

MIL-C-85256(AS)

13 June 1981

## MILITARY SPECIFICATION

### CARTRIDGE, IMPULSE, CCU-13/B

This specification is approved for use by the Naval Air Systems Command, Department of the Navy, and is available for use by all Departments and Agencies of the Department of Defense.

#### 1. SCOPE.

1.1 Scope. This specification establishes the requirements for the manufacture and acceptance of the CCU-13/B Impulse Cartridge, critical item, referred to herein as the cartridge.

#### 2. APPLICABLE DOCUMENTS.

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

## SPECIFICATIONS

### MILITARY

MIL-B-85251

Bomb, Binary Chemical, BLU-80/B.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commanding Officer, Naval Air Engineering Center, Engineering Specifications and Standards Department (ESSD), Code 93, Lakehurst, NJ 08733, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document, or by letter.

FSC 1377

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STANDARDS

FEDERAL

FED-STD-102                      Preservation, Packaging and Packing Levels.

MILITARY

MIL-STD-109                      Quality Assurance Terms and Definitions.

MIL-STD-129                      Marking for Shipment and Storage.

MIL-STD-130                      Identification and Marking of U.S. Military Property.

MIL-STD-414                      Sampling Procedures and Tables for Inspection by Variables for Percent Defective.

MIL-STD-454                      Standard General Requirements for Electronic Equipment.

MIL-STD-810                      Environmental Test Methods.

MIL-STD-45662                      Calibration System Requirements.

DRAWINGS

Naval Air Systems Command  
(Code Ident 30003)

SA2875064                      Test Fixture, Impulse Cartridge CCU-13/B.

X4900559                      Cartridge, Impulse, CCU-13/B.

(Copies of specifications, standards, drawings, and publications required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

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(2A)

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

DEPARTMENT OF TRANSPORTATION

Code of Federal Regulations

49 CFR 171-178

Transportation.

(Application for copies should be addressed to the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402.)

3. REQUIREMENTS.

3.1 Item description. The cartridge is a pyrotechnic device consisting of a housing, an explosive actuator, impulse igniter, and propellant.

3.2 Characteristics.

3.2.1 Performance.

3.2.1.1 Functional. When assembled and fired at ambient temperature into a volume of  $931.0 \pm 0.5$  cubic inches, the cartridge shall produce a pressure-time curve conforming to Figure 1.

3.2.2 Environmental. The cartridge performance shall not be degraded below that specified in Figure 1 after exposure to the following environments.

3.2.2.1 High temperature. Exposure to a high temperature of 74 degrees Celsius ( $^{\circ}\text{C}$ ) for 48 consecutive hours.

3.2.2.2 Low temperature. Exposure to low temperature of  $-48^{\circ}\text{C}$  for 24 consecutive hours.

3.2.2.3 Vibration. Exposure to the vibration schedule specified in Figure 2 in each of three mutually perpendicular axes in accordance with the environmental conditions of 4.3.2.3.

