

INCH-POUND

MIL-PRF-18949B(OS)  
26 May 1999  
 SUPERSEDING  
 MIL-PRF-18949A(OS)  
 5 January 1976

## PERFORMANCE SPECIFICATION

### PROJECTILES, ILLUMINATING, LOCALIZED HEAT TREATMENT OF

*This specification is approved for use by the Naval Sea 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 covers the localized heat treatment requirements of an inner annulus of the body under the band seat on illuminating projectiles, and supplements the requirements of the projectile specification.

#### 2. APPLICABLE DOCUMENTS

**2.1 General.** The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 3 and 4 of this specification, whether or not they are listed.

##### 2.2 Government documents.

**2.2.1 Specifications.** The following specification forms a part of this document to the extent specified herein. Unless otherwise specified, the issue of this document is that listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2).

#### DEPARTMENT OF DEFENSE

MIL-PRF-18950      Projectiles, High-Capacity, Anti-Aircraft, and Illuminating

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Indian Head Division, Naval Surface Warfare Center, Standardization Team (Code 840M), 101 Strauss Avenue, Indian Head, MD 20640-5035, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by sending a letter.

AMSC N/A

FSC 1320

**DISTRIBUTION STATEMENT A.** Approved for public release; distribution is unlimited.

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**2.3 Non-Government publications.** The following document forms a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)/AMERICAN SOCIETY FOR  
QUALITY CONTROL (ASQC)

ANSI/ASQC Z1.4      Sampling Procedures and Tables for Inspection by Attributes (DoD  
adopted)

(DoD activities may obtain copies of ANSI/ASQC Z1.4 from the Standardization Documents Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094. The private sector and other Government agencies may purchase copies from the American Society for Quality Control, 611 East Wisconsin Avenue, Milwaukee, WI 53202-4606.)

**2.4 Order of precedence.** In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

### 3. REQUIREMENTS

**3.1 General.** In addition to those requirements set forth herein and in MIL-PRF-18950, illuminating projectiles shall, at the time of localized heat treatment, be in that stage of manufacture where the rotating bands have been assembled to the body of the projectile but prior to the finish machining of those surfaces subject to warping due to this localized heat treatment.

**3.2 First Article.** When specified (see 6.2), a sample shall be subjected to first article inspection in accordance with 4.2.

**3.3 Material.** Materials shall comply with the requirements specified herein and the specifications referred to on the applicable drawings or list of drawings, unless specific approval, in writing, covering a departure therefrom has been obtained from the contracting activity prior to manufacture or use.

**3.4 Chemical composition.** Illuminating projectiles purchased under this specification shall be restricted to the analysis shown in table I. Upon written request by the contractor, other compositions may be approved by the contracting activity.

**3.5 Physical Properties.** The inner annulus shall be heat treated so that its minimum cross section is in accordance with table II for the applicable caliber and mark. That portion of the cavity between D and E (see figure 1) shall be heat treated to a minimum hardness of Rockwell C52 for a total minimum depth of C minus F.

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TABLE I. *Chemical composition.*

