . . . . .	.631.1
Z21.15—97 (R2003)	Manually Operated Gas Valves for Appliances, Appliance Connector Valves, and Hose End Valves with Addenda Z21.15a-2001(R2003) . . . . .	.409.1.1
Z21.19—02	Refrigerators Using Gas (R1999) Fuel . . . . .	.625.1
Z21.24—97	Connectors for Gas Appliances . . . . .	.411.1
Z21.40.1—96 (R2002)	Gas-fired Heat Activated Air Conditioning and Heat Pump Appliances—with Addendum Z21.40.1a-1997 (R2002) . . . . .	.627.1
Z21.40.2—96 (R2002)	Gas-fired Work Activated Air Conditioning and Heat Pump Appliances (Internal Combustion)—with Addendum Z21.40.2a-97 (R2002) . . . . .	.627.1
Z21.42—93 (R2002)	Gas-fired Illuminating Appliances . . . . .	.628.1
Z21.47—03	Gas-fired Central Furnaces . . . . .	.618.1
Z21.50—03	Vented Gas Fireplaces – with Addenda Z21.50a-2003 . . . . .	.604.1
Z21.56—01	Gas-fired Pool Heaters – with Addenda Z21.56a-2004 and Z21.56b-2004 . . . . .	.617.1
Z21.58—95 (R2002)	Outdoor Cooking Gas Appliances—with Addendum Z21.58a-1998 (R2002) and Z21.58b-2002 . . . . .	.623.1
Z21.60—03	Decorative Gas Appliances for Installation in Solid-fuel Burning Fireplaces – with Addenda Z21.60a-2003 . . . . .	.602.1
Z21.61—83 (R 1996)	Toilets, Gas-Fired . . . . .	.625.1
Z21.69—02	Connectors for Movable Gas Appliances – with Addenda Z21.69a-2003 . . . . .	.411.1
Z21.75/CSA 6.27—01	Connectors for Outdoor Gas Appliances and Manufactured Homes . . . . .	.411.1, 411.2
Z21.80—03	Line Pressure Regulators . . . . .	.410.1
Z21.84—02	Manually-Lighted, Natural Gas Decorative Gas Appliances for Installation in Solid Fuel Burning Fireplaces – with Addenda Z21.84a-2003 . . . . .	.602.1, 602.2
Z21.86—04	Gas-Fired Vented Space Heating Appliances - with Addenda Z21.86a-2002 and Z21.86b-2002 . . . . .	.608.1, 609.1, 622.1
Z21.88—02	Vented Gas Fireplace Heaters with Addenda Z21.88a-2003 and Z21.88b-2004 . . . . .	.605.1
Z21.91—01	Ventless Firebox Enclosures for Gas-Fired Unvented Decorative Room Heaters . . . . .	.621.7.1
Z83.4—03	Non-Recirculating Direct-Gas-Fired Industrial Air Heaters . . . . .	.611.1
Z83.6—90 (R 1998)	Gas-Fired Infrared Heaters . . . . .	.630.1
Z83.8—02	Gas Unit Heaters and Gas-Fired Duct Furnaces – with Addenda Z83.8a-2003 . . . . .	.620.1
Z83.11—02	Gas Food Service Equipment – with Addenda Z83.11a-2004 . . . . .	.623.1
Z83.18—00	Recirculating Direct Gas-Fired Industrial Air Heaters with Addenda Z83.18a 2001 and Z83.18b-2003 . . . . .	.612.1

REFERENCED STANDARDS

ASME

American Society of Mechanical Engineers
 Three Park Avenue
 New York, NY 10016-5990

