

RULES AND REGULATIONS
PERTAINING TO
INTERIOR FUEL GAS PIPING SYSTEMS USING
CORRUGATED STAINLESS STEEL TUBING

SECTION I. Authority

The following regulation is duly adopted and promulgated by the Arkansas State Board of Health pursuant to the authority expressly conferred by the laws of the state of Arkansas in Act 200 of 1951, as amended, and Act 372 of 1957 and as amended by Act 555 of 1963 and as amended by Act 385 of 1973 and as amended by 902 of 1975 and as amended by Act 816 of 1987 and as amended by Act 768 of 1987 and as amended by Acts 412 and 330 Of 1991 and as amended by Act 638 of 1994 and as amended by act 982 and Act 788 of 1995.

SECTION II. Purpose

To establish standards of the Arkansas State Gas Code for interior fuel gas piping systems, using corrugated stainless steel tubing, intended for installation in residential or commercial buildings, and including all components supplied or specified by the manufacturer to convey and control fuel gas to all appliances served.

SECTION III. Definitions

- (A) Appliance (Equipment). Any device which utilizes gas as a fuel or raw material to produce light, heat, power, refrigeration, or air conditioning.
- (B) Approved. Acceptable to the provisions of this Code or the authority having jurisdiction.
- (C) Authority Having Jurisdiction. In this chapter, the administrative authority or authority having jurisdiction is the state of Arkansas that administers or enforces the provisions of this chapter as adopted or amended.
- (D) Concealed Gas Piping. Gas Piping, which, when in place in a finished building, would require removal of permanent construction to gain access to the piping.
- (E) Exposed Gas Piping. Gas piping which will be in view in the finished structure.

- (F) Fuel Gas. A commercially distributed gas used for fuel such as natural gas.
- (G) Gas Utilization Equipment. Any device which utilizes gas as fuel or raw material or both.
- (H) Listed. Equipment or materials included in a list published by an organization acceptable to the authority having jurisdiction and concerned with product evaluation that maintains periodic inspection of production of listed equipment or materials and whose listing states either that the equipment or material meets appropriate standards or has been tested and found suitable for use in a specified manner.
- (I) Maximum Actual Operating Pressure. The maximum pressure existing in a piping system during a given operating cycle.
- (J) Maximum Allowable Operating Pressure. The maximum pressure at which the gas system is allowed to be operated.
- (K) Piping System. As used in the regulation, an assembly of corrugated stainless steel tubing and tubing connection fittings intended for field assembly and installation in residential or commercial buildings to distribute fuel gas to gas utilization equipment within the building. The piping system may also include a gas pressure regulator (s), a shut off valve (s), tube shielding devices, distribution manifold (s), termination outlet and other approved devices or components.
- (L) Qualified Installer. Any individual, firm, corporation, or company which either in person or through a representative is engaged in and is responsible for the installation or replacement of building gas piping systems, who has been properly trained and is experienced in such work, familiar with all precautions required, and has complied with all of the licensing requirements of the authority having jurisdiction.
- (M) Regulator, Pressure. A device placed in a gas line for reducing, controlling, and maintaining the pressure in that portion of the piping system downstream of the device. Installation must comply with the provision 402.13 in the Arkansas State Gas Code.
- (N) Shielding Device. A component of the piping system used to protect the installed corrugated tubing from accidental puncture by nails, screws or similar hardware at concealed tubing support points.
- (O) State Gas Code. The Arkansas State Gas Code

- (P) Striker Plate. A special type of shielding device used when concealed tubing is run through wall studs, wood or metal, floor and ceiling joists or other structural members where tubing movement is restricted.
- (Q) Termination Outlet. A component of the piping system used to attach corrugated tubing for final connection to the gas utilization equipment. Reference Arkansas State Gas Code page 46- Section 306.2. - Page 53 - Section 309.6.
- (R) Strip Wound Metal Hose. A component of the piping system used to protect the corrugated tubing from accidental puncture when running through plates or floors in concealed locations.

SECTION IV. Restrictions

- (A) This regulation applies to piping systems for use with fuel gas at maximum allowable operating pressures not exceeding 5 psig.
- (B) This regulation applies to piping systems not exceeding a size of 1 inch nominal inside diameter of the tubing.
- (C) This regulation does not apply to gas connectors for appliances. Standards for final connectors to gas utilization equipment may be found in Section 403.1 of the Arkansas State Gas Code.

SECTION V. Materials

- (A) Piping systems components shall be constructed entirely of new and unused parts and materials. Tubing of austenitic stainless steel alloy of the 300 series shall be used. Any deviation shall be approved in writing by the authority having jurisdiction.
- (B) Piping system components and materials shall have been evaluated and found to be suitable for their intended usage by a testing agency recognized by the authority having jurisdiction.
- (C) When requested, the manufacturer shall furnish evidence acceptable to the authority having jurisdiction concerning the composition of the materials used in all components of the piping system.
- (D) The construction of parts not specifically covered by this regulation shall be in accordance with reasonable concepts of safety, substantially and durability.

- (E) Fittings intended for connection to threaded pipe shall have cleanly cut tapered pipe threads conforming the Standard for Pipe Threads General Purpose (inch), ANSI/ASME, B 1.20.1.
- (F) Tubing and fittings shall be clean and free from dents, flaws or other defects.
- (G) Cutting of tubing shall be done in compliance with the manufacture's recommendation.