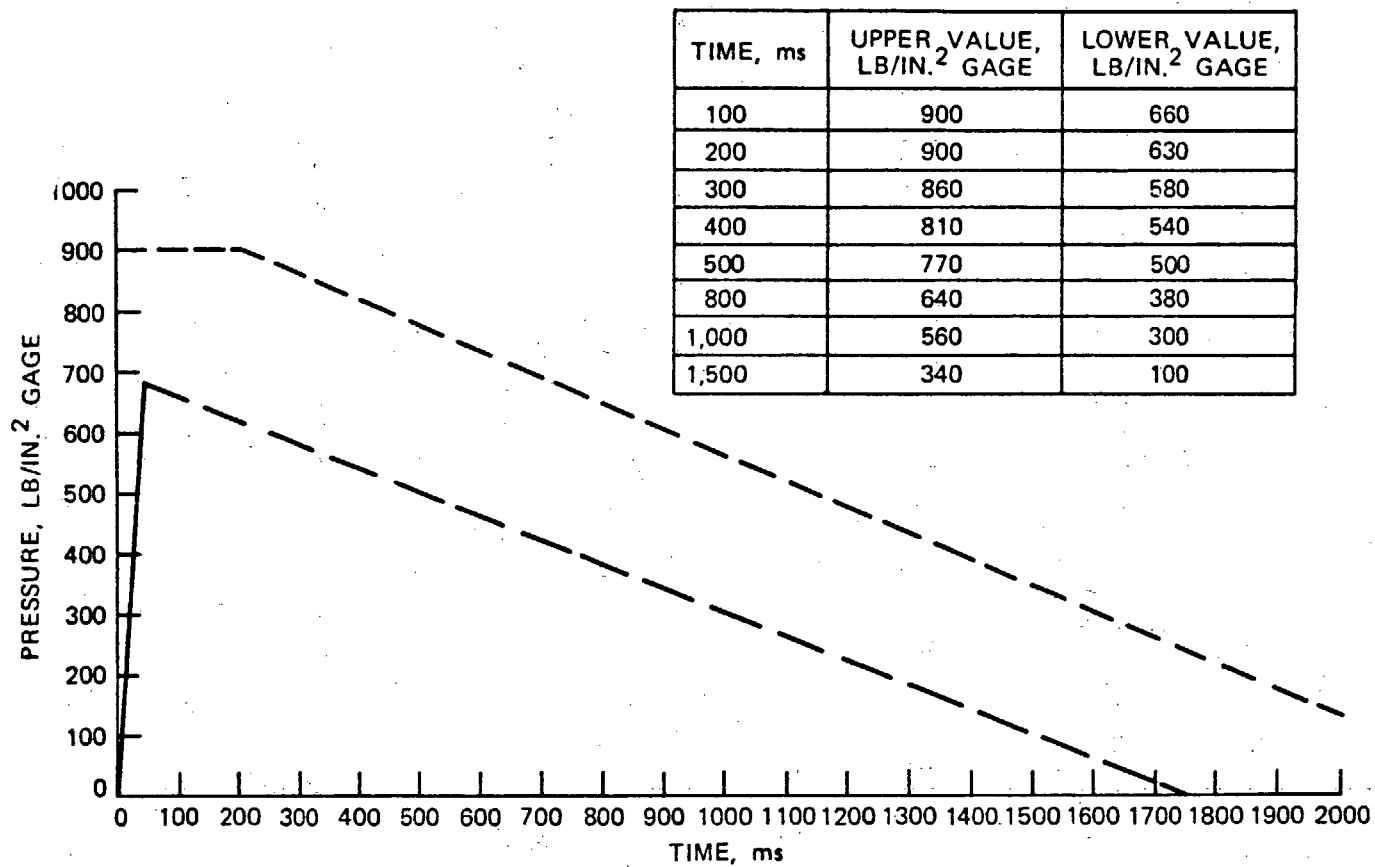
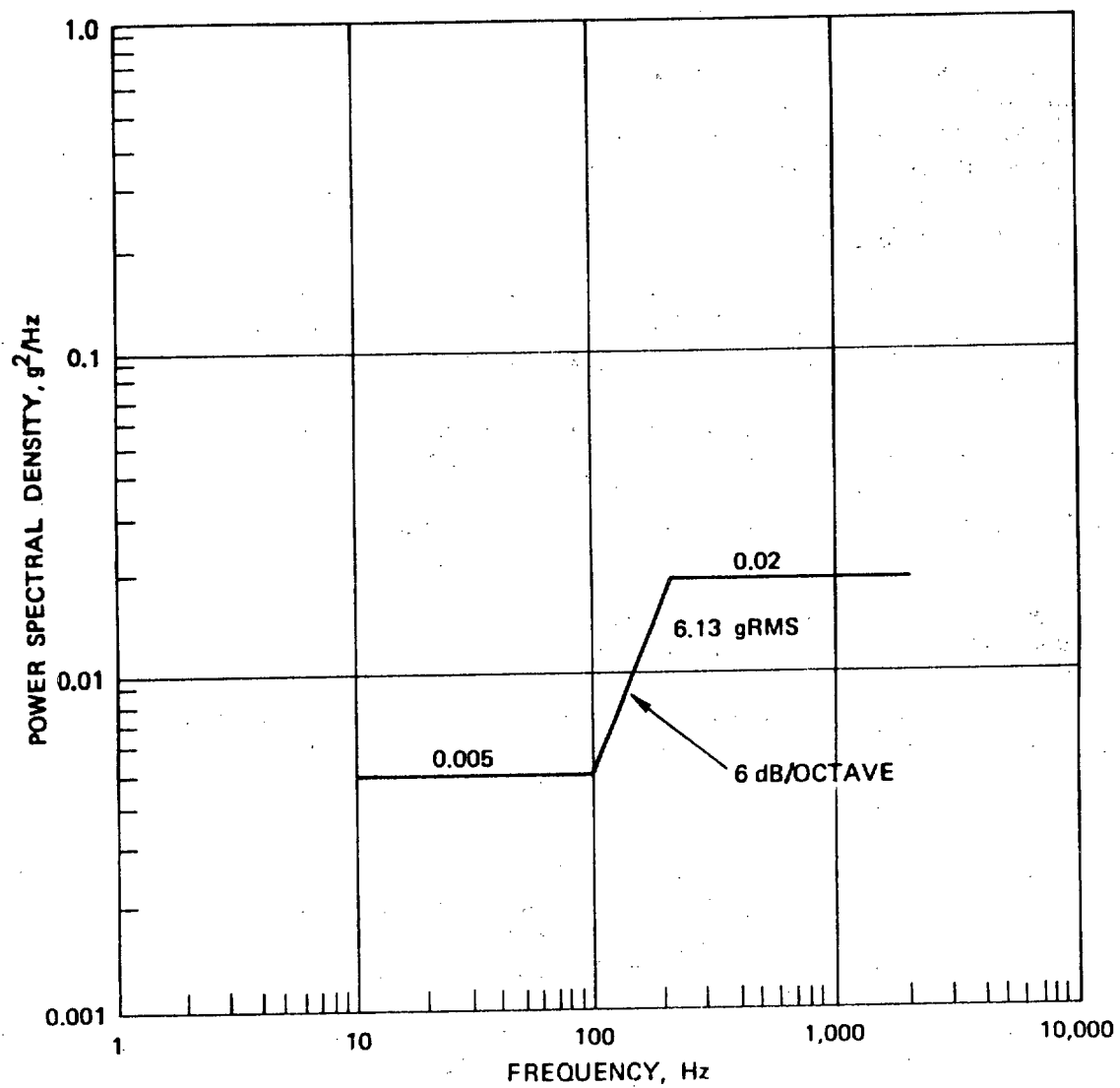