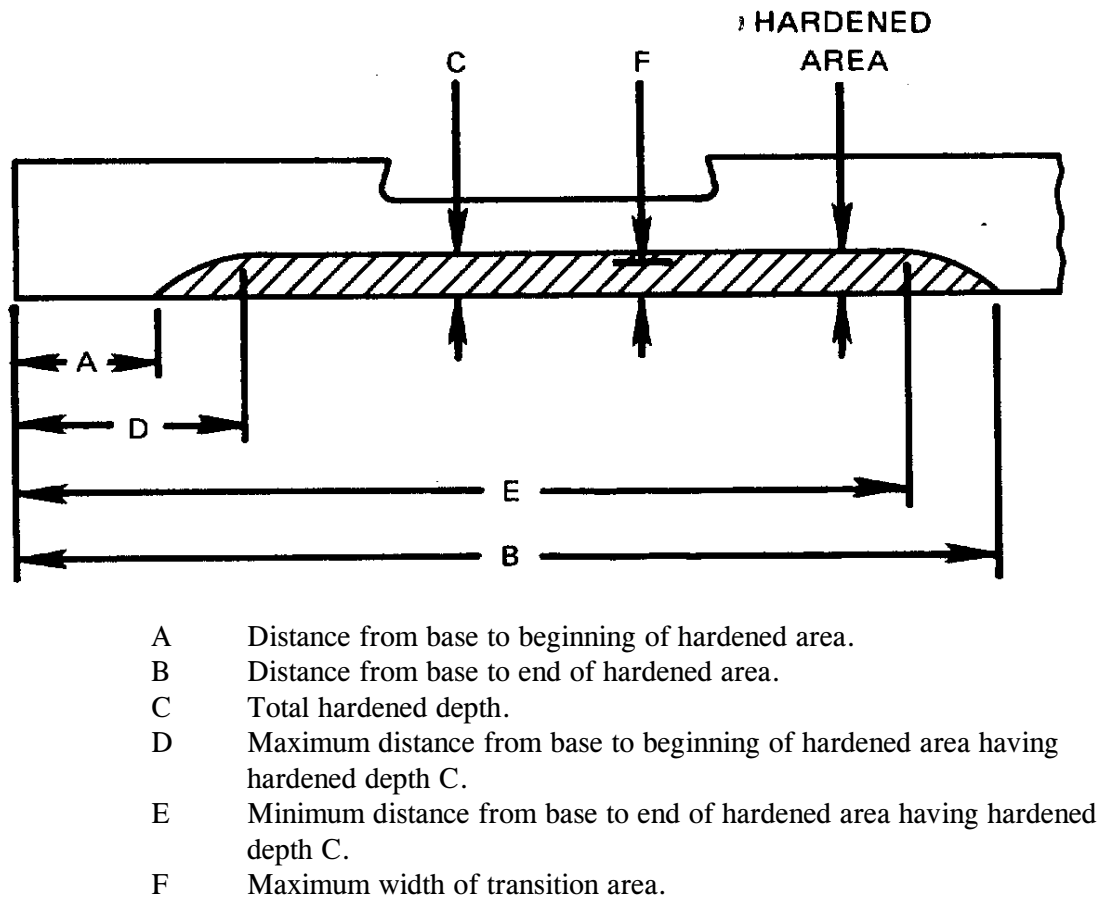
Element	Percent
Carbon	0.45 - 0.55
Manganese	1.35 - 1.60
Phosphorous	0.05, max.
Sulfur	0.05, max.
Silicon	<sup>1</sup>
Copper	0.25, max.
Nickel	0.25, max.
Chromium	0.15, max.
Molybdenum	0.10, max.

<sup>1</sup> Full silicon killed.TABLE II. *Limiting dimensions (inches) of hardened areas.*

Caliber	MK	A <sup>1</sup>	B	C	D	E	F
5"/38	44	0.500 - 0.725	5.00 $\begin{smallmatrix} + 0.500 \\ - 0.000 \end{smallmatrix}$	0.125 - 0.140	1.30	4.50	0.025
5"/54	48	0.800 - 1.000	5.40 $\begin{smallmatrix} + 0.500 \\ - 0.000 \end{smallmatrix}$	0.125 - 0.140	1.30	5.10	0.025

<sup>1</sup> Letters are as defined in figure 1.

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FIGURE 1. *Location of hardened pattern.*

**3.6 Workmanship.** All workmanship shall be high grade, suitable for the purpose intended and uniform for all projectiles in each lot. Projectile bodies shall be free from all surface conditions that interfere with satisfactory heat treatment.

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**4. VERIFICATION**

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

- a. First article inspection (see 4.2)
- b. Quality conformance inspection (see 4.3).

