

WATER SOLUTION TYPE HAND FIRE EXTINGUISHER

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Revised

1. **PURPOSE:** To specify minimum requirements for a water solution type hand fire extinguisher which shall be suitable for use on incipient fires which may occur in an airplane cabin interior. The type of fire for which these units are intended is one involving combustible materials such as paper, textiles, and similar materials.

2. **SCOPE:** This specification covers two basic types as follows:

Type I	Stored pressure type
Type II	Cartridge operated type

3. **GENERAL REQUIREMENTS:**

3.1 **Material and Workmanship:**

3.1.1 **Materials:** Materials shall be of a quality which experience or tests have demonstrated to be suitable and dependable for use in aircraft equipment and with extinguishing medium used.

3.1.2 **Workmanship:** Workmanship shall be consistent with high-grade aircraft equipment manufacturing practice.

3.2 **Identification:** The following information shall be legibly and permanently marked on the extinguisher:

- (a) Name of extinguisher
- (b) SAE Spec. No. AS-245
- (c) Capacity
- (d) Test pressure of Container
- (e) Manufacturer's Part or Model Number
- (f) Manufacturer's Name and/or Trade Mark
- (g) Operating and Maintenance Instructions

3.3 **Environmental Conditions:** The following conditions have been established as design requirements only. Tests shall be conducted as specified in Sections 5 and 6.

3.3.1 **Temperature:** This extinguisher shall withstand, without deterioration temperatures from -40F to +140F, and shall operate satisfactorily within that temperature range.

3.3.2 **Humidity:** The extinguisher shall function and shall not be adversely affected when exposed to any relative humidity in the range of from 0 to 95% at a temperature of approximately 90F.

3.3.3 **Altitude:** The extinguisher shall function and not be adversely affected when subjected to a pressure and temperature range equivalent to -1000 feet to +40,000 feet standard altitude, except as limited by the application of 3.3.1.

Section 7C of the SAE Technical Board rules provides that: "All technical reports, including drafts approved and practices recommended, are advisory only, their use by anyone engaged in industry or trade is entirely voluntary. There is no agreement to defend, the Board and its Committees will not investigate or consider to conform to or be guided by any technical report. In formulating and approving technical reports, the Board and its Committees will not investigate or consider patents which may apply to the subject matter. Prospective users of the report are responsible for protecting themselves against liability for infringement of patents."

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3.3.4 Vibration: When mounted in accordance with the extinguisher manufacturer's instructions the unit shall not be adversely affected when subjected to a vibration of 2400 cycles per minute with a total excursion of  $3/32$ " , and when subjected to a vibration of 3000 cycles per minute with a total excursion of .015 inches.

#### 4. DETAIL REQUIREMENTS:

##### 4.1 Design:

4.1.1 The extinguisher shall consist of:

Type I - A container having a dischargeable capacity of at least 1-3/8 qts., a connection for pressurizing the unit and a means of controlling the discharge of the liquid content.

Type II - A container having a dischargeable capacity of at least 1-3/8 qts., a suitable holder and releasing means for the cartridge, and a means of controlling the discharge of the liquid content.

4.1.2 The container shall be designed for a minimum burst pressure of 500 p.s.i.

4.1.3 The Type I unit shall be fitted with an AN connection in accordance with AN-C-71, or equivalent, for pressurizing the unit. A pressure gage to indicate the stored pressure shall also be provided. The gage range shall be at least 100-lbs. above the charged pressure of the unit at 70F.

4.1.4 Type II units shall use as a pressurizing means a carbon dioxide filled cartridge made in accordance with Specification AN-C-105 or equivalent, but in addition suitably winterized to insure operation at -40F. A means shall be provided to readily release the carbon dioxide from the cartridge immediately prior to the use of the units. The torque required to release the cartridge shall not exceed 25 inch pounds. The cartridge holder shall be designed so that it cannot be assembled if the cartridge is in the wrong position. The cartridge holder shall be designed so that a simple visual inspection will indicate whether a cartridge is in the holder.

4.1.5 The extinguisher shall be provided with a valve which will control the liquid discharge. The extinguisher shall be designed so that after the unit has been placed in operation it shall be completely controllable with one hand, including starting, stopping and directing the discharge stream. The force to operate the valve shall not exceed 3 pounds if the lever type is used. If a rotary type is used the torque required shall not exceed 25 inch-pounds.

4.1.6 Type I units shall be designed so that the maximum stored pressure at 70F. shall not exceed 175 psi. Type II units shall be designed so that the instantaneous pressure developed at 70F when the cartridge is released into a filled unit shall not exceed 200 psi.

4.1.7 The extinguisher shall be designed so that it cannot be overfilled with extinguishing medium.

4.1.8 The extinguisher shall be provided with a satisfactory seal to indicate tampering and/or operation.

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**4.2 Liquid Charge:**

- 4.2.1 The liquid used as the extinguishing medium shall be as free from corrosive effects as practicable.
- 4.2.2 The fire extinguishing liquid shall be non-toxic and non-injurious to personnel and shall not form injurious toxic fumes when discharged on a fire.
- 4.2.3 The fire extinguishing liquid shall not deteriorate or lose its efficiency over a one year period.
- 4.2.4 The fire extinguishing liquid shall have extinguishing qualities equal to or better than an equal quantity of water when used at 70 F.
- 4.2.5 A wetting agent may be used provided the resulting solution complies with all requirements of the specification.

**4.3 Discharge Characteristics:**

- 4.3.1 At 70F the time of effective discharge for a full extinguisher shall be not less than 30 nor more than 45 seconds.
- 4.3.2 At 70F, with the extinguisher nozzle approximately 4 feet above the floor, it shall throw a stream a horizontal distance of not less than 20 feet and maintain this range for at least three-quarters of the contents.
- 4.3.3 The extinguisher at 70F shall be capable of discharging three-quarters of its contents by directing the stream in any desired direction.

**4.4 Bracket:**

- 4.4.1 A bracket shall be furnished from which the extinguisher can be quickly and easily removed. The bracket shall be designed to hold the charged extinguisher against an acceleration force of 10 g applied in any direction.

**5. INDIVIDUAL PERFORMANCE REQUIREMENTS:**

All extinguishers, or components of same, shall be subjected to whatever tests the manufacturer deems necessary to demonstrate specific compliance with this specification, including the following requirements:

- 5.1 Hydrostatic Tests: Each container shall be hydrostatically tested to 250 psi for a one minute period and shall show no leakage or detriment effects.

**6. QUALIFICATION TESTS:**

As many extinguishers as deemed necessary by the manufacturer to demonstrate that all extinguishers will comply with the requirements of this section shall be tested. The tests of each extinguisher shall be conducted consecutively and after the tests have been initiated, no servicing (except recharging and repressurizing) or adjustments shall be permitted. For both types of extinguishers, these tests shall be conducted with a fully charged unit. The Type I units shall be pressurized to the recommended pressure at 70F. The Type II units shall have the cartridge inserted in the holders.