

New Jersey Fire Inspector Certification Program

New Jersey Uniform Fire Code

Fire Inspector Training Program

Based on the ICC IFC-2015 Edition with NJ adopted changes



CAUTION!
ADMISSION TO AUTHORIZED PERSONNEL ONLY
When an authorized person enters, please close the door behind you.

**Radioactive Materials**

**4 W**

**BSL-2**

**FUEL**
CHURN
EXHAUST
HIGH



New Jersey Uniform Fire Code Inspector training program

Module –5

Referenced Standards



Welcome

Instructor introduction

■ Before we get started

– Has everyone signed in?

– Anyone have any questions?

Entry Class Presentation

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Referenced Standards

■ Learning Objectives:

- *Understanding the differences between Codes and Standards.*
- *Understand the relationship of a standard to the adopted code.*
- *Review Chapter 80 of the 2015 NJIFC.*
- *Understand what to do when a standard is not identified in the 2015 NJIFC.*

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What is a Code?

A set of rules established and adopted by government for the construction of buildings, the prevention of fires, and community safety.



Video cdp Access

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Types of Codes

- *Fire Prevention Code*
- *Building Code*
- *Zoning Code*
- *Housing Code*
- *Health Code*
- *Environmental Code*



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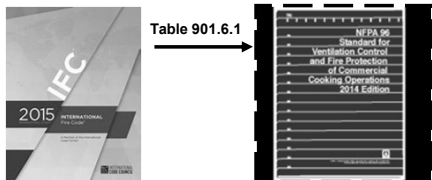
Fire Code Main Elements

- **Purpose:**
 - The prevention of fires
- **Mandatory:**
 - Every item is a minimum requirement
- **Enforceable:**
 - Fire Codes shall be enforced including actions and penalties that may be taken to gain compliance

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What is a Standard?

"A document that establishes performance, specification, or process, and is or may be adopted by reference in a code."



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Codes & Standards

- Codes tell us: *"What, when, where and why a fire prevention measure must be followed"*
- Standards tell us: *How to accomplish !*
- Codes are adopted by Statute and/or Ordinance
- Standards are adopted by reference

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Sample: Standard Issuing Groups

- NFPA –National Fire Protection Association
- API –American Petroleum Institute
- ANSI- American National Standards Institute
- ASME- American Society of Mechanical Engineers
- ASTM – American Society of Testing & Materials
- UL- Underwriters Laboratories
- CGA – Compressed Gas Association
- CPSC- Consumer Product Safety Commission
- DOC- U.S. Department of Commerce
- DOT – U.S. Department of Transportation

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Main Elements of a Standard

- **Advisory Nature:**
 - It is a guideline for a particular subject:
- **Permissive:**
 - It tells you what you are permitted to do, not what you cannot do.
- **Unenforceable:**
 - Has no legal authority for enforcement unless it is referenced by the adopted code.
- **Appendix:**
 - -not enforceable for illustration of application only

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The Path to Standards

How do we use referenced standards in the provisions of the NJIFC?



Video-Inspector -9-1-1

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NJAC or IFCNJ – Standards Application

There are four ways Standards may be applied:

1. **NJAC 5:70-1.3(b)**
 - a. Where no standards or requirements are specified in the code.
2. **NJAC 5:70-1.4(c)**
 - a. Other codes and ordinances legally adopted
3. **IFC 101.2 Scope**
 - a. Conditions 1 thru 5
4. **IFC 103.2 References**
 - a. Chapter 80 standards as referenced in the code and only as the code directs.

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NJAC 5:70-1.3(b)

*“ **Where no specific standards** or requirements are specified in this Code, or contained within other applicable laws (or adopted codes) or ordinances, compliance with the **Standards of the National Fire Protection Association** or other **nationally recognized fire-safety standards** as are approved by the Fire Code Official shall be deemed as prima facie evidence of compliance with the **stated intent of this code.**”*

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NJAC 5:70-1.3(b)

- *The stated intent of the fire code is broad in that not just fire hazards are covered, as it identifies **“conditions hazardous to life or property in the use or occupancy of buildings or premises”***
- *There will be times when you find a condition that is clearly a safety hazard, but the NJIFC doesn't have a specific code section addressing that particular hazard.*

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NJAC 5:70-1.3(b)

- *This section provides a path for Fire Inspectors to utilize other sources.*
 - *First refers to other laws, adopted codes, or ordinances.*
 - *Secondly it then refers you to any of the standards of the National Fire Protection Association or other nationally recognized fire safety standards.*

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NJAC 5:70-1.3(b)

■ In addition to **NFPA**, many other national and international organizations publish safety standards. **Factory Mutual (FM)**, the **American Petroleum Institute (API)**, and the **Compressed Gas Association (CGA)** are just three of these.