**4.2 First article inspection.** Projectiles in the first article lot shall be subjected to all tests considered necessary by the contracting activity (see 6.2) to determine conformance to the requirements of this specification. The results of these tests will determine whether the supplier shall proceed under the contract.

**4.3 Quality conformance inspection.**

**4.3.1 Sampling.** Unless otherwise specified, and when applicable, the sampling plans and procedures used in the determination of the acceptability of products submitted by a supplier for Government inspection shall be in accordance with ANSI/ASQC Z1.4.

**4.3.1.1 Inspection lot.** As applied to the Government inspection of units of product, the term "lot" shall mean "inspection lot," i.e., a collection of units of the product used as a basis for Government inspection. Unless otherwise specified (see 6.2), the number of units of product in inspection lots shall be as determined by the contracting activity and may differ from the quantity designated in the contract or order as a lot for production, shipment, or other purposes.

**4.3.2 Examination of packaging.** The preservation, packing, and marking of the projectiles shall be examined for conformance to the requirements of section 5.

**4.3.3 Physical properties test.** Every second projectile shall, after localized heat treatment, be tested in a Rockwell testing device to determine that the hardness meets the minimum requirements of 3.5. In addition, one projectile from each lot shall be sectioned through the locally hardened area and parallel to its longitudinal axis. Hardness check readings shall be taken on such sectioned projectiles as required by the contracting activity (see 6.2). Each sectioned projectile shall then be suitably etched to bring out the hardened pattern. The pattern shall be examined for conformance to the requirements of 3.5.

**5. PACKAGING**

**5.1 Packaging.** For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of materiel is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Department or Defense Agency, or within the Military Department's System Command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible

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packaging activity.

## 6. NOTES

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

**6.1 Intended use.** These projectiles are military unique because they are used to provide illumination, screening, and electromagnetic interference on a battlefield. They have no commercial application.

**6.2 Acquisition requirements.** Acquisition documents must specify the following:

- a. Title, number, and date of this specification.
- b. Issue of DoDISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.2 and 2.3).
- c. Whether first article inspection is required and the specific sampling and tests to be performed (see 3.2 and 4.2).
- d. Lot size, if other than specified by the contracting activity (see 4.3.1.1).
- e. Hardness checks required on the sectioned projectiles (see 4.3.3).
- f. Packaging requirements (see 5.1).

**6.3 Subject term (key word) listing.**

Chemical composition  
Hardened pattern  
Physical properties

**6.4 Changes from previous issue.** Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Preparing activity:  
Navy - OS  
(Project 1320-0021)

## 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.

<b>I RECOMMEND A CHANGE:</b>		1. DOCUMENT NUMBER MIL-PRF-18949B(OS)	2. DOCUMENT DATE (YYMMDD) 990526
3. DOCUMENT TITLE PROJECTILES, ILLUMINATING, LOCALIZED HEAT TREATMENT OF			
4. NATURE OF CHANGE ( <i>Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.</i> )			
5. REASON FOR RECOMMENDATION			
6. SUBMITTER			
a. NAME ( <i>Last, First, Middle Initial</i> )		b. ORGANIZATION	
c. ADDRESS ( <i>Include Zip Code</i> )		d. TELEPHONE ( <i>Include Area Code</i> ) (1) Commercial  (2) DSN ( <i>If applicable</i> )	7. DATE SUBMITTED (YYMMDD)
8. PREPARING ACTIVITY			
a. NAME Commander, Indian Head Division Naval Surface Warfare Center		b. TELEPHONE ( <i>Include Area Code</i> ) (1) Commercial 301-744-4700 (2) DSN 354-4700	
c. ADDRESS ( <i>Include Zip Code</i> ) Standardization Team (Code 840M) 101 Strauss Avenue Indian Head, MD 20640-5035		IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT: Defense Standardization Program Office (DLSC-LM) 8725 John J. Kingman Road, Suite 2533 Fort Belvoir, VA 22060-6221 Telephone (703) 767-6888 DSN 427-6888	