FIGURE 1. Impulse cartridge performance envelope.

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FIGURE 2. Vibration schedule.

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3.2.2.4 Mechanical shock. Exposure to half sine wave impact shocks in each of three mutually perpendicular axes having a peak amplitude of 15 gravity units (g) and a total duration of 11 milliseconds (ms) at a temperature of -48°C.

3.3 Design and construction.

3.3.1 Production drawings. The cartridge shall be fabricated and assembled in accordance with the parts list, and other documents listed on Drawing X4900559 and this specification.

3.3.2 Standards of manufacture. When specified in the contract or purchase order (see 6.2.2), the contractor shall include written certification accompanied by objective quality evidence as defined in MIL-STD-109, that the materials, processes, and parts used in the cartridge meet the requirements of Section 3.

3.3.2.1 Working environment. Special working environments for the manufacture of the cartridge shall be as specified in MIL-B-85251.

3.3.3 Marking. Each cartridge shall be marked in accordance with MIL-STD-130, with the manufacturer's name or symbol, part number and manufacturer's lot designation. The markings shall be as shown on Drawing X4900559.

3.4 First article. Unless otherwise specified in the contract or purchase order, the contractor shall furnish a preproduction sample consisting of 15 cartridges to the testing activity designated in the contract or purchase order for first article inspection and approval (see 4.1.2.1 and 6.2.1). The preproduction sample shall be manufactured using the same methods, materials, processes, and procedures proposed for production. Any production prior to acceptance of the preproduction sample is at the risk of the contractor. Any changes in design, materials, or processes used in the manufacture of the preproduction sample may be cause for resubmission of another preproduction sample for testing.

3.4.1 Retest. At the discretion of the procuring activity, preproduction tests, or any portion thereof, shall be repeated under any of the following conditions:

- a. The manufacturer has modified his product (such as a change of raw materials, the process, production procedures, or methods).

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- b. Where there is evidence that the quality of the product has not been maintained. This evidence may be in the form of accumulated product failures, of system failures attributable to the product, or failure of the product to pass any of the tests for production lot acceptance that may be conducted by or for the procuring activity.
- c. When applicable documents have been amended or revised sufficiently so that continued validity of the previous preproduction testing is questionable.
- d. When the manufacturer has not produced cartridges to this specification for a period of 12 months or longer.
- e. When the manufacturer has changed the location at which cartridges are produced.

3.5 Documentation. When specified in the contract or purchase order (see 6.2.2), inspection reports and certification shall be prepared as specified in 4.1.2.3 and 4.2.4.

