

MIL-O-16898B
21 June 1967
 SUPERSEDING
 MIL-O-16898A
 6 September 1963

MILITARY SPECIFICATION

OPTICAL ELEMENTS; PACKAGING OF

This specification is mandatory for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 This specification covers cleaning, drying, preservation, wrapping, packaging, packing and marking of optical elements such as lenses, prisms, mirrors and reticles (see 6.1).

2. APPLICABLE DOCUMENTS

2.1 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

Federal

O-E-760	Ethyl, Alcohol (Ethanol)
UU-T-106	Tape, Pressure-Sensitive, Adhesive, Masking, Paper
CCC-C-440	Cloth, Cheesecloth, Cotton
JJJ-C-561	Cotton; Sterile and Nonsterile
NNN-P-40	Paper, Lens Tissue
PPP-B-585	Box, Wood, Wirebound
PPP-B-591	Box, Fiberboard, Wood-Cleated
PPP-B-601	Box, Wood, Cleated-Plywood
PPP-B-621	Box, Wood, Nailed and Lock Corner
PPP-B-636	Box, Fiberboard
PPP-B-676	Box, Set-up
PPP-C-843	Cushioning Material, Cellulosic

Military

MIL-P-116	Preservation, Methods of
MIL-B-117	Bag and Sleeve, Interior Packaging
MIL-P-13988	Paper, Lens, Tissue, Antitarnish; Wrapping
MIL-C-40129	Cloth, Cotton, Batiste, Polishing
MIL-B-43014	Boxes: Water Resistant Paperboard; Folding, Set-up, and Metal Stayed

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STANDARDS

Military

MIL-STD-105

Sampling Procedures and Tables for
Inspection by Attributes

MIL-STD-129

Marking for Shipment and Storage

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

3. REQUIREMENTS

3.1 Materials. - The materials shall be in accordance with the specifications referenced herein.

3.2 First article testing. - Requirements for the submission of first article samples by the contractor shall be as specified in the contract. (See 6.2).

3.3 Size of packaging materials and containers. - The wraps, bags and containers shall be of the minimum size that will provide adequate protection to the contents.

3.4 Preservation and packaging. - Preservation and packaging shall be level A or C as specified (see 6.2).

3.4.1 Level A.3.4.1.1 Cleaning, drying and wrapping.

3.4.1.1.1 Cleaning materials and equipment. - The following materials and equipment shall be used in the cleaning of optical elements:

Materials and EquipmentSpecification

Alcohol, ethyl (Ethanol)

O-E-760 Grade 1

Bottle, glass, 4 ounce

Commercial

Brush, camel hair

Commercial

Cloth, cotton cheesecloth

CCC-C-440

Cloth, batiste

MIL-C-40129

Cotton, absorbent

JJJ-C-561 Grade A, Class 1

Paper, lens tissue

MMW-P-40

Sticks, orange or equal

Commercial

Syringe, rubber

Commercial

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3.4.1.1.2 Cleaning and drying operations.- The optical elements shall be cleaned in the following manner:

a. Loose particles of dust shall be removed from the surface of the optical elements with a camel hair brush.

b. The surfaces shall be wiped with a circular motion using cotton, lens tissue paper or freshly laundered cheesecloth which is saturated with alcohol.

CAUTION: Only lens tissue paper or batiste cloth shall be used to clean plastic elements. The surfaces shall be dried by wiping with clean cotton, lens paper or freshly laundered cheesecloth.

c. A swab shall be made by wrapping one piece of lens tissue paper around the end of an orange stick or equal. One or two drops of alcohol shall be added on the tip of the swab. The swabbing operation shall begin at the center of the polished surfaces. A light downward pressure shall be exerted on the swab end and with a circular motion gradually increase the radius of area being cleaned until the entire surface has been swabbed. This operation shall be repeated until no trace of dirt, lint or smears are perceptible.

d. A rubber syringe shall be used as a bellows to remove any residual dust or lint that may remain on the cleaned surfaces.

3.4.1.2 Unit packaging.- Each optical element shall be packaged as specified herein, which is in conformance with unit protection Method IC-3 of MIL-P-116.

3.4.1.2.1 Wrapping.- Immediately after cleaning, each optical element shall be wrapped with four or more thicknesses of lens tissue paper conforming to MIL-P-13988. The tissue shall be secured in place with pressure sensitive tape conforming to Type I or II of UU-T-106.

3.4.1.2.2 Cushioning.- Each wrapped optical element shall be cushioned by overwrapping the tissue wrapped item with cellulosic cushioning material conforming to Type II, Class B of PPP-C-843. Overwrapping the tissue covered optical element with cellulosic cushioning material shall be performed in such a manner that the cushioning material is not compressed to the degree that it will result in a loss of cushioning properties. The overwrap shall be secured in place with tape conforming to Type I or II of UU-T-106. The thickness of the cushioning material shall be as follows:

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Weight in Ounces for
Lenses, Mirrors and Reticles

0 to 3
3 to 9
9 to 16

Thickness of Cushioning
in inches

1/8
1/4
1/2

Weight in Ounces for
Prisms

0 to 3
3 to 9
9 to 16

Thickness of Cushioning
in inches

1/4
1/2
1

3.4.1.2.3 Water-vaporproof bag.- Each cushioned optical element shall be placed in a close-fitting bag conforming to Type II, Class E of MIL-B-117.

