

Residential Fire Sprinklers

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Areas Briefly Covered

- ▶ **NFPA13D**
 - ▶ **Texas Legislation**
 - ▶ **Conflicting Views – Fire Service and Home Builders**
 - ▶ **Incentives offered in the ICC**
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Administration

Chapter 1 Purpose

- ▶ Detect and control residential fires
- ▶ Prevent injury and death
- ▶ Prevent flashover
- ▶ Provide for safe escape

NFPA 13D 2013 Edition



Pipe Material

Chapter 5

- ▶ Aboveground piping is commonly CPVC & PEX, variations of Steel, Copper, & Brass
- ▶ Underground piping needs to comply with local plumbing codes, NFPA 24 not applicable

Water Supply

Chapter 6

- ▶ Needs to be a reliable Source
- ▶ Water Main
- ▶ Tank or Well with a reliable pump
- ▶ If not a Water Main, needs to supply the demand of the sprinkler system for 10 minutes

Multipurpose Piping

Chapter 6

- ▶ Single piping inside the structure serving both, the domestic use and sprinkler system
- ▶ Comply with local plumbing and health codes
- ▶ Reviewed, installed and inspected by licensed fire protection specialist
- ▶ No FDC

NFPA 13D 2013 Edition

Texas Occupations Code
Chapter 13 Plumbers

Common Supply Piping

Chapter 6

- ▶ Supply piping is shared by domestic and sprinklers
- ▶ Add friction loss for filtration systems to the calculations
- ▶ Add bypass around filtration systems
- ▶ Add 5gpm to systems serving more than one dwelling

Installation

Chapter 7

- ▶ Control valves supervised or locked open, including valves on backflow devices
- ▶ ½ inch drain required past the control valve
- ▶ The drain can be the test connection as long as equal or smaller than the smallest sprinkler

Installation

Chapter 7

- ▶ Aboveground pipe installed according to local plumbing codes
- ▶ Supported to prevent lateral movement
- ▶ Supported to prevent movement when sprinkler activates

Installation

Chapter 7

- ▶ Dry pendants and dry sidewalls allowed in unheated areas not intended as living space
- ▶ Painting of sprinklers only by manufacturer
- ▶ If no fire alarm system, local waterflow alarm required
- ▶ Plastic pipe in the attic needs insulation

Sprinkler Position

Chapter 8

- ▶ Pendant sprinklers, 3 ft. from ceiling fans and light fixtures, or an additional sprinkler on the opposite side
- ▶ Sidewall sprinklers, 5 ft. from ceiling fans and light fixtures, or an additional sprinkler on the opposite side
- ▶ Sprinklers required under soffits more than 8 inches

Sprinkler Location

Chapter 8

- ▶ Omitted, in bathrooms <55 square ft.
- ▶ Omitted, in small closets and pantries <24 square ft., <3 ft. shortest dimensions, noncombustible walls or ceilings (NFPA 220)
- ▶ Omitted, in garages, porches, carports, concealed spaces, etc... not intended for living spaces

Sprinkler Location

Chapter 8

- ▶ Omitted, in outside closets that do not open to the dwelling unit
- ▶ Omitted, in attics or spaces above living space with a/c and heaters, water heaters
- ▶ Required, in closets in dwelling units with a/c and heaters, washers/dryers, water heaters
- ▶ Required, if only one entrance/exit in unheated projections

Freeze Protection

Chapter 9

- ▶ Methods for providing 40 degree protection
- ▶ Insulation
- ▶ Dry pipe system or preaction systems
- ▶ Antifreeze systems, must be premixed, listed for fire protection systems, compatible to piping, systems <40 gallons, and placarded

Hydraulic Calculations

Chapter 10

- ▶ The system design area is calculated from the most demanding compartment with no more than two sprinklers
- ▶ Minimum pipe size is 1 inch for steel, ½ inch other than steel

