[Inch - Pounds]

BB-E-2879
31 AUGUST 1995

FEDERAL SPECIFICATION

# EXTINGUISHER, FIRE, CARBON DIOXIDE (CO,), PORTABLE, WITH MOUNTING BRACKET, FOR AVIATION USE

The General Services Administration has authorized the use of this federal specification by all Federal Agencies.

## 1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers the requirements for a non-refillable, hand-held fire extinguisher, containing 2.5 pounds (lb) of carbon dioxide (CO,), and its mounting bracket. The hand-held fire extinguisher is intended to extinguish petroleum and electrical fires. The extinguisher assembly is suitable for use on tactical military aircraft and possesses gunfire and crash integrity.

1.2 Classification Fire extinguishers supplied under this specification shall be classified as follows:

Type A - Aluminum fire extinguisher cylinder (see 3.2.1)
Type S - Steel fire extinguisher cylinder (see 3.2.2)

1.3 Part numbers. Part numbers for cataloging purposes may be assigned in accordance with 6.4.

## 2. APPLICABLE DOCUMENTS

2.1 Government publications. The following documents, of the issues in effect on the date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

FEDERAL SPECIFICATIONS

| | | |
|---|---|---|
| BB-C-101 | - | Carbon Dioxide (CO,): Technical and U.S.P. |
| RR-C-901 | - | Cylinders, Compressed Gas: High Pressure, Steel DOT 3AA, and Aluminum Application, General Specification for |

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any data which may improve this document should be sent to: Commander, Systems Standardization Department, Code 4.1.11B120-3, Naval Air Warfare Center Aircraft Division, Highway 547, Lakehurst, NJ 08733-5100.

AMSC N/A FSC 4210
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FEDERAL STANDARDS

| | | |
|---|---|---|
| FED-STD-123 | - | Marking for Domestic Shipment |
| FED-STD-595 | - | Colors Used in Government Procurement |

MILITARY STANDARDS

| | | |
|---|---|---|
| MIL-STD-129 | - | Marking for Shipment or Storage |
| MIL-STD-2073-1 | - | DOD Materiel Procedures for Development and Application of Packaging Requirements |

(Activities outside the Federal Government may obtain copies of federal specifications and standards as specified in the General Information section of the Index of Federal Specifications and Standards. The Index is for sale on a subscription basis from-the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.)

(Single copies of these specifications and other federal specifications required by activities outside the Federal Government for bidding purposes are available without charge from the General Services Administration, Federal Supply Service Bureau, 'specification Section, Suite 8100, 470 L'Enfant Plaza, SW, Washington, DC, 20407.)

(Federal Government activities may obtain copies of federal standardization documents and the Index of Federal Specifications, Standards, and Commercial Item Descriptions from established distribution points in their agencies.)

(DoD activities may obtain copies of standardization documents 1isted in the Department of Defense Index of Specifications and Standards (DoDISS) free of charge from the Standardization Document Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA, 19111-5094.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)/UNDERWRITER'S LABORATORY

| | | |
|---|---|---|
| ANSI/UL 154- | | Standard for Safety Carbon Dioxide Fire Extinguishers |
| ANSI/UL 711 | - | Standard for Safety Fire Extinguisher, Rating and Fire Testing of |

(Private sector and civil agencies may purchase copies of these voluntary standards from the Underwriters Laboratories Incorporated, 333 Pfingston Road, Northbrook, IL 60062 or from American National Standards Institute, Inc., 1430



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Broadway, New York, NY 10018.)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM-B117 - Standard Test Method of Salt Spray (Fog) Testing
ASTM-D3951 - Standard Practice for Commercial Packaging

(Private sector and civil agencies may purchase copies of these voluntary standards from the American Society for Testing and Materials, 1916 Race St., Philadelphia, PA 19103.)

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

(DoD activities may obtain copies of those adopted voluntary standards 1 i steal in the DoD Index of Specifications and Standards free of charge from the Standardization Document Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA, 19111-5094.)

