



FIRE INSTRUCTOR I

Student Presentation Lesson Plan

10-Impact of Fire on Wood and Masonry

Outline of Instruction

Objective

Upon successful completion of this lesson, the student shall be able to:

- Describe the impact of fire on common building materials. [NFPA® 1001, 5.3.4, 5.3.10, 5.3.12]

Instructor Directions

1. Set up non-projectable training aids
 - a. Chart pad to include:
 - i. Title Page
 - ii. Acronym
 - iii. Summary
 - iv. 1 Application scenario
 - v. 2 Evaluation questions
2. Set up projectable training aids (LCD projector & computer)
3. Present lecture utilizing this outline of instruction, non-projectable and projectable audio visual aids.
 - a. Overall time 18 min. (set up, present topic, and take down of audio visuals)
 - b. Presentation time 8-12 min. (presentation time is part of the 18 min)
4. Breakdown of projectable training aids.

Reference Stowell, F.(2013). Essentials of Fire Fighting and Fire Department Operations (6th ed.). Upper Saddle River, N.J.: Brady Pub.; ISBN# 978-013-314080-4

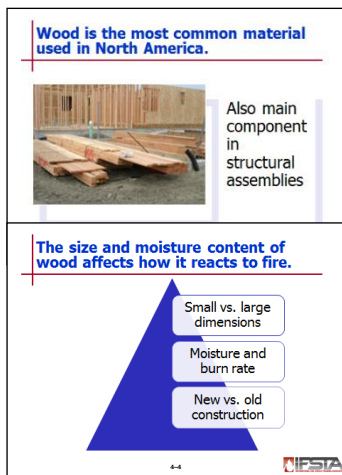
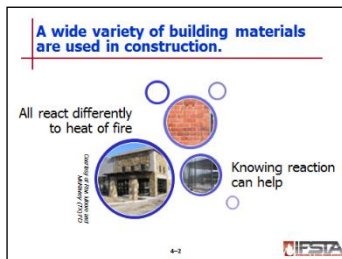
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Preparation

Introduction

- Instructor introduction
- Objectives
- Preparation Step

Presentation



Building Materials

Variety used in construction

All react differently when exposed to heat of fire

Knowledge of reaction will give an idea of what to expect from a fire in that type of construction

Wood

Most common material used in North America

Main component in variety of structural assemblies

Size and moisture content affect how reacts to fire

Smaller dimensions

Easier to ignite

Lose structural integrity faster

Protected by gypsum drywall or other insulation

Large beams

Difficult to ignite

Retain structural integrity even after prolonged exposure to direct flame

Moisture content affects burn rate

High moisture content – Can be known as green wood

Does not ignite readily

Does not burn as fast as kiln dried or dehydrated by exposure to air over long periods of time

May be pressure treated with fire-retardant chemicals to reduce ignition and burn speed

Not always totally effective in reducing fire spread

Weakens load-carrying ability by as much as twenty-five percent

Newer construction contains composite building components and materials

Made of wood fibers, plastics, other substances; joined by glue or resin binders

Include plywood, particleboard, fiberboard, oriented strand board (OSB)

Under fire conditions

May be highly combustible

Can produce significant toxic gases

Can rapidly deteriorate

Masonry

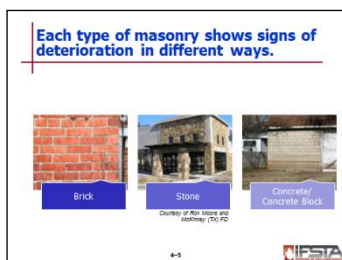
Includes bricks, stones, concrete blocks

Brick, stone used to create veneer walls –
Decorative covers for wood, metal,
concrete block load-bearing walls

Minimally affected by fire, exposure to high temperatures

Signs of deterioration

Bricks – Rarely show any signs of loss of integrity, serious deterioration



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Stone, concrete – May lose small portions of surface when heated, called spalling

Concrete blocks – May crack, usually retain strength and structural stability

Mortar between bricks, blocks, stone – May degrade by heat, display signs of weakening

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Chart Pad:

Title Page

- Name, Department, Title of Presentation

Acronym

- **L.I.P.** (Life Safety, Incident Stabilization, Property Conservation)
instructor relates these priorities to the lecture

Summary (2-4 key points)

- Instructor reviews 2-4 key points of the lesson plan to clarify uncertainties, prevent misconceptions, increase learning and improve retention

Application (1 scenario)

- The student is given a scenario where the student will apply all of the knowledge that was given in the lecture. *This is not a question*, it is merely the explanation of the scenario.

Evaluation (2 questions)

- Instructor should ask students 2 direct questions that were presented during the lesson. *Answer to the questions must be give after asking the question.*