Acceptance

Chapter 11

- ▶ Hydrostatically tested at normal system operating pressure, no leaks for 2 hours
- ▶ If the owner requests an FDC, the system is hydrostatically tested same as NFPA 13, 200 psi for 2 hours
- ▶ Owner is responsible for periodic maintenance and testing, recommended intervals A12.2

Legislation

- ▶ Since January 2009 two changes in the Texas Occupations Code, Chapter 13 for Plumbers have affected the installation of residential fire sprinklers
- ▶ Sec. 1301.551(i) Municipal Plumbing Ordinances and Permits (residential sprinkler ordinances)
- ▶ Sec. 1301.365 Endorsement: Multipurpose Residential Fire Protection Sprinkler Specialist

Texas Occupations Code
Chapter 13 Plumbers
Texas Board of Plumbing Examiners

Legislation

1301.551(i)

- ▶ Municipalities not allowed to adopt ordinances requiring the installation of residential fire sprinklers in new and existing one or two-family dwellings
- ▶ A multipurpose fire sprinkler system can be installed by a licensed sprinkler specialist

Legislation

1301.365

- ▶ A licensed master plumber, journeyman plumber, or plumbing inspector can hold a multipurpose residential fire sprinkler specialist endorsement
- ▶ Must complete an approved training program (24 hours)
- ▶ Must pay examination fee and successfully pass examination
- ▶ Must have the endorsement to inspect a multipurpose system

Texas Occupations Code
Chapter 13 Plumbers
Texas Board of Plumbing Examiners

Conflicting Views

Homebuilders Argue:

- ▶ Smoke alarms provide adequate safety and protection from fires and sprinklers are not needed
- ▶ Few fires occur in homes with working smoke alarms
- ▶ Water damage from sprinklers increase dollar loss in fires
- ▶ Sprinklers will price potential homebuyers out of the new home market
- ▶ Homes built today are safer due to current model codes. **What about higher combustibility of furnishings and continued injuries and deaths, including firefighters?**

Conflicting Views

National Institute of Standards and Technology, 2012

- ▶ For every 1 000 fires, residential sprinklers prevent 10.1 less civilian deaths
- ▶ For every 1 000 fires, residential sprinklers prevent 29.7 firefighter injuries
- ▶ \$17,731 less dollar loss with residential sprinklers than in houses equipped with only smoke alarms

David T. Butry

NIST, 2012

Comparing the performance of residential fire sprinklers with other life saving technology

Conflicting Views

NFPA

- ▶ 83% greater chance of surviving a fire with residential fire sprinklers
- ▶ 69% lower dollar loss with residential fire sprinklers
- ▶ NFIRS reports, 60% of fire deaths occur in homes with non functioning smoke alarms

Conflicting Views

National Association of Homebuilders

- ▶ 15% of potential homebuyers are willing to pay for fire for installation of fire sprinklers
- ▶ 34% of potential homebuyers will choose fire sprinklers as a free option...common free incentives are granite countertops and upgraded flooring
- ▶ Increased ANNUAL mortgage payment of \$193

NAHB Public Opinion Strategies Poll, 2006
NAHB Residential fire sprinklers far costlier than advocates claim, 2008

ICC Incentives

Residential developments having all dwelling units equipped with fire sprinklers

- ▶ >30 dwelling units, reduction of two remote fire apparatus access roads to one
- ▶ Spacing incentive, houses can be built on the property line with 6 ft. separation
- ▶ Unrated exterior walls instead of 1-hour

2012 International Fire Code, Appendix D
2012 International Residential Code, R302.1

WHAT'S OUR MESSAGE?

Anyone?

- ▶ Deadly Flashover and Toxic Smoke
 - ▶ Smoke Alarms, Safe Exits Plans
 - ▶ Once Out, Stay Out
 - ▶ Everyone Goes Home
 - ▶ Compromise between fire service and homebuilders
 - ▶ Sprinklers improve the Quality of Life and provide Safer Communities
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Can sprinklers reduce
medicals bills and funerals
resulting from house fires?

Thank you

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