## 3. REQUIREMENTS

3.1 First article When specified (see 6.2), samples shall be subjected to first article inspection in accordance with 4.3

3.2 Materlal.

3.2.1 Type A (aluminum cylindr). The type A fire extinguisher cylinder shall be constructed of aluminum, in accordance with RR-C-901.

3.2.2 Type S ( steel cylinder). The type S fire extinguisher cylinder shall be constructed of steel, in accordance with RR-C-901.

3.2.3 Mounting bracket The mounting bracket material is not limited; however, it shall meet all performance requirements specified herein. The bracket design shall permit flush mounting against the mounting surface.

3.3 General design and construction. Unless otherwise specified herein, the fire extinguisher assembly design and construction shall conform to ANSI/UL 154.

3.4 Assembly. The assembly shall consist of the extinguisher cylinder, delivery system, horn, identification and instruction labels, and mounting bracket. The dimensions of the assembly shall be as shown in Figure 1. The extinguisher cylinder shall have a rounded bottom.



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3.4.1 Cylinder contents. The cylinder shall contain 2.5 lb +2 ounces -0 ounces of $CO_2$ conforming to BB-C-101 and shall have a minimum rating of 2B:C, as defined by ANSI/UL 711.

3.4.2 Mounting bracket latch The bracket shall feature a latch which permits easy removal of the extinguisher from any position when the latch is released.

3.4.3 Weight.

3.4.3.1 Type A (aluminum cylinder). The fully charged fire extinguisher assembly weight shall be a maximum of 8.90 lb.

3.4.3.2 Type S (steel cylinder). The fully charged fire extinguisher assembly weight shall be a maximum of 10.50 lb.

3.5 Cylinder retention and fragmentation resistance. Every tested cylinder shall remain unscattered and in one piece, and every tested bracket shall retain the cylinder, when tested in accordance with 4.4.1.

3.6 Crash retention. The bracket shall function as specified in 3.7 after being tested in accordance with 4.4.2.

3.7 Performance. The fire extinguisher shall be capable of being removed from its bracket, having its safety pin extracted, and be operated while its user is wearing heavy gloves or arctic mittens. The extinguisher shall be capable of fully discharging its contents from any orientation. The discharge time for expelling the contents of the extinguisher shall be a **minimum of 8 seconds and a maximum of 30 seconds, at 68° ±3°F. The discharge** range shall be a minimum of 4 feet for the full time the extinguisher is discharging. Additionally, the fire extinguisher shall conform to all performance requirements of ANSI/UL 154 and ANSI/UL 711.

3.8 Climatic extremes. The fire extinguisher shall function in accordance with 3.7 at any temperature from -40"F to +120°F. The fire extinguisher shall meet the requirements of 3.7 after conditioning for a **minimum of 16 hours at -65° ±3°F.** The fire extinguisher should meet the requirements of 3.7 after conditioning for a minimum of 4 hours at +175° **±3°F.**

3.9 Discharge indicator. The fire extinguisher shall be equipped with a visual device to notify the user that it has been discharged. This device shall be securely fastened to the extinguisher and shall not be susceptible to accidental activation, and shall be a color distinguishable from the other extinguisher components.



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3.10 ~~Identification and~~ instructions.

3.10.1 ~~Aluminum cylinder~~. Permanent label(s) shall be affixed to the cylinder as shown in Figure 1 and shall contain the data below. The letter size specified is in units of inches with a tolerance of 4.10 inch. The text shall be permanent and legible.

| Letter Size (inch) | Data |
|---|---|
| 3/16 | TO OPERATE |
| 5/32 | 1. Pull ring pin. |
| 5/32 | 2. Point horn close to base of fire. |
| 5/32 | 3. Depress lever for discharge and keep base of flame covered. |
| 3/16 | CAUTION |
| 5/32 | 1. Avoid breathing smoke. |
| 5/32 | 2. Ventilate vehicle after discharge. |
| 5/32 | 3. Avoid contact with skin or clothing. |
| 5/32 | 4. Do not direct discharge towards face. |

