



# Fire Protection Training

Procedures Handbook 4300

FIRE PHYSICS & CHEMISTRY

**TOPIC:** Extinguishing Agents For Electrical Fires

**TIME FRAME:** 15 Minutes

**LEVEL OF INSTRUCTION:**

**BEHAVIORAL OBJECTIVE:**

*Condition:* A written quiz

*Behavior:* The student will describe the advantages, disadvantages and precautions when using different extinguishing agents on Class "C" fires

*Standard:* With a minimum of 70% accuracy

**MATERIALS NEEDED:**

- Chalkboard
- Chalk
- Appropriate visual aids
- Audio visual equipment

**REFERENCES:**

- IFSTA, Essentials of Fire Fighting, 2nd Edition, Chapter 2
- IFSTA, Fire Fighter Occupational Safety, 1st Edition, Chapter 9

**PREPARATION:** Because of electricity's ability to kill or injure immediately and without warning, firefighters must exercise extreme caution on electrical fires.



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EXTINGUISHING AGENTS FOR  
ELECTRICAL FIRES

PRESENTATION	APPLICATION
<p><b>I. A SMALL FIRE IN ENERGIZED ELECTRICAL EQUIPMENT CAN BEST BE HANDLED WITH A PORTABLE FIRE EXTINGUISHER.</b></p> <p>A. The Extinguishing Agent Chosen Must Not Conduct Electricity.</p> <ol style="list-style-type: none"><li>1. Must be rated for Class C fires.</li><li>2. Must not be water or water based agent (i.e., foam).</li></ol> <p>B. All Electrical Wires Should Be Considered OF High Voltage and Energized Unless Known to be Otherwise.</p> <p>C. De-energized Electrical Equipment, Becomes a Class A or B Fire, Depending On the Materials Involved.</p> <p><b>II. EXTINGUISHING AGENTS THAT ARE SAFE TO USE ON CLASS C FIRES INCLUDE:</b></p> <p>A. Carbon Dioxide</p> <ol style="list-style-type: none"><li>1. Advantages<ol style="list-style-type: none"><li>a. Inert gas</li><li>b. Inexpensive</li><li>c. Effective on B and C fires in confined spaces</li><li>d. Will not leave a residue on electrical equipment</li></ol></li></ol>	<p>Emphasize that the preferred method of dealing with electrical incidents including fire is to have the power company intercede</p>



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PRESENTATION	APPLICATION
<ul style="list-style-type: none"><li>2. Disadvantages<ul style="list-style-type: none"><li>a. Will dissipate if windy or drafty</li><li>b. Will exclude oxygen. Could be hazardous to user</li><li>c. Must be close to fire during application</li><li>d. Leaves condensation which is harmful in a sensitive electronic environment</li></ul></li><li>B. Dry Chemical<ul style="list-style-type: none"><li>1. Advantages<ul style="list-style-type: none"><li>a. Rapid flame knockdown</li><li>b. Can be applied at a greater distance</li><li>c. Some are effective on Class A, B and C fires</li><li>d. Can be used concurrently with other extinguishing agents</li></ul></li><li>2. Disadvantages<ul style="list-style-type: none"><li>a. Leaves a corrosive residue that must be cleaned</li><li>b. Dangerous chemical reaction if mixed with other dry chemical agents</li></ul></li></ul></li><li>C. Halon<ul style="list-style-type: none"><li>1. Advantages<ul style="list-style-type: none"><li>a. Quick and effective knockdown</li><li>b. No residue on electrical equipment</li><li>(1) Agent of choice in sensitive electronic environment</li></ul></li></ul></li></ul>	



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<p>2. Disadvantages</p> <ul style="list-style-type: none"><li>a. Expensive</li><li>b. Dissipated by wind and draft</li><li>c. In thermal decomposition, the agent becomes toxic to breathe. Must use caution in confined spaces.</li><li>d. Linked to depletion of the ozone layer</li></ul>	<p>Ask questions and lead discussion throughout.</p>



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## ***SUMMARY:***

In order for a firefighter to extinguish a Class C fire safely, the advantages and disadvantages of available extinguishing agents must be known.

## ***EVALUATION:***

A written quiz.

## ***ASSIGNMENT:***

To be determined by instructor(s).