■ Many of these standards will fill voids that occasionally occur in the subjects covered by the NJIFC, particularly those due to progress.

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NJAC 5:70-1.4(c)

'...When any provision of this Code is found to be in conflict with any zoning, safety, health or other applicable law, ordinance or code of the jurisdiction existing on the effective date of this Code or hereafter adopted, the provision which establishes the higher standard for the promotion and protection of the safety and welfare of the public shall prevail.'

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Eliminating conflicts....

NJAC 5:70-1.4(c) is intended to ensure conflicts in codes are settled in favor of the highest level of protection. By virtue of the language of this section the higher standard becomes a referenced standard.

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**NJAC 5:70-1.4(c)
example....**

- *'Section 315.4 Outside storage' under the NJIFC restricts exterior combustible storage to 20' in height and 15' from property lot lines or building.*
- *When inspecting a warehouse site the inspector find 30' high piles of pallets scattered throughout the rear yard of the site, 20 feet from the property line. The rear yard faces a residential neighborhood.*

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**NJAC 5:70-1.4(c) example
continued....**

- *These conditions clearly violate **Section 315.4** and are subject to action under the code.*
- *But the Inspector is also aware that the municipality has a legally adopted property maintenance regulations that prohibits any exterior combustible storage adjacent to residential uses.*

How do you correct the fire hazard?

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**NJAC 5:70-1.4(c) example
continued....**

- *The higher standard in this case is the local property maintenance ordinance. It prohibits the storage entirely, not just the storage arrangement.*
- *In this situation the local property maintenance ordinance provides a greater degree of safety than section 315.4.*
- *Therefore the Inspector should issue a violation and refer this violation to the agency enforcing the property maintenance ordinance requirements.*
- *Code Cite: N.J.A.C 5:70-1.4c, Municipal Code 'XXX'*

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101.2 Scope

1. *The proper maintenance of fire protection features required by the construction code in effect at the time of first occupancy; by the Fire Safety Code(NJAC 5:70-4) or by the provisions of other, applicable fire safety rules or ordinances lawfully promulgated by the State or by local enforcing agency.*

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101.2 Scope

2. *The hazard of fire and explosion arising from the storage, handling, or use of structures, materials or devices.*
3. *Conditions hazardous to life, property or public welfare in the occupancy of structures,premises or mobile enclosed units.*
4. *Fire Hazards in the structure or on the premises from occupancy or operation.*
5. *Conditions affecting the safety of firefighters and emergency responders during emergency operations.*

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103.2 Referenced Codes & Standards

*The codes and standards referenced in this code shall only be those that are listed in **Chapter 80** and such codes and standards shall be considered part of the requirements of this code only to the prescribed extent of each such reference.*

Where differences occur between the provisions of this code and the referenced standards, the provisions of this code shall apply

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103.3 Standards; Accepted Practices

1. *This section together with the codes, national standards and appendices it adopts by reference, shall be the primary guide to accepted practices with respect to any material, equipment, system or method of installation, use, operation or maintenance therein specified.*

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103.3 Standards; Accepted Practices

■ 2. *“ When this section and the codes, national standards and appendices it **adopts by reference are silent**, a manufacturer's recommendations for the installation of any material or assembly **may be considered to be accepted practice**; provided, however, that the manufacturer's recommendations **shall not be read to overrule this subchapter or any code, national standard or appendix** which it adopts by reference”.*

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Chapter 80 of NJIFC

*How do we use the referenced standards found in **Chapter 80**?*



Video – NFPA code & standards

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Example – NFPA 211

The 2013 edition of NFPA Standard 211, Standard for “Chimneys, Fireplaces, Vents, and Solid Fuel Burning Appliances” is found listed in Chapter 80 under the National Fire Protection Association heading.

Why is it listed there?

Because it is referenced in 603.2

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NFPA 211 example continued...