Maintenance instructions shall be placed below the operating instructions and inscribed per the following:

| Letter Size (inch) | Data |
|---|---|
| 3/16 | FOR MAINTENANCE |
| 3/16 | ALUMINUM CYLINDER |
| 7/64 | Replace with a new charged extinguisher, part number BBE2879-2-A, immediately after use or 5 years after date of manufacture. |
| 5/64 | Weigh extinguisher every six months and replace if the gross weight has decreased by four ounces or more. |
| 3/32 | "NATIONAL STOCK NUMBER (NSN)" |
| 3/32 | "MANUFACTURER'S NAME AND CAGE CODE" |
| 3/32 | "CONTRACT NO." |
| 3/32 | DATE OF MANUFACTURE MONTH "__" YEAR "___" |
| 3/32 | EXTINGUISHER ASSEMBLY (without mounting bracket) "___ "LB "___ "OZ |
| 7/64 | Property of the U.S. Government |

3.10.1.1 ~~Mounting~~ bracket for ~~aluminum cylinder~~. The bracket shall have a permanently affixed label, bearing the following information:

| Letter Size (inch) | Data |
|---|---|
| 3/32 | ALUMINUM CYLINDER BRACKET |
| 3/32 | Part number BBE2879-1-A |

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3.10.2 Steel Cylinder. Permanent label(s) shall be affixed to the cylinder as shown in Figure 1 and shall contain the data below. The letter size specified is in units of inches with a tolerance of ±0.10 inch. The text shall be permanent and legible.

| Letter Size (inch) | Data |
|---|---|
| 3/16 | TO OPERATE |
| 5/32 | 1. Pull ring pin. |
| 5/32 | 2. Point horn close to base of fire. |
| 5/32 | 3. Depress lever for discharge and keep base of flame covered. |
| 3/16 | CAUTION |
| 5/32 | 1. Avoid breathing smoke. |
| 5/32 | 2. Ventilate vehicle after discharge. |
| 5/32 | 3. Avoid contact with skin or clothing. |
| 5/32 | 4. Do not direct discharge towards face. |

Maintenance instructions shall be placed below the operating instructions and inscribed per the following:

| Letter Size (inch) | Data |
|---|---|
| 3/16 | FOR MAINTENANCE |
| 3/16 | STEEL CYLINDER |
| 7/64 | Replace with a new charged extinguisher, part number BBE2879-2-S, immediately after use. |
| 5/64 | Weigh extinguisher every six months and replace if the gross weight has decreased by four ounces or more. |
| 3/32 | "NATIONAL STOCK NUMBER (NSN)" |
| 3/32 | "MANUFACTURER'S NAME AND CAGE CODE" |
| 3/32 | "CONTRACT NO." |
| 3/32 | DATE OF MANUFACTURE MONTH "____" YEAR "____" |
| 3/32 | EXTINGUISHER ASSEMBLY (without mounting bracket) |
| | "___"LB "___"OZ |
| 7/64 | Property of the U.S. Government |

3.10.2.1 Mounting bracket for steel cylinder. The bracket shall have a permanently affixed label, bearing the following information:

| Letter Size (inch) | Data |
|---|---|
| 3/32 | STEEL CYLINDER BRACKET |
| 3/32 | Part number BB5E2879-l-S |



