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MIL-E-5627B(WP)
9 August 1965

Superseding
MIL-E-5627A(Wep)
4 February 1963

MILITARY SPECIFICATION

EXTINGUISHERS, FIRE, CARBON DIOXIDE, PORTABLE

This specification has been approved by the Bureau of Naval Weapons, Department of the Navy.

1. SCOPE

1.1 This specification covers portable carbon dioxide fire extinguishers for use with Naval aircraft.

2. APPLICABLE DOCUMENTS

2.1 The following specifications, standards, drawings, and publications form a part of this specification. Unless otherwise specified, the issue in effect on date of invitation for bids shall apply.

SPECIFICATIONS

Federal

BB-C-101	Carbon Dioxide (CO_2): Compressed
BB-N-411	Nitrogen

Military

MIL-P-116	Preservation, Methods of
MIL-E-5272	Environmental Testing, Aeronautical and Associated Equipment, General Specification for

FSC 4210

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Military (Cont'd)

MIL-E-7729	Enamel, Gloss
MIL-S-7742	Screw Threads, Standard, Optimum Selected Series, General Specification for
MIL-P-007936	Parts and Equipment, Aeronautical, Preparation for Delivery
MIL-P-8585	Primer Coating, Zinc Chromate, Low-Moisture-Sensitivity
MIL-A-8625	Anodic Coatings, for Aluminum and Aluminum Alloys
MIL-D-8634	Decals, Elastomeric Pigmented Film, For Use on Exterior Surfaces

STANDARDS

Military

MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129	Marking for Shipment and Storage
MIL-STD-130	Identification Marking of U. S. Military Property
MIL-STD-143	Specifications and Standards, Order of Precedence for the Selection of
MS26545	Cylinders, Compressed Gas, Nonshatterable
MS33586	Metals, Definition of Dissimilar

Air Force-Navy Aeronautical

AN6045	Extinguisher Assembly - Fire, Carbon Dioxide, Portable
AN6046	Bracket-Mounting, Extinguisher, Fire

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(When requesting any of the applicable documents, refer to both title and number. All requests should be made via the cognizant Government quality control representative. Copies of this specification and other unclassified specifications and drawings required by contractors in connection with specific procurement functions should be obtained upon application to the Commanding Officer, Naval Supply Depot (Code 1051), 5801 Tabor Avenue, Philadelphia, Pennsylvania 19120. All other documents should be obtained from the procuring activity or as directed by the contracting officer.)

3. REQUIREMENTS

3.1 Preproduction - The extinguisher furnished under this specification shall be a product which has been inspected and passed the preproduction inspection specified herein.

3.2 Selection of specifications and standards - Specifications and standards for necessary commodities and services not specified herein shall be selected in accordance with MIL-STD-143.

3.3 Materials - Materials shall conform to applicable specifications and shall be as specified herein and on applicable drawings. Materials which are not covered by specifications, or which are not specifically described herein, shall be of the best quality, of the lightest practicable weight, and suitable for the purpose intended.

3.3.1 Metal parts - All metal parts shall be of a corrosion-resistant material or treated in a manner to render them adequately resistant to corrosion.

3.3.1.1 Dissimilar metals - Unless suitably protected against electrolytic corrosion, dissimilar metals shall not be used in intimate contact with each other. Dissimilar metals are defined in MS33586.

3.4 Design and construction - The design and construction of the extinguishers shall be in accordance with AN6045 and the part number specified in the contract or order (see 6.2). Extinguishers shall permit easy operation and shall permit opening and closing of valves by the hand holding the extinguisher, without the use of the other hand and with no external support. Discharges shall be effected through a discharge horn which shall be easily rotatable. Extinguishers shall consist of the following:

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Cylinder
Valve and siphon tube
Extension nipple
Discharge horn
Strainers
Carrying handle
Mounting brackets

3.4.1 Cylinders - Cylinders shall conform to MS26545, except that cylinders with 1-1/8-12 NF3 external thread in accordance with MIL-S-7742 shall be permitted.

3.4.1.1 Charge - Nitrogen conforming to BB-N-411, type I, grade B, shall be introduced into the cylinder until the pressure in the cylinder is 200 psi at 21°C(70°F) or corresponding pressure at other temperatures of the gas. The extinguishers shall then be charged with carbon dioxide (CO_2) conforming to BB-C-101, type II, grade B, in the amount shown in AN6045.