- *To the right of the entry for **NFPA 211** we see ‘**603.2**’ listed.*
- *This tells us **NFPA 211** is a direct reference to that section of the fire code.*
- ***Section 603.2 CHIMNEYS** - the last sentence lists NFPA 211.*

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Section 603

FUEL FIRED APPLIANCES

- *This section has subsections **603.1 through 603.9***
- *How do we use **NFPA 211-13** in conjunction with these provisions?*

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NFPA 211(2013)

1. The **first** concept to understand is that we only apply the '**maintenance**' provisions of the referenced standard.
 1. See 'Chapter 14 Maintenance' of NFPA 211-13
2. The **second** concept is only to apply those provisions not already covered by the language found directly within the 2015-NJIFC or those that provide further guidance on compliance.

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NFPA-211-13

- **Chapter 14 Maintenance**
- 14.1 Initial Installation
- 14.2 Annual Inspection
- 14.3 Inspection — Connections
- 14.4 Appliance or Connector Replacement
- 14.5 Cleanout Doors
- 14.6 Cleaning Methods
- 14.7 Evidence of Damage
- 14.8 Operating Malfunction
- 14.9 Damaged or Deteriorated Liners
- 14.10 Unused Openings

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NJAC 5:70-1.3(b) Example

- A rock and roll band wishes to use flame projectors as part of their act in a public assembly.
- The equipment uses propane as a fuel and they have applied for a fire safety permit.
 - What are the code requirements?

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NJAC 5:70-1.3(b) example...

308.3.2 Theatrical performances.

Where approved, open-flame devices used in conjunction with theatrical performances are allowed to be used **when adequate safety precautions have been taken in accordance with NFPA 160-11**



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NFPA 160 -11

- Adequate safety precautions in accordance with NFPA 160
- All fire safety provisions in Chapter 4 to 11 could be applied including emergency plans, fire extinguishers, standby personnel, and operation manuals and documentation as well as demonstration

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NFPA 160-(2011) Equivalency

- NFPA-160
- **1.5 Equivalency.** Nothing in this standard is intended to prevent the use of systems, methods, or devices of equivalent or superior quality, strength, fire resistance, effectiveness, durability, and safety over those prescribed by this standard.

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NFPA 160-(2011) Equivalency

- **“1.5.1 Technical documentation: shall be submitted to the authority having jurisdiction to demonstrate equivalency.**
- **1.5.2 The system, method, or device shall be approved for the intended purpose by the authority having jurisdiction”.**

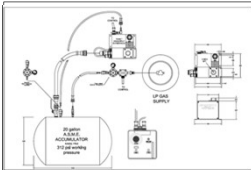
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NFPA 160-(2011) Equivalency

- **So What does this mean to the Fire Code Official ?**
- **Technical Documents can be based upon listing of individual component by UL or CGA**
Or
- **Manufactures instruction manual-safety precautions**
Or
- **Parameters specified in the permit by the Fire Code Official**

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Flame Projector- Approvals



“System should be approved and certified by ARL (Applied Research Laboratory), NRTL, UL, North American TUV, Mark Standards, State Mechanic Certified to comply with NFPA 160.2001 Codes”.

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FM & Underwriters Laboratories

- *Factory Mutual and Underwriters Laboratories are two of the oldest and most recognized testing agencies in the world.*
 - *Factory Mutual systems – 1835*
 - *Underwriters Laboratories – 1894*
- *The primary purpose of these organizations are founded on public safety*

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Testing and Listings: 'Approved Agency'

- *UL, like many test facilities and firms, provides for testing and listing of products.*
- *These listings become a further reference for the Fire Inspector.*
- *Materials, equipment, devices and systems can only be used in accordance with the limitations of those listings.*
 - *Listings are found in the UL Fire Protection Equipment Directory*

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UL-Product Spec



UL-product spec video

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Testing and Listings:
‘Approved Agency’

■ **605.7 Appliances:**
*Electrical appliances and fixtures shall be **tested and listed** in published reports of inspected electrical equipment by an **approved agency** and **installed and maintained in accordance with all instructions** included as part of such listing.*

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Testing and Listings:
‘Approved Agency’

■ **605.7** restricts the use of electrical appliances and equipment to those installations that are specifically provided for in the approval listing.

■ “Since the ‘**manufacture’s instructions**’ are integral to that approval they become a reference document for the use of the appliance pursuant to health and safety codes”.

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Testing and Listings: example...

Coffee Makers

- There are Coffee Makers listed for household (domestic) use
- UL -1082, and,
- There are Coffee Makers listed for commercial use UL 197.
- "Only the commercially listed Coffee Makers are permitted to be used in commercial cooking locations"



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Testing and Listings: concept...