SECTION VI. Valves and Regulators

- (A) Installed in compliance with standards outlined in 402.13 of the Arkansas State Gas Code.
- (B) A manually operated gas valve supplied as part of a gas piping system shall comply with the standard for manually operated metallic gas valves for use in gas piping systems up to 125 psig (Sizes 1/2 through 2), ANSI/ASME B 16.33.

SECTION VII. Striker Plates

- (A) Striker plates shall be provided by the piping system manufacturer to protect the installed tubing from penetration by nails, screws, etc. in those areas where the tubing will be concealed and will not be free to move to avoid such penetration.
- (B) Striker plates shall be designated to protect the tubing at points of penetration through a stud, joist, plate, etc.
- (C) Striker plates shall include all fasteners required for there installation in accordance with the manufacture's instruction. (See Section VIII.)

SECTION VIII. Instructions and Requirements for Installation

Complete detailed instructions, including appropriate illustrations, necessary for proper installation and use of the piping system, shall be provided by the manufacturer. Included in the instructions shall be statements to the effect that:

- (1) The installation must be done by a qualified installer.
- (2) A warning to the installer that the installation instructions must be followed exactly.

- (3) The installation must be in accordance with applicable state/local gas codes and/or regulations.
- (4) Precautions must be taken by the installer to ensure any exposed tubing is not damaged or abused during building construction or reconstruction.
- (5) The piping system is for use with fuel gases only at maximum allowable operating pressures not exceeding 5 psig.
- (6) Only the components provided or specified by the manufacturer as part of the piping system are to be used in the installation.
- (7) The ends of the tubing are to be temporarily plugged or taped closed prior to installation to prevent the entrance of dirt, dust or other debris.
- (8) Contact with sharp objects or harmful substances are to be avoided.
- (9) Undue stress or strain on the tubing and fittings is to be avoided.
- (10) A warning to avoid sharp bends, stretching, kinking or twisting of the tubing.
- (11) Installation clearance holes for routing the tubing through studs, joists, plates, etc., shall have a diameter 1/2 inch greater than the outside diameter of the tubing.
- (12) Concealed tubing must be protected from puncture threats, using the striker plates provided, at all points of penetration through studs, joists, plates, or similar structures. The extent of the protection shall be defined as follows:
 - (A) At points of penetration less than 2 inches from any edge of a stud, joist, plate, etc., a striker plate is required to provide protection at the area of support and within 5 inches of each side of the support.
 - (B) At points of penetration 2 to 3 inches from any edge of a stud, joist, plate, etc., a striker plate is required to provide protection throughout the area of support.
 - (C) At points of penetration greater than 3 inches from any edge of a stud, joist, plate, etc., no protection is required.
- (13) Tubing routed horizontally through studs must be protected from

puncture threats between the studs using the shielding devices provided.

- (14) Each branch run of tubing intended to serve gas utilization equipment shall be connected to a termination outlet. This termination outlet must be securely fastened in place and included as part of the pressure test.

- (15) The instructions shall also include the following information:
 - (A) The minimum permissible bend radius for the tubing, and minimum permissible bend radius for fitting and tubing combinations.
 - (B) Recommended tightening torque (s) for threaded fittings.
 - (C) Sizing tables for 1/2 psig, 2 psig and 5 psig service, as applicable, to aid the installer or contractor in selecting the proper size piping system.
 - (D) Instructions for adjusting the gas pressure regulator (s), if applicable.
 - (E) Procedures which shall be followed by the installer to meet state or local codes with respect to flame spread and smoke density regulations for nonmetallic materials.

SECTION IX. Prohibited Locations

- (A) Fuel gas piping shall not be installed or run in or through a circulating air duct, clothes chute, chimney, or gas vent, ventilating duct, dumb waiter, or elevator shaft. (See Section 309.5 of the State Gas Code.)

- (B) Corrugated stainless steel shall not be installed outside unless it is fully protected from the effects of the weather and physical abuse. Corrugated stainless steel when routed outside, shall be completely incased in solid steel, coated pipe at least one inch (1) larger than the diameter of the tubing for the entire outside length. When passing through an outside wall, the casing or sleeve will be at least one inch (1) larger in diameter than the tubing and be sealed at both ends and supported by a crossbrace.

When tubing is connected to a meter, the meter and piping shall be completely self supporting by the use of mounting brackets. All such outside installations shall first be approved by the Administrative Authority.

- (C) Tubing routed in crawl spaces, underneath buildings, shall be adequately supported and shall not come in contact with the ground or other pipes.
- (D) Corrugated stainless steel tubing shall not be used with any other type tubing unless recommend by the manufacture and approved by the administrative authority.

SECTION X. Marking

- (A) Each component of a piping system (tubing, fitting, manifold and striker plates) shall bear a permanent marking of the following:
 - (1) Manufacturer's name, trade-mark or symbol:
 - (2) Part Number; and
 - (3) Symbol of the organization making the test for compliance with the regulation.
- (B) Tubing shall bear a permanent marking of the following:
 - (1) Maximum allowable operating pressure in pounds per square inch.
 - (2) The Equivalent Hydraulic Diameter (EHD); and
 - (3) The words "Fuel Gas Piping."
- (C) The markings specified in Section X., paragraphs A and B shall appear on the tubing at not more than 24 inch intervals.

SECTION XI. Severability

If any provision of these regulations, or the application thereof to any person is held invalid, such invalidity shall not affect other provisions or applications of these regulations which can give effect without the invalid provisions or applications, and to this end the provisions hereto are declared to be severable.

SECTION XII. Repeal

All regulations and parts of regulations in conflict with this regulation are hereby repealed.