3.4.2 Valve and siphon tube - Cylinders shall be provided with corrosion-resisting metal discharge valves. Valves shall be provided with rigid siphon tubes. Valves shall be of the self-seating type, shall provide an unrestricted passage for the discharge of the gas to the discharge horn, and shall be capable of being readily recharged without the use of special tools. Areas of gas passages shall be so portioned as to prevent freezing and accumulation of snow so that stoppage will not occur when the extinguisher is operated at low temperatures.

3.4.2.1 Safety features - Valves shall be provided with a safety outlet incorporating a frangible safety disc that shall permit release of the cylinder contents in the event of excessive pressure. Sealing wire shall be provided on discharge valves to prevent accidental operation of valves and indicate when the cylinder has been used.

3.4.3 Extension nipples - Extinguishers shall be fitted with extension nipples fitted at the ends with suitable couplings for connection to discharge valves and discharge horns. Couplings, at the discharge valve end of the nipplies, shall impose sufficient frictional load on the nipple so that the horn may be rotated from its normal stowage position, to any desired position parallel to the cylinder, without undue effort and then retain this position without assistance.

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3.4.4 Discharge horn - Suitable discharge horns, having a high dielectric strength, shall be provided as a component part of each extinguisher. Horns on each size extinguisher shall be designed for best extinguishing characteristics.

3.4.5 Strainers - Monel metal strainers shall be installed in either the valve or discharge fitting. The strainer shall be shaped so as to provide sufficient discharge area even when partially clogged with dirt or other foreign matter. The strainer shall be readily accessible to permit its removal for cleaning.

3.4.6 Carrying handle - The carrying handle shall be constructed of a metallic material and shall provide for a squeeze-grip type method of operating the valve. The loaded extinguisher shall assume an angle to provide convenient carrying.

3.4.7 Mounting brackets - The mounting brackets shall conform to AN6046. Brackets shall be so designed that the extinguisher is securely held in place when it is stowed away and shall permit quick release of the fire extinguisher without interference.

3.5 Performance -

3.5.1 CO_2 leakage - The fully charged extinguishers, when tested as specified in 4.6.2, shall not show any evidence of leakage or loss of weight.

3.5.2 Valve leakage - The valve, when tested as specified in 4.6.3, shall not show any evidence of leakage or damage.

3.5.3 Safety disc rupture - The safety disc, when tested as specified in 4.6.4, shall rupture between 2650 and 3000 psi.

3.5.4 Discharge characteristics - The extinguishers, when tested as specified in 4.6.5, shall discharge at least 70 percent of the original charge in the time specified in Table I.

Table I. Discharge Time

Extinguisher AN assembly Part No.	Discharge Time at 21°C(70°F) (Seconds)
AN6045-57	5 to 8
AN6045-96	8 to 12
AN6045-147	12 to 18
AN6045-205	12 to 18

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3.5.5 Low temperature - The extinguishers, when tested as specified in 4.6.6, shall not have any accumulation of snow or ice preventing or retarding discharge at the specified temperature.

3.5.6 High temperature - The extinguishers, when tested as specified in 4.6.7, shall operate satisfactorily at the specified temperature.

3.5.7 Salt spray - The extinguishers, when tested as specified in 4.6.8, shall not show any evidence of mechanical or material failure.

3.5.8 Vibration - The extinguishers, when tested as specified in 4.6.9, shall not show any evidence of mechanical or material failure.

3.6 Interchangeability - All parts having the same manufacturer's part number shall be functionally and dimensionally interchangeable.

3.7 Weight - Weight of fire extinguisher, complete and charged shall conform to AN6045. The weight of the extinguisher does not include the weight of the mounting bracket.

3.8 Finish - Cylinders and other exposed steel parts shall be completely coated with one coat of zinc-chromate primer conforming to MIL-P-8585, and followed by two coats of red baking enamel conforming to MIL-E-7729, type II. Two coats of gloss black enamel, in accordance with MIL-E-7729, type II, shall be baked on the handle of the extinguisher after application of one coat of zinc primer. Anodic coatings for aluminum and aluminum alloys shall be in accordance with MIL-A-8625.