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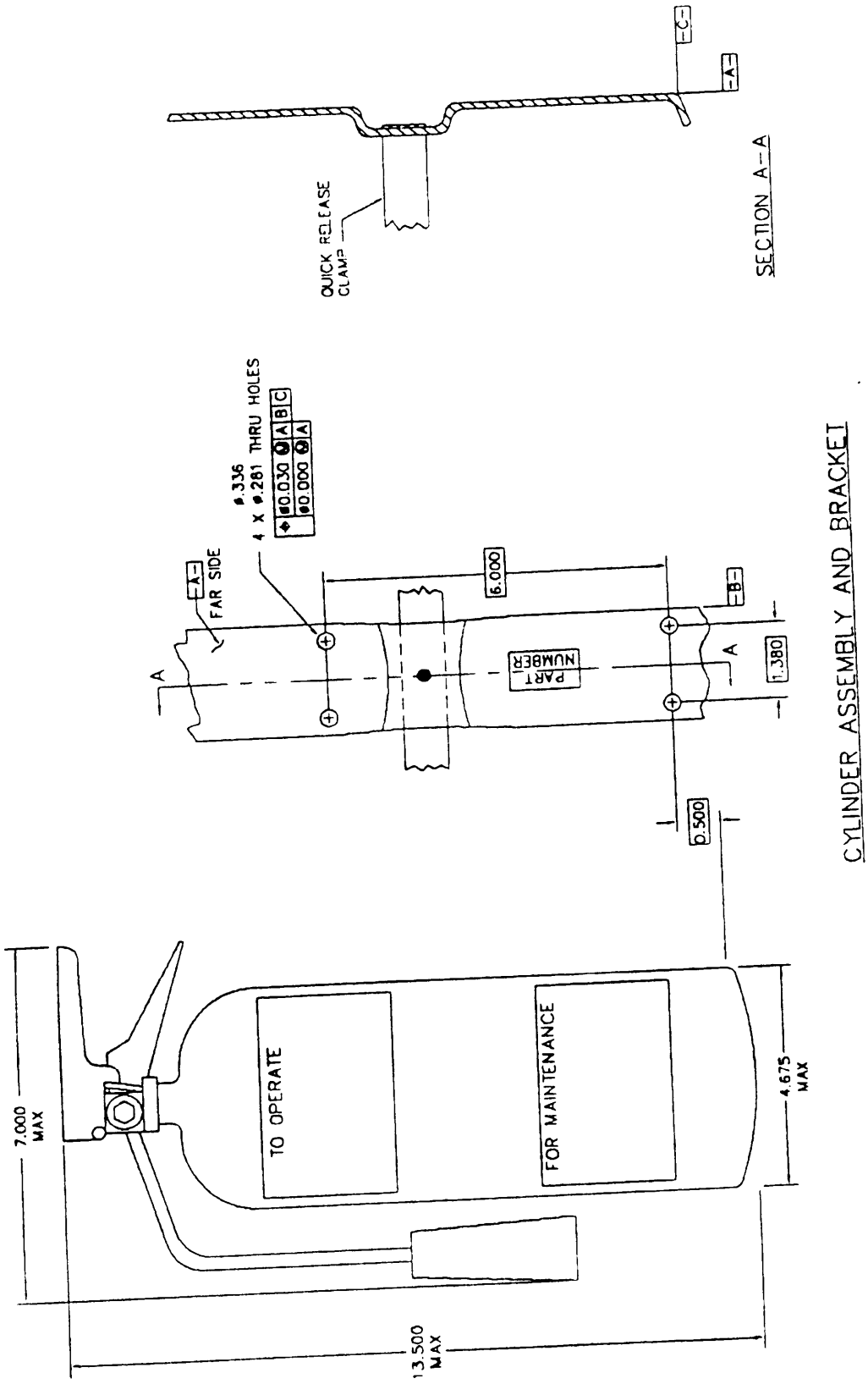



Figure 1. Assembly (all dimensions are in inches.



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3.11 Assembly finish. The assembly finish shall provide effective substrate corrosion control performance, and shall not blister, uplift, soften, nor exhibit other evidence of substrate corrosion, when tested in accordance with 4.4.3. Coatings containing cadmium, lead, or chromium shall not be used.

3.11.1 Exterior surfaces. All exterior metal surfaces shall be suitably treated to resist atmospheric corrosion. The cylinder shall be painted red, conforming FED-STD-595, color number 11105.

## 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the manufacturer is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the manufacturer may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by 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 ensure supplies and services conform to prescribed requirements.

4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

First article inspection (see 4.3)
b: Quality conformance inspection (see 4.4)

4.3 First article inspection. First article testing shall consist of all requirements and tests specified in section 3, and shall be accomplished on the first production lot of a contract or purchase order and when specified (see 6.2). The cylinder retention and fragmentation resistance testing (see 3.5 and 4.4.1) shall be conducted by the Government. The salt fog test (see 4.4.3) shall be performed by the manufacturer's own *or* any other facility suitable for the performance of this test, unless disapproved by the Government. Failure of any examination or test shall result in first article disapproval.