3.6 Workmanship. As a minimum, the cartridge shall be manufactured, inspected, and tested under conditions and procedures meeting the requirements of 3.3.1 and as specified herein. The cartridge shall be fabricated in a manner that will ensure compliance with all requirements of this specification and the assembly drawing. Unless otherwise specified herein or on the assembly drawing, fabrication and assembly practices shall be in accordance with MIL-STD-454, Requirement 9.

#### 4. QUALITY ASSURANCE PROVISIONS.

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order (see 6.2.1), the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor 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 this specification where such inspections are deemed necessary to assure that supplies and services conform to prescribed requirements.

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4.1.1 Classification of inspection. The inspection of the cartridge shall be classified as follows:-

- a. Preproduction inspections (see 4.1.2.1).
- b. Quality conformance inspections (see 4.2).

4.1.2 Special tests and examinations.

4.1.2.1 Preproduction inspections. The preproduction sample of 3.4.1 shall be subjected to the examinations and tests of Table I in the sequence shown.

TABLE I. Preproduction inspections.

Examination or test	Requirement paragraph	Method paragraph
Visual	3.3.1, 3.6	4.3.1
High temperature	3.2.2.1	4.3.2.1
Low temperature	3.2.2.2	4.3.2.2
Vibration	3.2.2.3	4.3.2.3
Mechanical shock	3.2.2.4	4.3.2.4
Functional	3.2.1.1, 3.2.2	4.3.3

4.1.2.2 Acceptance criteria. Failure of one or more cartridges in the preproduction sample to pass any of the preproduction tests shall cause rejection of the preproduction sample.

4.1.2.3 Preproduction inspection report. When specified in the contract or purchase order (see 6.2.2), results of the preproduction inspections shall be prepared for the procuring activity. The report



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shall contain the following information accompanied by a certification (see 6.2.2) which attests that the information provided is correct and applicable to the product being submitted:

- a. A statement that the preproduction sample complies with all quality assurance provisions of this specification for the cartridge in the contract or purchase order.
- b. Number of units of product inspected.
- c. Results obtained for all inspections performed.
- d. Purchase order or contract number and date, together with an identification and date of changes.
- e. Certificates of compliance of all material procured directly by the contractor.
- f. Date submitted.

The certification shall be signed by a responsible agent of the certifying organization. The initial certification shall be substantiated by evidence of the agent's authority to bind his principal. Substantiation of the agent's authority will not be required with subsequent certifications unless, during the course of the contract, this authority is vested in another agent of the certifying organization.

4.2 Quality conformance inspections. Each lot of cartridges offered for acceptance shall be subjected to the quality conformance inspections and tests specified in Table II. Tests shall be performed in the sequence shown.

4.2.1 Acceptance criteria. Failure of the quality conformance sample to pass the functional tests of Table II shall cause rejection of the lot represented.

4.2.2 Inspection lot. Unless otherwise specified herein, inspection, lot definition, and lot formation shall be in accordance with MIL-STD-414. Definition of terms and inspection procedures shall be as defined in MIL-STD-414.

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TABLE II. Quality conformance inspections.

Examination or test	Requirement paragraph	Method paragraph
Group I (100% of the lot)		
Visual	3.3.1, 3.6	4.3.1
Standards of manufacture	3.3.1, 3.3.2, 3.6	4.3.1.1
Group II (SAMPLE)		
Functional	3.2.1.1	4.3.3

4.2.3 Sampling. A sample shall be randomly selected in accordance with MIL-STD-414 from each inspection lot and subjected to Group II tests of Table II. The sample size code letter shall be that specified in MIL-STD-414, Table A2, Inspection Level III, Acceptable Quality Level (AQL) of 0.65 percent defective, except that the sample size shall never be smaller than that specified for sample size code letter D.

4.2.4 Quality conformance inspection report. When specified in the contract or purchase order (see 6.2.2), results of the quality conformance inspection shall be included with each lot. Reports shall contain the following information accompanied by a certification which attests that the information provided is correct and applicable to the product being submitted:

- a. A statement that the lot complies with all quality assurance provisions of this specification and as specified in the contract or purchase order.
- b. Number of units of product inspected.
- c. Results obtained for all inspections performed.
- d. Purchase order or contract number and date, together with an identification and date of changes.

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- e. Certificates of compliance of all material procured directly by the contractor.
- f. Date submitted.

The certification shall be signed by a responsible agent of the certifying organization. The initial certification shall be substantiated by evidence of the agent's authority to bind his principal. Substantiation of the agent's authority will not be required with subsequent certifications unless, during the course of the contract, this authority is vested in another agent of the certifying organization.