Standard reference number	Title	Referenced in code section number
B1.20.1—83 (Reaffirmed 2001)	Pipe Threads, General Purpose (inch)	403.9
B16.1—98	Cast Iron Pipe Flanges and Flanged Fittings, Class 25, 125 and 250	403.12
B16.20—98	Metallic Gaskets for Pipe Flanges Ring-joint, Spiral-wound, and Jacketed —with Addendum B16.20a-2000	403.12
B31.3-02	Process Piping	704.1.2, 704.1.2.4, 705.2, 705.3
B16.33—02	Manually Operated Metallic Gas Valves for Use in Gas Piping Systems up to 125 psig (Sizes 1/2 through 2)	409.1.1
B16.44-01	Manually Operated Metallic Gas Valves for Use in House Piping Systems	409.1.1
B36.10M—00	Welded and Seamless Wrought-steel Pipe	403.4.2
BPVC—01	ASME Boiler & Pressure Vessel Code (2001 Edition) (Section I, II, IV, V, VIII & IX)	631.1, 703.2.2, 703.3.3, 703.3.4
CSD-1—02	Controls and Safety Devices for Automatically Fired Boilers	631.1

ASTM

ASTM International
 100 Barr Harbor Drive
 West Conshohocken, PA 19428-2959

Standard reference number	Title	Referenced in code section number
A 53/A 53M—02	Specification for Pipe, Steel, Black and Hot Dipped Zinc-coated Welded and Seamless	403.4.2
A 106—04	Specification for Seamless Carbon Steel Pipe for High-temperature Service	403.4.2
A 254—97 (2002)	Specification for Copper Brazed Steel Tubing	403.5.1
A 539—99	Specification for Electric Resistance-welded Coiled Steel Tubing for Gas and Fuel Oil Lines	403.5.1
B 88—03	Specification for Seamless Copper Water Tube	403.5.2
B 210—02	Specification for Aluminum and Aluminum-alloy Drawn Seamless Tubes	403.5.3
B 241/B 241M—02	Specification for Aluminum and Aluminum-alloy, Seamless Pipe and Seamless Extruded Tube	403.4.4, 403.5.3
B 280—03	Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service	403.5.2
C 64—72 (1977)	Withdrawn No Replacement (Specification for Fireclay Brick Refractories for Heavy Duty Stationary Boiler Service)	503.10.2.5
C 315—02	Specification for Clay Flue Linings	501.12
D 2513—04a	Specification for Thermoplastic Gas Pressure Pipe, Tubing, and Fittings	403.6, 403.6.1, 403.11, 404.14.2

CGA

Compressed Gas Association
 1725 Jefferson Davis Highway, 5th Floor
 Arlington, VA 22202-4102

Standard reference number	Title	Referenced in code section number
S-1.1—(2002)	Pressure Relief Device Standards—Part 1—Cylinders for Compressed Gases	703.3
S-1.2—(1995)	Pressure Relief Device Standards—Part 2—Cargo and Portable Tanks for Compressed Gases	703.3
S-1.3—(1995)	Pressure Relief Device Standards—Part 3—Stationary Storage Containers for Compressed Gases	703.3

CSA

CSA America Inc.
 8501 E. Pleasant Valley Rd.
 Cleveland, OH USA 44131-5575

Standard reference Part number	Title	Referenced in code section number
ANSI CSA America FC1-03	Stationary Fuel Cell Power Systems	633.1
CSA Requirement 3-88	Manually Operated Gas Valves for Use in House Piping Systems	409.1.1
CSA 8—93	Requirements for Gas-fired Log Lighters for Wood Burning Fireplaces with Revisions through January 1999	603.1

DOTn

Department of Transportation
400 Seventh St. SW.
Washington, DC 20590

Standard reference number	Title	Referenced in code section number
49 CFR, Parts 192.281(e) & 192.283 (b)	Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards	403.6.1
49 CFR Parts 100-180	Hazardous Materials Regulations	703.2.2, 703.3.3, 703.3.4

ICC

International Code Council, Inc.
500 New Jersey Ave, NW
6th Floor
Washington, DC 20001