4.3.1 First article test sample Test samples shall be representative of production units and shall consist if the following:

a. Nine (9) fire extinguisher assemblies for fragmentation resistance testing.
b. Twenty-four (24) fire extinguisher assemblies for all other examinations (inspections) and testing. Twelve (12) of the 24 assemblies are to be used for the "One-year Time Leakage Test" of ANSI/UL 154.



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to the system for a period of not less than 30 minutes. The system components

c. A certified test report (see 6.5) showing that the fire extinguisher conforms to the requirements of this specification, ANSI/UL 154, and ANSI/UL 711.

In addition to the above, ANSI/UL 154 requires that the following components be tested separately:

1. Twelve (12) frangible discs
2. Twelve (12) valves
3. Six (6) horns

4.4 Quality conformance inspection. Quality conformance inspection shall consist of all tests specified in section 3, with the exception of the cylinder retention and fragmentation resistance test (see 3.5 and 4.4.1), climatic extreme testing (3.8), and the salt fog test (see 4.4.3). Mess otherwise stated in the test method or paragraph, room temperature shall be **defined as 70° ±10°F and relative humidity as 50 ±10%.**

4.4.1 Cylinder retention and fragmentat~on resistance. The cylinder retention and fragmentation resistance shall be verified by shooting fully charged cylinders with 7.62 x 63 mm APM2 projectiles at a muzzle velocity of 2,765 feet/second. The cylinders shall be mounted in its bracket, which shall be securely mounted using its mounting hardware, and then impacted with fully tumbled projectiles. The cylinder shall be supported and constrained by its normal latch and bracket during the test. The test shall be conducted at ambient temperature. A separate cylinder and mounting bracket shall be used for each test, as follows:

1. With the longitudinal axis of the cylinder normal to the line of fire.
2. With the longitudinal axis of the cylinder 45 degrees from normal toward the gun position.
3. With the longitudinal axis of the cylinder parallel to the line of fire with outlet port (neck) facing away from the gun.

4.4.2 **Crash** retention. Using a separate bracket for each direction (upward, downward, and lateral), the assembly shall be subjected to the following: a static loading of 50 times its weight (50g) in the downward, lateral, and forward directions to the cylinder axis; and a static load of 10g in a direction longitudinal to the cylinder axis.

4.4.3 Assembly finish. The coated assembly shall be exposed to 500 hours salt fog in accordance with ASTM B117. Upon removal from the salt fog chamber, the assembly shall be examined for conformance to 3.11.

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## 5. PACKAGING

5.1 Packaging and preservation. Unless otherwise specified in the contract or Purchase order, this item shall be packaged in accordance with ASTM D3951 or MIL-STD-2073-1, level B or C.

5.2 Marking. Unless otherwise specified in the contract or purchase order, this item shall be marked in accordance with FED-STD-123 or MIL-STD-129.

## 6. INFORMATION FOR GUIDANCE ONLY

(This section contains information of a general or explanatory nature which is helpful, but is not mandatory.)

6.1 Intended use. The intended use of this fire extinguisher is to put out fires in crew compartments of aircraft, particularly tactical military aircraft.

6.2 Acquisition requirements. Acquisition documents must specify the following:

a. Title, number and date of this specification, including any amendments.
b. Issue of DoDISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1 and 2.2).
Whether first article inspection is required (see 3.1 and 4.3)
d: Data requirements (see 6.5)
e. Packaging, preservation and marking requirements (see 5.1 and 5.2) (Procurement personnel should review 5.1 and 5.2 to determine the appropriate document reference)
f. FAR clause 52.223-3.