- This concept applies to appliances, devices, and equipment throughout the code. Whether it is associated with fire protection equipment, electrical equipment, equipment for use with hazardous materials, etc., the listings and manufacturers instructions have to be applied the same as any other code provision.

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Let's look at one more Example

- 609.3.3.2 Grease accumulation. If during the inspection it is found that hoods, grease-removal devices, fans, ducts or other appurtenances have an accumulation of grease, such components shall be cleaned in accordance with ANSI/IFCA C 10
- This is a new standard.

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ANSI/IKECA C-10

- Commercial kitchen exhaust systems remove smoke, soot and grease-laden vapor resulting from cooking operations.
- These systems become contaminated with grease and cooking by-products over time. Accumulations of these combustible contaminants create a fire safety hazard to workers, patrons, other building occupants and property.
- Mitigation of this hazard requires periodic cleaning of commercial kitchen exhaust systems. This standard is intended to determine the frequency and necessity for commercial kitchen exhaust system cleaning through inspection procedures, to define acceptable methods for cleaning exhaust systems and components, and to set standards for acceptable post-cleaning cleanliness.

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Inspection Gauge



- Grease comb is run along the inside of hood or duct to determine the level of cleaning necessary.

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Portable Fire Extinguishers
Class Exercise

Alternative Class Exercise : Commodity Code NFPA-13-13
Press here!

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Scenario

- You are inspecting a flammable liquid storage room at an industrial facility. The room contains 100 gallons of Acetone a water soluble flammable liquid. You determine that portable fire extinguishers are required by code section 5704.3.3.1.
- The owners asks you what type and size of fire extinguisher is required?

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901.6.1 Standards

- *"Fire protection systems shall be inspected, tested and maintained in accordance with the referenced standards in Table 901.6.1"*



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Table 901.6.1

TABLE 901.6.1
FIRE PROTECTION SYSTEM MAINTENANCE STANDARDS

SYSTEM	STANDARD
Portable fire extinguishers	NFPA 10
Carbon dioxide fire-extinguishing system	NFPA 12
Halon 1301 fire-extinguishing systems	NFPA 12A
Dry-chemical extinguishing systems	NFPA 17 ^a
Wet-chemical extinguishing systems	NFPA 17A ^a
Water-based fire protection systems	NFPA 25 ^a
Fire alarm systems	NFPA 72 ^b
Smoke and heat vents	NFPA 204
Water-mist systems	NFPA 750
Clean-agent extinguishing systems	NFPA 2001
Smoke control systems	NFPA 92
Smoke and heat vents	NFPA 204
Carbon monoxide warning equipment	NFPA 720

NFPA 10 in Chapter 80
2013 Edition

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906.2 General Requirements

■ **Portable fire extinguishers shall be selected, installed and maintained in accordance with this section and NFPA-10**

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Where Does NFPA 10 Apply?

■ **906.2 Exception 2.5 – hydrostatic test frequency NFPA 10**

2.5. A written log of required hydrostatic test dates for extinguishers shall be maintained by the *owner* to verify that hydrostatic tests are conducted at the frequency required by NFPA 10.

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Where Does NFPA 10 Apply?

TABLE 906.3(1)
FIRE EXTINGUISHERS FOR CLASS A FIRE HAZARDS

	LIGHT (Low) HAZARD OCCUPANCY	ORDINARY (Moderate) HAZARD OCCUPANCY	EXTRA (High) HAZARD OCCUPANCY
Minimum rated single extinguisher	2-A ^a	2-A	4-A ^a
Maximum floor area per unit of A	3,000 square feet	1,500 square feet	1,000 square feet
Maximum floor area for extinguisher ^b	11,250 square feet	11,250 square feet	11,250 square feet
Maximum distance of travel to extinguisher	75 feet	75 feet	75 feet

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m², 1 gallon = 3.785 L.
a. Two 2½-gallon water-type extinguishers shall be deemed the equivalent of one 4-A rated extinguisher.
b. Annex E.3.3 of NFPA 10 provides more details concerning application of the maximum floor area criteria.
c. Two water-type extinguishers each with a 1-A rating shall be deemed the equivalent of one 2-A rated extinguisher for Light (Low) Hazard Occupancies.

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Where Does NFPA 10 Apply?