Standard reference number	Title	Referenced in code section number
IBC—06	International Building Code®	102.2.1, 201.3, 301.10, 301.11, 301.12, 301.14, 302.1, 302.2, 305.6, 306.6, 401.1.1, 412.6, 413.3, 413.3.1, 501.1, 501.3, 501.12, 501.15.4, 609.3, 614.2, 706.1, 706.3
ICC EC—06	ICC Electrical Code®—Administrative Provisions	201.3, 306.3.1, 306.4.1, 306.5.2, 309.2, 413.9.2.4, 703.6
IEBC—06	International Existing Building Code®	101.2
IECC—06	International Energy Conservation Code®	301.2
IFC—06	International Fire Code®	201.3, 303.4, 401.2, 412.1, 412.6, 412.7, 412.7.3, 412.8, 413.1, 413.3, 413.3.1, 413.4, 413.8.2.5, 701.1, 701.2, 703.2, 703.2.2, 703.3.8, 703.4, 703.5, 704.1.2, 704.3, 704.4, 706.2, 706.3.4, 706.3.5, 706.3.6, 707.2, 707.1, 708.1
IMC—06	International Mechanical Code®	101.2.5, 201.3, 301.1.1, 301.13, 304.11, 501.1, 614.2, 618.5, 621.1, 624.1, 631.2, 632.1, 703.1.2, 706.3.2
IPC—06	International Plumbing Code®	201.3, 301.6, 624.1.1, 624.2
IRC—06	International Residential Code®	703.2.1

MSS

Manufacturers Standardization Society of
the Valve and Fittings Industry
127 Park Street, Northeast
Vienna, VA 22180

Standard reference number	Title	Referenced in code section number
SP-6—01	Standard Finishes for Contact Faces of Pipe Flanges and Connecting-end Flanges of Valves and Fittings	403.12
SP-58—93	Pipe Hangers and Supports—Materials, Design and Manufacture.	407.2

NFPA

National Fire Protection Association
1 Batterymarch Pike
P.O. Box 9101
Quincy, MA 02269-9101

Standard reference number	Title	Referenced in code section number
30A-03	Code for Motor Fuel Dispensing Facilities and Repair Garages	305.5
37—02	Installation and Use of Stationary Combustion Engines and Gas Turbines	616.1
50A—99	Gaseous Hydrogen Systems at Consumer Sites	706.1
51—02	Design and Installation of Oxygen-Fuel Gas Systems for Welding, Cutting, and Allied Processes	414.1
58—04	Liquefied Petroleum Gas Code	401.2, 402.6.1, 403.6.2, 403.11
82—04	Incinerators, Waste and Linen Handling Systems and Equipment.	607.1
85—04	Boiler and Combustion Systems Hazards Code.	631.1
211—03	Chimneys, Fireplaces, Vents, and Solid Fuel-burning Appliances	503.5.2, 503.5.3, 503.5.6.1, 503.5.6.3
853—03	Installation of Stationary Fuel Cell Power Systems	633.1

REFERENCED STANDARDS



Underwriters Laboratories Inc.
333 Pfingsten Road
Northbrook, IL 60062

Standard reference number	Title	Referenced in code section number
103—2001	Factory-built Chimneys, Residential Type and Building Heating Appliances - with Revisions through December 2003 . . . . .	.506.1
127—99	Factory-built Fireplaces—with Revisions through November 1999 . . . . .	.621.7
441—96	Gas Vents—with Revisions through December 1999. . . . .	.502.1
641—95	Type L Low-temperature Venting Systems—with Revisions through April 1999. . . . .	.502.1
651—05	Schedule 40 and Schedule 80 Rigid PVC Conduit and Fittings . . . . .	.403.6.3
795—99	Commercial-Industrial Gas Heating Equipment . . . . .	.610.1, 618.1, 631.1
959—01	Medium Heat Appliance Factory-built Chimneys . . . . .	.506.3
1738—00	Venting Systems for Gas Burning Appliances, Categories II, III and IV with Revisions through December 2000. . . . .	.502.1
1777—04	Standard for Chimney Liners . . . . .	.501.12, 501.15.4