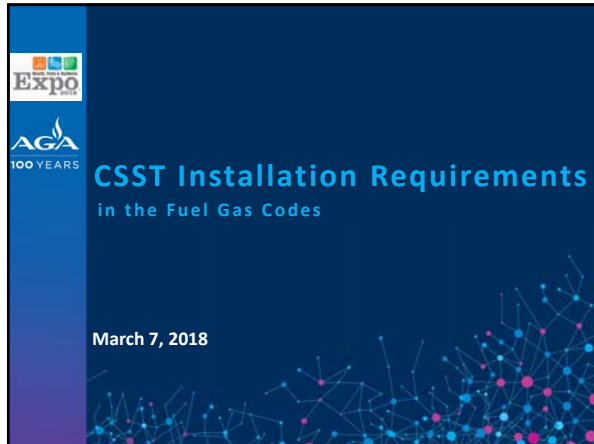


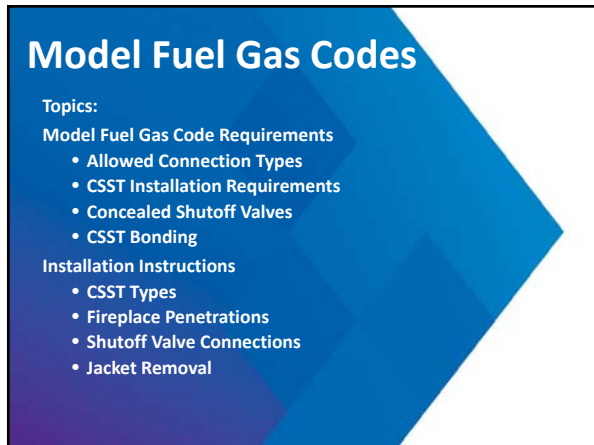
CSST Installation Requirements in the Fuel Gas Codes

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Course Description

Correct gas pipe sizing, installation, and appliance connections are vital steps that help ensure gas fireplaces are safe and provide long-term performance. The fuel gas codes and manufacturer installation instructions have general and specific requirements when Corrugated Stainless Steel Tubing (CSST) is used to supply fireplace appliances. The course will provide CSST installation code basics, including general sizing and installation, with an emphasis on the connection between the fireplace appliance and the CSST system. The code requirements from latest model codes, 2018 National Fuel Gas Code and 2018 International Fuel Gas Code will be presented.









Main Connection Requirements

- NFGC: 9.6 Appliances and Equipment Connections
- IFGC: 411 Appliance and Manufactured Home Connections
- UPC: 1212.0 Appliance and Equipment Connections to Building Piping.
- UMC: 1312.0 Appliance Connections to Building Piping

Permitted Connections

- Rigid metallic pipe
- Semirigid metallic
- CSST**
- Listed appliance connectors (Z21.24)
- Listed quick-disconnect devices
- Listed convenience outlets
- Listed outdoor appliance connectors (Z21.75)
- Listed outdoor hoses (Z21.54)
- Gas hoses (Labs and Educational)



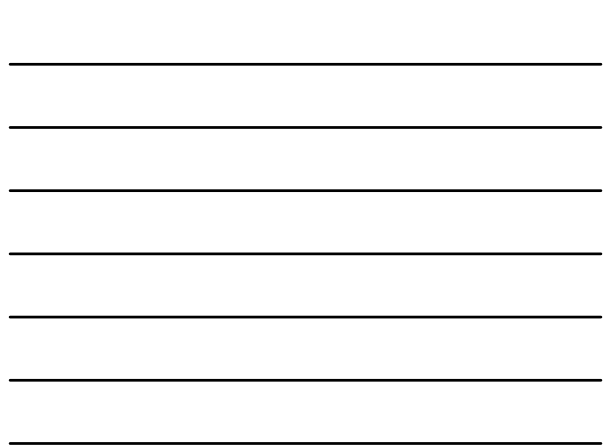
Use of CSST

- CSST listed in accordance with ANSI LC 1/CSA G.26, Fuel Gas Piping Systems Using Corrugated Stainless Steel Tubing (CSST)
- Installed in accordance with the manufacturer's installation instructions