#### 4.3 Inspection methods.

4.3.1 Visual and mechanical examination. Each cartridge shall be inspected for conformance to the requirements of 3.3.1 and 3.6.

4.3.2 Environmental tests. The following environmental tests shall be performed in the sequence shown in Table I for preproduction testing.

4.3.2.1 High temperature. The cartridge samples shall be subjected to the high temperature test of MIL-STD-810, Method 501.1, Procedure I, except the temperature shall be 74°C. Steps 4 and 5 shall be omitted.

4.3.2.2 Low temperature. The cartridge samples shall be subjected to the low temperature test of MIL-STD-810, Method 502.1, Procedure I, except the temperature shall be -48°C. Steps 4 and 5 shall be omitted.

4.3.2.3 Vibration. The testing shall be conducted in accordance with MIL-STD-810. The cartridge samples shall be vibrated in each of three mutually perpendicular axes for a period of 2 hours minimum for each axis at a temperature of  $-48 \pm 3^\circ\text{C}$ . The vibration test profile shall be in accordance with Figure 2. The tolerance on vibration test levels and test conduct shall be in accordance with MIL-STD-810, Method 514.2, paragraph 4.5.2, "Random Vibration Test."

4.3.2.4 Mechanical shock. Testing shall be performed in accordance with MIL-STD-810, Method 516.2, Procedure I, subject to

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the modifications and additions herein. Testing shall be conducted by applying three shocks in each direction through three mutually perpendicular principle axes at a temperature of  $-48 \pm 3^{\circ}\text{C}$ , as follows:

- a. The shock pulse signature shall be half sine pulse, 15 g peak and 11 ms duration. The shock pulse tolerance limits shall be in accordance with MIL-STD-810, Method 516.2, Figure 516.2-2, Half Sine Shock Pulse Configuration and its Tolerance Limits.
- b. Before applying mechanical shocks, the cartridge samples shall be temperature conditioned at  $-48 \pm 3^{\circ}\text{C}$  for not less than 4 hours. If the cartridge samples must be removed from the chamber to apply the required shocks, the elapsed time between removal from the chamber and the start of application of any shock along any axis shall not exceed 3 minutes. If the cartridge samples are transferred from the temperature conditioning chamber to a temperature conditioned insulated box which is at the same temperature, the elapsed time between removal from the chamber and start of application of any shock along any axis may be increased to 5 minutes, provided the cartridge samples are not exposed to ambient temperature for more than 3 minutes of the 5 minute period. If shock testing is not completed within the time limits specified, the cartridge samples shall be returned to the conditioning chamber for not less than 1 hour before shock tests are resumed.
- c. The cartridge samples shall then be operated in accordance with 4.3.3. To be acceptable, the cartridge samples shall meet the requirements of 3.2.1.1.

**4.3.3 Performance.** Unless otherwise specified herein, testing shall be conducted at ambient conditions. Each cartridge shall be fired into a volume of  $931.0 \pm 0.5$  cubic inches as defined by Drawing SA2875064. The pressure inside the volume shall be continuously recorded.

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4.3.3.1 Acceptance criteria. The acceptability of each lot of cartridges shall be determined by the acceptability of its representative sample. The acceptance criteria of MIL-STD-414 shall be used to determine whether the performance parameters comply with the limits in Figure 1. The evaluation shall be in accordance with the procedures of MIL-STD-414, variability unknown, standard deviation method, double specification limit, Form 1, and an AQL of 0.65 percent defective. Evaluation shall be made at times of 0.1, 0.2, 0.3, 0.4, 0.5, 0.8, 1.0, and 1.5 second. Failure of the evaluation at any time to meet the acceptance criteria of MIL-STD-414 shall cause rejection of the lot represented.

#### 4.4 Test equipment and conditions.

4.4.1 Standard test equipment. The contractor shall provide and maintain an adequate system of inspection and test equipment necessary to ensure that parts and products will meet the contract or purchase order, specification and drawing requirements at the rate of delivery specified in the contract or purchase order. The calibration of measuring and test equipment shall be in accordance with MIL-STD-45662. Test equipment, including associated calibration programs and operation and maintenance procedures, are subject to disapproval by the procuring activity. When special test equipment and circuits are devised or commercially available equipment is employed, all test equipment circuits and methods are subject to disapproval by the procuring activity. Unless otherwise specified herein, the magnitude of any error introduced by test equipment shall not exceed 10 percent of the tolerance of the requirement being measured.