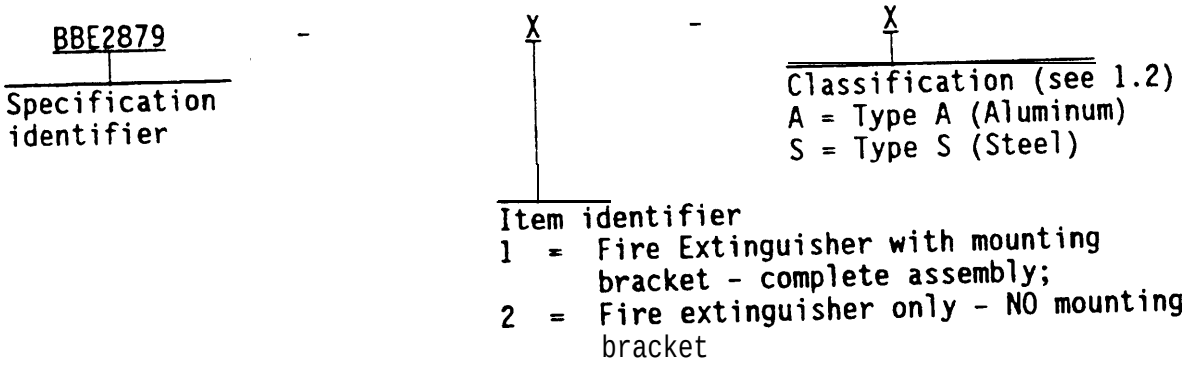
6.3 Subject term (key word) listing.

Fire extinguishing equipment
Fire fighting equipment
Fragmentation resistant



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6.4 ~~Part identification number (PIN)~~. Part numbers may be coded as follows:




6.5 Consideration of data requirements. The following Data Item Descriptions (DID's) must be listed, as applicable, on the Contract Data Requirements List (DD Form 1423) when this specification is applied on a contract, in order to obtain the data, except where DoD FAR Supplement 227.405-70 exempts the requirement for a DD Form 1423.

| Reference Paragraph | DID Number | DID Title | Suggested Tailoring |
|---|---|---|---|
| 4.3.1 | DI-NDTI-80809A | Test/Inspection Reports | --- |

The above DID's were those cleared as of the date of this specification. The current issue of DOD 5010.12-L, Acquisition Management Systems and Data Requirements Control List (AMSDL), must be researched to ensure that only current, cleared DID's are cited on the DD Form 1423.

MILITARY INTERESTS:

Military Coordinating Activity
Navy - AS

Custodians:
Army - AV

Review activities:
DLA - CS

CIVIL AGENCY COORDINATING ACTIVITIES:

GSA -FSS

Preparing Activity:
Navy - AS

DoD Project 4210-0500



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# STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

**INSTRUCTIONS**

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.
   NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

| I RECOMMEND A CHANGE: | 1. DOCUMENT NUMBER<br>BB-E-2879 | 2. DOCUMENT DATE (YYMMDD)<br>950831 |
|---|---|---|

3. DOCUMENT TITLE
EXTINGUISHER, FIRE, CARBON DIOXIDE ($CO_2$), PORTABLE, WITH MOUNTING BRACKET, FOR AVIATION USE

4. NATURE OF CHANGE (*Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.*)

5. REASON FOR RECOMMENDATION

6. SUBMITTER

| a. NAME (*Last, First, Middle Initial*) | b. ORGANIZATION | |
|---|---|---|
| c. ADDRESS (*Include Zip Code*) | d. TELEPHONE (*Include Area Code*)<br>(1) Commercial:<br>(2) DSN:<br>(*If Applicable*) | 7. DATE SUBMITTED (YYMMDD) |

8. PREPARING ACTIVITY

| a. NAME<br>COMMANDER<br>NAVAL AIR WARFARE CENTER<br>AIRCRAFT DIVISION | b. TELEPHONE NUMBER (*Include Area Code*)<br>(1) Commercial<br>(908) 323-7488<br>(2) DSN<br>624-7488 |
|---|---|
| c. ADDRESS (*Include Zip Code*)<br>CODE 4.1.11.2B120-3<br>HIGHWAY 547<br>LAKEHURST, NJ 08733-5100 | IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:<br>Defense Quality and Standardization Office, 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466<br>Telephone (703) 756-2340 DSN 289-2340 |



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