



American Fire Sprinkler Association

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www.firesprinkler.org

Residential Fire Sprinkler System Installation

A Guide to Installation Techniques for Residential Systems

114.0 Credit Hours

Module 1 Introduction to the Trade (18 Hours)

Upon completion of this module, the trainee will understand the difference between building codes and standards; explain the roles of testing agencies and AHJs in the fire sprinkler industry; demonstrate the use and care of appropriate personal protective equipment (PPE); explain the appropriate safety precautions to take around common job-site hazards; follow safety procedures required for lifting heavy objects; describe safe behavior on and around ladders and scaffolds; and explain appropriate use of barriers and barricades.

Lesson 1 (Sections 1.0 through 4.1.2)

Lesson 2 (Sections 4.2 through 4.10.2)

Lesson 3 (Sections 4.11 through End)

Module 2 Basic Construction Math (18 Hours)

Upon completion of this module, the trainee will be able to add, subtract, multiply, and divide whole numbers; use a standard ruler to measure; add, subtract, multiply, and divide fractions; add, subtract, multiply, and divide decimals; and demonstrate basic conversion processes for decimals, percentages, and fractions.

Lesson 4 (Sections 1.0 through 1.1.17)

Lesson 5 (Sections 2.0 through 5.2.1)

Lesson 6 (Sections 5.3 through End)

Module 3 System Design Configurations (18 Hours)

Upon completion of this module, the trainee will be able to identify three different piping configurations; define the meaning of a multipurpose piping system; identify basic design criteria for residential sprinkler systems outlined in industry standards such as NFPA 13D, UL 1626, and FM 2030; explain different types of sprinklers and system types approved for residential installation; identify sprinkler system components such as pipes, valves, fittings, piping support, sprinklers, and alarms; perform basic manual hydraulic calculations; identify residential construction areas requiring special applications; explain electrolysis; and describe the importance of water supplies, sources, and distribution in a fire sprinkler system.

Lesson 7 (Sections 1.0 through 3.5)

Lesson 8 (Sections 4.0 through 6.8)

Lesson 9 (Sections 7.0 through End)

Module 4 Tools, Material, and Installation Overview (48 Hours)

Upon completion of this module, the trainee will be able to explain the functions of and how to use many tools applied in fire sprinkler system installation (hand tools, power tools, threading machines); describe how to cut, thread, ream, oil, and clean pipe; identify types of fittings; follow basic safety precautions for the preparation and installation of CPVC and



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copper pipe; identify approved types CPVC and copper pipe; calculate takeouts for both CPVC and copper pipe; set up equipment for both CPVC and copper pipe; join and cure CPVC pipe; cut, chamfer, and clean copper pipe; check for correctness of end preparation for both CPVC and copper pipe; explain steps for basic fire sprinkler system installation; identify types of hangers, anchors, and fasteners; install sprinkler drops; and conduct visual inspection and hydrostatic test of installed system.

Lesson 10 (Sections 1.0 through 3.1)

Lesson 11 (Sections 3.2 through 3.12)

Lesson 12 (Sections 4.0 through 5.6)

Lesson 13 (Sections 5.7 through End)

Lesson 14 (Appendix A, Sections 1.0.0 through 3.3.0)

Lesson 15 (Appendix A, Sections 4.0.0 through Summary)

Lesson 16 (Appendix B, Sections 1.0.0 through 5.7.0)

Lesson 17 (Appendix B, Sections 6.0.0 through Summary)

Module 5 Special Systems and Retrofit (12 Hours)

Upon completion of this module, the trainee will be able to explain the need for installation of special systems, such as dry pipe and antifreeze; understand the use of pumps, identify the presence of microbiologically influenced corrosion and the hazards it presents; explain the steps of retrofitting existing structures; demonstrate routine maintenance; and identify various types of wall construction.

Lesson 18 (Sections 1.0 through 3.0)

Lesson 19 (Sections 4.0 through End)

Additional Resources:

- BlazeMaster® Fire Sprinkler Systems
 - www.blazemaster.com
 - Literature available in “Design & Installation” section on website.
 - Latest information on CPVC compatibility with steel pipe can be found here: www.systemcompatible.com
- Copper Development Association
 - Several documents in “Publications” section of www.copper.org
- NFPA 13D: Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes
- Various manufacturers’ demonstrations of CPVC care and installation
 - Some manufacturers offer training courses for installation of their products:
 - Globe Fire Sprinkler Corp. www.globesprinkler.com
 - Harvel Plastics www.harvel.com
 - Rehau Inc. www.rehau.com
 - Reliable Automatic Sprinkler Corp. www.reliablesprinkler.com
 - Senju Comtek Corp. www.senjucomtek.com
 - The Viking Corp. www.vikingcorp.com
 - Tyco Fire & Building Products www.tyco-fire.com
 - Uponor-USA www.uponor-usa.com
 - Victaulic www.victaulic.com