3.9 Identification of product - The extinguishers shall be marked for identification in accordance with MIL-STD-130, except that the Federal Stock Number shall be omitted from the nameplate. The extinguishers shall be provided with a decalcomania nameplate conforming to MIL-D-8634, type II:

3.9.1 Nameplate - The following information shall be permanently and legibly stamped on the decalcomania nameplate:

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EXTINGUISHER; FIRE, CARBON DIOXIDE, PORTABLE
AN Part No. _____.
Weight empty, including horn _____lbs.
Weight of CO_2 charge _____lbs.
Weight of CO_2 and nitrogen charge _____lbs.
Total weight _____lbs.
Date of last weight inspection _____.
Manufacturer's name or trademark _____.
Manufacturer's assembly Part No. _____.

3.9.2 Instruction plate - Decalcomania type instruction plates shall be placed in a conspicuous place on each extinguisher. They shall give suitable instructions for the use of the extinguisher. Decalcomanias shall conform to MIL-D-8634, type II.

3.10 Workmanship - The extinguishers shall be uniform in quality and shall be free from irregularities, defect, or foreign matter which could adversely affect, safety, performance, reliability, or durability.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection - Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own facilities or any commercial laboratory acceptable to the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.2 Classification of inspection - The examination and testing of the extinguishers shall be classified as follows:

(a) Preproduction - Preproduction inspection consists of examinations and tests performed on samples which are representative of the production item after award of a contract to determine that the production item meets the requirements of this specification.

(b) Quality conformance inspection - Quality conformance inspection consists of examinations and tests performed on individual products or lots to determine conformance of the products or lots with the requirements set forth in this specification.

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4.3 Preproduction inspection - Preproduction inspection shall consist of the examination and tests deemed necessary by the procuring activity.

4.3.1 Preproduction samples - Unless otherwise specified, as soon as practicable after the award of the contract or order, the manufacturer shall submit 2 extinguishers of each size for which preproduction inspection is required. The samples shall be represenative of the construction, workmanship, components, and materials to be used during production. When a contractor is in continuous production of these extinguishers from contract to contract, submission of further preproduction samples on the new contract may be waived at the discretion of the procuring activity. Approval of the preproduction samples or the waiving of the preproduction inspection does not preclude the requirements of submitting to the quality conformance inspection. The preproduction samples shall be forwarded to a laboratory designated by the procuring activity (see 6.2). The preproduction samples shall be plainly identified by securely attached durable tags marked with the following information:

Sample submitted by (name) (date) for preproduction inspection in accordance with the requirements of MIL-E-5627B(WP) under contract no.

4.3.1.1 Upon completion of the preproduction inspection, all the applicable inspection reports and when applicable, recommendations and comments pertinent for use in monitoring production shall be forwarded to the Government quality control representative. The approved extinguishers shall be returned to the manufacturer for use in monitoring production.

4.4 Quality conformance inspection - Quality conformance inspecition shall consist of the following examinations and tests:

Visual examination
Dimensions
CO_2 leakage
Valve leakage
Discharge characteristics
Preparation for delivery

4.4.1 Sampling -

4.4.1.1 Inspection lot -

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4.4.1.1.1 Extinguisher - An inspection lot size shall be expressed in units of one extinguisher made under essentially the same conditions and from the same materials and components. The sample unit shall be one extinguisher.

4.4.1.1.2 Preparation for delivery - An inspection lot size shall be expressed in units of one fully prepared shipping container, containing extinguishers fully prepared for delivery, made from essentially the same materials and components. The sample unit shall be one shipping container, containing extinguishers fully prepared for delivery with the exception that it need not be sealed.

4.4.1.2 Sampling for tests and examinations of extinguishers - The sample size, acceptance criteria, tests, and examinations required for the extinguishers shall be as specified in Table II.