4.4.2 Test conditions. Unless otherwise specified herein, all tests shall be conducted at the test area ambient temperature and relative humidity. Where special conditions of tests are specified, equipment employed shall adequately provide specified conditions, and all monitoring and measurement devices shall conform to the requirements of 4.4.1. When special conditions of tests are not imposed, commercially available direct-measurement equipment may be employed provided it conforms to the requirements of 4.4.1.

4.5 Packaging, packing, and marking. Prior to shipment, examination shall be made to assure that packaging, packing, and marking conform to Section 5 of this specification.

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## 5. PACKAGING.

5.1 Preservation-packaging. Preservation and packaging shall be Level C in accordance with FED-STD-102. When specified in the contract or purchase order, the cartridge shall be packaged to afford protection against damage during direct shipment from the supply source to the first receiving activity for immediate use. Packaging shall conform to the Code of Federal Regulations, 49 CFR 171-178, for shipment of Class C explosives.

5.2 Packing. Packing shall be Level C in accordance with FED-STD-102. The packaged cartridges shall be packed in shipping containers in a manner that will afford adequate protection against damage during direct shipment from the supply source to the first receiving activity. These packs shall conform to the applicable carrier rules and regulations for Level C. Packing shall conform to the Code of Federal Regulations, 49 CFR 171-178, for shipment of Class C explosives.

5.3 Marking. Unit packages and shipping containers shall be marked in accordance with the requirements of MIL-STD-129.

## 6. NOTES AND CONCLUDING MATERIAL.

6.1 Intended use. The cartridge is intended to be used to provide power to expand ballonet to permit chemicals to combine in a binary chemical bomb.

### 6.2 Ordering data.

6.2.1 Procurement requirements. Procurement documents should specify the following:

- a. Title, number, and date of this specification.
- b. Special working environment requirements (see 3.3.2.1).
- c. When a first article is required, it should be tested and approved under the appropriate provisions of 7-104.55 of the Defense Acquisition Regulations (DAR). The first article should be a preproduction

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sample consisting of 15 cartridges as specified in 3.4. The contracting officer should include specific instructions in all procurement instruments, regarding arrangements for examinations, tests, and approval of the first article.

- d. Responsibility for inspection and facilities if different than 4.1.

**6.2.2 Data requirements.** When this specification is used in a procurement which incorporates a Contract Data Requirements List (DD Form 1423) and invokes the provisions of 7-104.9(n) of the DAR, the data requirements identified below will be developed as specified by an approved Data Item Description (DID) (DD Form 1664) and delivered in accordance with the approved DD Form 1423 incorporated in the contract. When the provisions of DAR 7-104.9(n) are not invoked, the data specified below will be delivered by the contractor in accordance with the contract requirements. Deliverable data required by this specification are cited as follows:

<u>Paragraph</u>	<u>Data Requirement</u>	<u>Applicable DID</u>
3.3.2, 3.5, 4.1.2.3, 4.2.4	Certificate of compliance	DI-E-2121
3.5, 4.1.2.3, 4.2.4	Inspection report	DI-T-2072

(Copies of DIDs required by the contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

**6.3 Safety precautions.** The loading, assembly, and handling of the explosives, subassemblies, and finished items covered by this specification involve hazardous operations and require explosive safety precautions as stated in DoD 4145.26M.

Preparing activity:  
Navy - AS

(Project 1377-N677)

**STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL**

**INSTRUCTIONS:** This form is provided to solicit beneficial comments which may improve this document and enhance its use. DoD contractors, government activities, manufacturers, vendors, or other prospective users of the document are invited to submit comments to the government. Fold on lines on reverse side, staple in corner, and send to preparing activity. Attach any pertinent data which may be of use in improving this document. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity. A response will be provided to the submitter, when name and address is provided, within 30 days indicating that the 1426 was received and when any appropriate action on it will be completed.

**NOTE:** This form shall not be used to submit requests for waivers, deviations or clarification of specification 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.

**DOCUMENT IDENTIFIER (Number) AND TITLE****MIL-C-85256(AS), CARTRIDGE, IMPULSE, CCU-13/B****NAME OF ORGANIZATION AND ADDRESS OF SUBMITTER**

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A. GIVE PARAGRAPH NUMBER AND WORDING

B. RECOMMENDED WORDING CHANGE

C. REASON FOR RECOMMENDED CHANGE(S)

**2. REMARKS**

SUBMITTED BY (Printed or typed name and address — Optional)

TELEPHONE NO.

DATE

**DD FORM 1426**  
1 OCT 76

Replaces edition of 1 Jan 72 which may be used.

S/N 0102-LF-001-4260



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