Fire Extinguisher

INTRODUCTION

Fire Extinguisher, portable device used to put out fires of limited size. Such fires are grouped into four classes, according to the type of material that is burning. Class A fires include those in which ordinary combustibles such as wood, cloth, and paper are burning. Class B fires are those in which flammable liquids, oils, and grease are burning. Class C fires are those involving live electrical equipment. Class D fires involve combustible metals such as magnesium, potassium, and sodium. Each class of fire requires its own type of fire extinguisher.

Standards for the selection, placement, and testing of portable fire extinguishers are issued by the National Fire Protection Association, a nonprofit technical and educational organization in Quincy, Massachusetts. The standards establish the minimum requirements for all types and sizes of extinguishers that are listed and rated by testing laboratories against standard test fires of the types they are designed to control. Each extinguisher is rated as to both type and size of the fire extinguished. For example, a 20-B extinguisher should extinguish a flammable-liquids fire that is 20 times the size of a fire that an extinguisher

rated 1-B would extinguish. Extinguishers that cannot extinguish the minimum size test fires are not listed or rated. Some extinguishers will put out only one class of fire; others are used for two or even three classes; none is suitable for all four classes.

Fire extinguishers may go unused for many years, but they must be maintained in a state of readiness. For this reason, periodic inspection and servicing are required, and that responsibility rests with the owner. Fire department inspectors check at periodic intervals to see that extinguishers are present where required by law and that they have been serviced within the specified time period.

II EXTINGUISHERS FOR CLASS A FIRES

Class A fire extinguishers are usually water based. Water provides a heat-absorbing (cooling) effect on the burning material to extinguish the fire. Stored-pressure extinguishers use air under pressure to expel water. Pump-tank extinguishers are operated by a hand pump.

III EXTINGUISHERS FOR CLASS B FIRES

Class B fires are put out by excluding air, by slowing down the release of flammable vapors, or by interrupting the chain reaction of the combustion. Three types of extinguishing agents—carbon dioxide gas, dry chemical, and foam—are used for fires involving flammable liquids, greases, and oils. Carbon dioxide is a compressed gas

agent that prevents combustion by displacing the oxygen in the air surrounding the fire. The two types of dry chemical extinguishers include one that contains ordinary sodium or potassium bicarbonate, urea potassium bicarbonate, and potassium chloride base agents; the second, multipurpose, type contains an ammonium phosphate base. The multipurpose extinguisher can be used on class A, B, and C fires. Most dry chemical extinguishers use stored pressure to discharge the agent, and the fire is extinguished mainly by the interruption of the combustion chain reaction. Foam extinguishers use an aqueous film forming foam (AFFF) agent that expels a layer of foam when it is discharged through a nozzle. It acts as a barrier to exclude oxygen from the fire.

IV EXTINGUISHERS FOR CLASS C FIRES

The extinguishing agent in a class C fire extinguisher must be electrically non-conductive. Both carbon dioxide and dry chemicals can be used in electrical fires. An advantage of carbon dioxide is that it leaves no residue after the fire is extinguished. When electrical equipment is not energized, extinguishers for class A or B fires may be used.

V EXTINGUISHERS FOR CLASS D FIRES

A heat-absorbing extinguishing medium is needed for fires in combustible metals. Also, the extinguishing medium

must not react with the burning metal. The extinguishing agents, known as dry powders, cover the burning metal and provide a smothering blanket.

The Underwriters' Laboratories, Inc., has available lists of approved fire extinguishers that may be purchased from different manufacturers. The extinguisher label gives operating instructions and identifies the class, or classes, of fire on which the extinguisher may be used safely. Approved extinguishers also carry the labels of the laboratories at which they were tested.