TABLE II

SAMPLE SIZE, ACCEPTANCE CRITERIA, TESTS, AND EXAMINATION OF THE EXTINGUISHERS

Inspection	Type of inspection	Method	Sample Size	Acceptance Criteria
Visual Examination (See classification of defects)	Critical Minor	4.6.1.1	Every extinguisher for critical defects. Inspection Level II 1/ for minor defects.	Reject all units with any critical defects. An acceptable quality level of 2.5 defects per hundred units for minor defects.
Dimensions	Major	4.6.1.1.1	Inspection Level S-1 1/	Acceptance number zero, rejection number 1.
CO_2 leakage	Major	4.6.2	Inspection Level S-1 1/	Acceptance number zero rejection number 1.
Valve leakage	Major	4.6.3	Inspection Level S-1 1/	Acceptance number zero, rejection number 1.
Discharge characteristics 2/	Major	4.6.5	Inspection Level S-1 1/	Acceptance number zero, rejection number 1.
Preparation for delivery	Minor	4.6.1.2	Inspection level S-2 1/	Total acceptable quality level of 4.0 percent defective.

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1/ The sample size shall be based only on the applicable sample size code letter corresponding to the specified inspection level of MIL-STD-105.

2/ Samples subject to this test shall be recharged and reexamined for valve leakage (see 6.2).

4.5 Test conditions - Unless otherwise specified, tests shall be conducted at a temperature of 75 ± 7°F and with the cylinder in the vertical position.

4.6 Inspection methods -

4.6.1 Visual examination -

4.6.1.1 Extinguisher - Every extinguisher shall be examined visually (for critical defects) to determine conformance to this specification and applicable drawings. The classification of defects, Table III, shall be used to classify the defects found.

4.6.1.1.1 Dimensions - The extinguisher shall be checked dimensionally to determine conformance to AN6045.

4.6.1.2 Preparation for delivery - Each of the fully prepared shipping containers, containing extinguishers of one size, selected as a sample unit from the lot shall be examined to determine that the packaging, packing, and marking conform to this specification. The classification of defects, Table IV, shall be used to classify the defects found.

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TABLE III

CLASSIFICATION OF DEFECTS FOR VISUAL EXAMINATION OF THE EXTINGUISHER

CRITICAL	MINOR
1. Material imperfections-foreign matter embedded	20. Marking - missing, insufficient, incorrect, illegible, or not permanent
2. Surface - unclean, rough, misaligned, or containing cracks, nicks, or other flaws	202. Color not as specified
3. Any component missing, malformed, fractured, or otherwise damaged	
4. Any component loose or otherwise not securely retained	
5. Incorrect assembling or improper positioning of components	
6. Any functioning part that works with difficulty	
7. Faulty workmanship or other irregularities	

TABLE IV

LIST OF DEFECTS FOR PREPARATION FOR DELIVERY

ITEM	DEFECTS
Exterior and interior markings	Missing, incorrect, incomplete, illegible: of improper size, location, sequence; or method of application; markings not the same on the interior and exterior containers.
Packaging and Packing materials	Any non-conforming component; any component missing, damaged, or otherwise defective.
Workmanship	Inadequate application of the components such as incomplete closure of the unit package, intermediate package, container flaps, loose strappings, etc.; bulging or distortion of the containers.
Exterior and interior weight or content	Number per container is more or less than required; gross or net weight exceeds the requirements; more than one size in the same container.

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4.6.2 CO_2 leakage - The fully charged extinguishers shall be weighed, the weight recorded, and then immersed in water for a period of not less than 4 hours. After the immersion period, the extinguisher shall be thoroughly dried and reweighed. The extinguishers shall meet the requirements specified in 3.5.1.

4.6.3 Valve leakage - This test shall be conducted on the valve only. The safety disc shall be removed and the safety outlet shall be suitably plugged. The valve shall be subjected to a slowly applied hydraulic pressure of 3000 psi and maintained for a period of 5 minutes. The valve shall meet the requirements specified in 3.5.2.

4.6.4 Safety disc rupture - The safety disc shall be installed in a suitable test fixture and subjected to a slowly applied hydraulic pressure. If the safety disc does not rupture before 3000 psi, the pressure shall be maintained at 3000 psi for 1 minute. The safety disc shall meet the requirements specified in 3.5.3.

4.6.5 Discharge characteristics - The extinguishers shall be charged to the capacity shown on AN6045 and weighed. The valve shall then be opened and at the cessation of snow, the valve shall be closed, the time noted, and the extinguisher reweighed. The extinguishers shall meet the requirements specified in 3.5.4. Each extinguisher subjected to this test shall be recharged prior to acceptance.