- 906.3.1 Class A Fire Hazards:
 - See Table 906.3(1) Note b:
 - “Annex E.3.3 of NFPA 10 provides more detail concerning the maximum floor area criteria”
 - Acetone is a water soluble flammable liquid and not a Class A Fire hazard – So move on!

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Where Does NFPA 10 Apply?

- 906.3.2 Class B Fire Hazards:

906.3.2 Class B fire hazards. Portable fire extinguishers for occupancies involving flammable or combustible liquids with depths of less than or equal to 0.25-inch (6.4 mm) shall be selected and placed in accordance with Table 906.3(2).

Portable fire extinguishers for occupancies involving flammable or combustible liquids with a depth of greater than 0.25-inch (6.4 mm) shall be selected and placed in accordance with NFPA 10.

This section applies to amounts greater then 0.25 inches
So we need to look at Table 906.3(2).

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Where Does NFPA 10 Apply?

TABLE 906.3(2)
FLAMMABLE OR COMBUSTIBLE LIQUIDS WITH DEPTHS OF LESS THAN OR EQUAL TO 0.25-INCH^a

TYPE OF HAZARD	BASIC MINIMUM EXTINGUISHER RATING	MAXIMUM DISTANCE OF TRAVEL TO EXTINGUISHERS (feet)
Light (Low)	5-B	30
	10-B	50
Ordinary (Moderate)	10-B	30
	20-B	50
Extra (High)	40-B	30
	80-B	50

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.
a. For requirements on water-soluble flammable liquids and alternative sizing criteria, see Section 5.5 of NFPA 10.

Note a: for requirements on water soluble flammable liquids
And alternative sizing see Section 5.5 of NFPA 10-13

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NFPA 10-13 Section 5.5.3

5.5.3 Water-Soluble Flammable Liquid Fires (Polar Solvents). Aqueous film-forming foam (AFFF) and film-forming fluoro-protein foam (FFFP) types of fire extinguishers shall not be used for the protection of water-soluble flammable liquids, such as alcohols, acetone, esters, ketones, and so forth, unless specifically referenced on the fire extinguisher nameplate.

*Section 5.5.3 tells us that either (aqueous film forming foam) AFFF or Film forming Fluoro-Protein foam) FFFP **will not be appropriate for water soluble flammable liquids unless they are alcohol resistant and referenced on the label***

*Therefore any other type **Class B** fire extinguisher or **AR-AFFF** or **AR-FFFP** would be acceptable. The size and travel distance are based on T-906.3(2) on the type of hazard*

OK I have the type extinguishers to use but What is the Hazard Category in Table 906.3(2)?

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NFPA 10-13 Section 5.4.1.3

- **Step 1** – Section 906 is silent on hazard classification
- **Step 2** – Chapter 2 has no definition on hazard classification
- **Step 3** – Apply **NJAC 5:70-1.3(b)** using **NFPA 10–13 section 5.4 “Classifications of Hazards”**

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NFPA 10–13 section 5.4

■ Section 5.4.1.3

5.4.1.3* Extra Hazard. Extra hazard occupancies shall be classified as locations where the quantity and combustibility of Class A combustible material are high or where high amounts of Class B flammables are present and rapidly developing fires with high rates of heat release are expected. These occupancies consist of fire hazards involved with the storage, packaging, handling, or manufacture of Class A combustibles, and/or the total quantity of Class B flammables expected to be present is more than 5 gal (18.9 L) in any room or area.

The Area is Extra Hazard as it contains more than 5 gallons of flammable Liquid and would require 40-B at 30 feet travel distance or 80-B at 50 feet travel distance

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One Last Note

The last reference to NFPA-10 is for **Class “D”** portable fire extinguishers in section **906.3.4** and they would be installed in accordance with **section 6.5 of NFPA-10**

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Summary

■ In this module we...

- Defined a code and a standard and review the difference.
- Reviewed standards impact on fire code enforcement.
- Reviewed when and how Chapter 80 of the NJIFC is used.
- Reviewed how we can use standards not specifically referenced by the NJIFC.

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Summary

■ We...

- Applied ANSI/IKECA C-10 to a commercial kitchen system
- We applied NFPA 10-13 to Portable Fire Extinguishers as identified in the NJIFC

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Review Questions

■ See student Manual for Review Questions
– Module 5 Reference Standard Review Questions

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Next Lesson

Module 6
Inspection Overview
Date/time

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End of Module

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