Additional Code Requirements

- Appliance shutoffs (KEY VALVE) in tubing systems shall be rigidly and securely supported



Additional Code Requirements

- Each appliance must have a shutoff valve
- CSST can connect to the shutoff valve to the gas supply
- CSST can connect the appliance to the shutoff valve



CSST Electrical Bonding

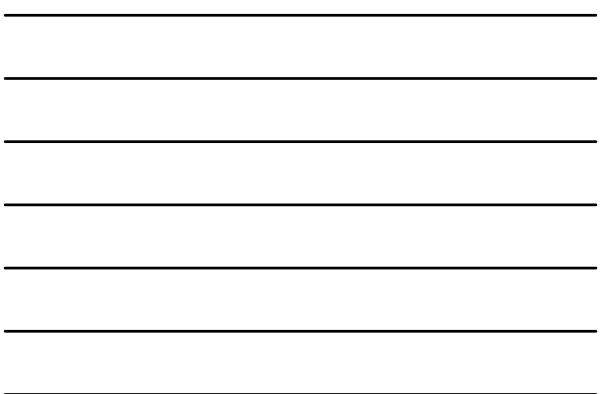
- Non Arc-resistant CSST
 - Plastic jacket designed to facilitate installation
 - Typically Yellow Color
- Arc-resistant CSST
 - Jacket designed to prevent arcing between CSST and other metal building components
 - Typically Black Color



CSST Electrical Bonding

- All CSST is required to be bonded
- Bond type depends on the type of CSST
 - Non arc-resistant jacketed
 - Direct bond
 - Arc-resistant jacketed
 - Appliance grounding conductor*

* New for 2018 Editions, Not currently in UPC/UMC



CSST Electrical Bonding

Direct Bond:

- Limited to 75 ft.
- Bond jumper sized 6 AWG or larger
- Bonded to an effective ground-fault current path
- Bond point on piping – anywhere
- Use a UL 467 listed clamp



Installation Instructions

- Three manufacturer's instructions were reviewed

Installation Instructions

Know your installation instructions

Installation Instructions – Penetrations

Masonry Fireplace

CSST through masonry is permitted where:

- Jacket is not removed
- Non-metallic sleeve is installed
- Annular space between the jacket and sleeve should be sealed

Installation Instructions – Penetrations Metallic Fireplace Enclosures

Metallic Vent Above the Roof


- CSST shall not be routed into a metallic fireplace
- Use rigid pipe stub out



Installation Instructions – Penetrations Metallic Fireplace Enclosures

Metallic Side Wall Vent & Insert with Clay Lined Chimney

- Arc-resistant & non Arc-resistant CSST may be routed into a metallic fireplace:
 - CSST supported to prevent contact with fireplace
 - Do not remove jacket at penetration point
 - CSST is protected using a non-metallic grommet



Installation Instructions – Penetrations Metallic Fireplace Enclosures

Manufacturer's Preferred Installation:


- End CSST outside of metal fireplaces
- Use hard pipe or listed appliance connector to connect the appliance



Installation Instructions – Log lighters

CSST and brass fittings should not be used inside the firebox for log lighter/gas wands or any firebox where wood logs will be burned.

- Use rigid pipe stub out



Installation Instructions – Key Shutoff Valves

Flexible piping connections to fireplace “key valves” can be located in a concealed location



Installation Instructions – Fireplace Shutoff Valves

Located under a factory built fireplace:

- CSST can connect directly to shutoff valve located under appliance for side wall vented fireplaces and inserts using the existing clay liner chimney

Located in a Fireplace:

- Code requires shutoff valve listed for such location
- CSST can connect directly to shutoff valve

Installation Instructions – Jacket Removal

CSST Fitting Installation:

- Refer to individual CSST manufacturer installation instructions

CSST In the firebox:

- Remove jacket

Summary

- Code permits CSST to connect directly to an appliance
- Know your local code
- Know your CSST manufacturer's installation instructions
- Manufacturers recommend CSST end at the shutoff valve
- Follow installation instructions for other in fireplace installations

QUESTIONS