4.6.6 Low temperature - The extinguishers shall be subjected to the low temperature test specified in MIL-E-5272, Procedure I. The extinguishers shall meet the requirements specified in 3.5.5.

4.6.7 High temperature - The extinguishers shall be subjected to the high temperature test specified in MIL-E-5272, Procedure II. The total volume occupied by a single extinguisher or by several similar extinguishers shall not be more than 50 percent of the internal volume of the test chamber. The extinguishers shall meet the requirements specified in 3.5.6.

4.6.8 Salt spray - The extinguishers shall be subjected to the salt spray test specified in MIL-E-5272, Procedure I, for 50 hours. The extinguishers shall then be subjected to and pass the discharge characteristics test.

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4.6.9 Vibration - The extinguishers shall be subjected to 36 hours of vibration testing; 12 hours at each of two positions along its horizonatal axis and 12 hours along its vertical axis. The extinguishers shall be vibrated at a double amplitude of 1/32 to 1/16 inch and a frequency of 60 cycles per second. The extinguishers shall meet the requirements specified in 3.5.8. The extinguishers shall then be subjected to and pass the CO_2 leakage and discharge characteristics tests.

5. PREPARATION FOR DELIVERY

5.1 Packaging - The extinguisher shall be packaged in accordance with MIL-P-007936(Wep), Level A or C as specified in the contract or order (see 6.2). Level A shall be in accordance with MIL-P-116, Method III.

5.2 Packing - The extinguisher shall be packed in accordance with MIL-P-007936(Wep), Level A, B, or C as specified in the contract or order (see 6.2). As far as practical, containers shall be of minimum tare and cube consistent with the protection required and contain identical quantities.

5.3 Marking - Unless otherwise specified in the contract or order, marking shall be in accordance with MIL-STD-129.

6. NOTES

6.1 Intended use - The carbon dioxide fire extinguishers covered by this specification are intended for the extinguishment of fires encountered within the aircraft while in flight.

6.2 Ordering data - Procurement documents should specify the following:

(a) Title, number, and date of this specification.
(b) Applicable part number of extinguisher required (see 3.4).
(c) Whether preproduction inspection is required and where the samples should be delivered (see 4.3.1).
(d) Selection of applicable levels of preservation, packaging, and packing.

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(e) Applicable methods of cleaning and preservation.
(f) Items of data required (see 6.3).
(g) Samples subjected to the discharge test should be recharged and reexamined for CO_2 leakage and may be shipped as part of the contract or order provided no delay in shipment of the lot or order is incurred (see Table II).

6.3 Data - For the information of Contractors and Contracting Officers, any of the data specified in applicable documents listed in Section 2 of this specification or referenced lower-tier documents need not be prepared for the Government and shall not be furnished to the Government unless specified in the contract or order. The data to be furnished shall be listed on DD Form 1423 (Contractor Data Requirements List), which shall be attached to and made a part of the contract or order. NavWeps Form 4200/15 (Drawings, Lists, and Specifications Required) shall be attached where applicable.

6.4 Changes from previous issue - The outside margins of this document have been marked "#" to indicate where changes (deletions, additons, etc.) from the previous issue have been made. This has been done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content as written irrespective of the marginal notations and relationship to the last previous issue.

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SPECIFICATION ANALYSIS SHEET

Form Approved
Budget Bureau No. 119-R004

INSTRUCTIONS

This sheet is to be filled out by personnel either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity *(as indicated on reverse hereof)*.

SPECIFICATION
MIL-E-5627B(WP) EXTINGUISHERS, FIRE, CARBON DIOXIDE, PORATABLE

ORGANIZATION *(Of submitter)*		CITY AND STATE
CONTRACT NO.	QUANTITY OF ITEMS PROCURED	DOLLAR AMOUNT $

MATERIAL PROCURED UNDER A

☐ DIRECT GOVERNMENT CONTRACT ☐ SUBCONTRACT

1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?

A. GIVE PARAGRAPH NUMBER AND WORDING.

B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES.

2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID

3. IS THE SPECIFICATION RESTRICTIVE?

☐ YES ☐ NO IF "YES", IN WHAT WAY?

4. REMARKS *(Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)*

SUBMITTED BY *(Printed or typed name and activity)*	DATE

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