3.4.1.2.4 Paperboard box.- Each bagged prism, weighing 3 to 9 ounces shall be placed in a paperboard box conforming to Type I, Variety 2, any class of PPP-B-676, or a paperboard box conforming to Form 2, Type A of MIL-B-43014. The box shall be closed as specified in the appendix to the applicable box specification.

3.4.1.2.5 Fiberboard box.- Each bagged lens, mirror, reticle or prism weighing 9 to 16 ounces shall be placed in a fiberboard box conforming to Style OPF or RSC, compliance symbol W6c, WR of PPP-B-636. Closure shall be in accordance with the appendix of the container specification.

3.4.1.3 Intermediate packaging.- The intermediate container shall conform to Style RSC, compliance symbol W5c, WR of PPP-B-636. Closure shall be in accordance with the appendix of the container specification. The size of the intermediate container shall be such that the unit packaged optical elements fit snugly in the container without creating an excessive amount of pressure being exerted on them and causing the container to bulge when it is closed. Only unit packaged optical elements containing the same stock number shall be packaged in an intermediate container. Unless otherwise specified, the quantity of unit packaged optical elements to be placed in an intermediate container shall be as follows:

Weight in Ounces for
Lenses, Mirrors, Reticles
and Prisms

0 to 3
3 to 9

No. of Unit Packages to be
Placed in the Intermediate
Container

10
10

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3.4.2 Level C.- Cleaning, drying and wrapping shall be as specified for level A. Unless otherwise specified, level C protection shall afford adequate protection against damage during shipment from the supply source to the first receiving activity. The suppliers commercial practice will be acceptable when it fulfills the above requirements.

3.5 Packing.- Packing shall be Level A or C as specified (see 6.2).

3.5.1 Level A.- A quantity of packaged optical elements of the same stock number shall be packed in one of the following containers:

Wirebound wood box	-	PPP-B-585 Class 3
Wood-cleated fiberboard box	-	PPP-B-591 (Overseas type)
Wood-cleated plywood box	-	PPP-B-601 Style A or B, Type I or II, Class 2
Nailed wood box	-	PPP-B-621 Class 2
Fiberboard box	-	PPP-B-636 WR

Closure shall be as specified in the applicable box specification or appendix thereto. The gross weight of wood or wood-cleated boxes shall not exceed 100 pounds. The gross weight of fiberboard boxes shall not exceed the weight limitations of the box specification.

3.5.2 Level C.- Packaged optical elements shall be packed to afford protection against damage during direct shipment from the supply source to the first receiving activity for immediate use.

3.6 Marking.- In addition to any special marking required by the contract or order unit packages, intermediate packages, and shipping containers shall be marked in accordance with MIL-STD-129. Packages containing coated optics shall be marked "COATED OPTICS".

3.7 Workmanship.- Workmanship shall be such that, when the proper procedure is followed, optical elements will receive maximum protection against abrasion, deterioration and physical damage during shipment and prolonged periods of storage.

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.

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4.2 First article sample.

4.2.1 Preproduction sample.- One preproduction sample shall be inspected for conformance to the examinations and tests specified herein. The preproduction sample shall be representative of the supplier's normal production.

4.3 Lots.- Inspection lot sizes and lot formation shall be in accordance with MIL-STD-105.

4.4 Sampling.

4.4.1 Examination.- Sampling for examination shall be conducted in accordance with Table IV-A of MIL-STD-105 using inspection level I.

4.4.2 Tests.- Sampling for unit package tests shall be conducted in accordance with Table IV-A of MIL-STD-105 using inspection level S-4 having an AQL of 4.0 percent defective.

4.5 Inspection.

4.5.1 Classification of defects.- Visual examination for defects established in Table I shall apply to each item of the applicable sample of interior packages or exterior containers.

TABLE I - CLASSIFICATION OF DEFECTS

CRITICAL: NONE DEFINED

MAJOR: AQL 1.5 Percent Defective

101. Wraps, bags and containers not of a minimum size.
102. Cleaning of optical elements not as specified.
103. Drying of optical elements not as specified.
104. Wrapping insufficient or incorrect for each optical element.
105. Incorrect method of unit packaging.
106. Cushioning inadequate, not according to specification.
107. Water-vaporproof bag damaged, air not extracted before final closure.
108. Containers not type or style specified.
109. Closure of containers not as specified.
110. Quantity of unit packages in intermediate container not as specified.
111. Markings illegible, incorrect, missing, not conforming to specifications.

MINOR: AQL 4.0 Percent Defective

201. Unit packages not of same stock number in intermediate package.
202. Gross weight and quantity limitations exceeded.
203. Cushioning material excessively compressed.
204. Improper workmanship.

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4.6 Test procedure.

4.6.1 Unit packaging tests.- Each sample unit package shall be subjected to the tests listed in Table II in accordance with MIL-P-116.

TABLE II - PACKAGING TESTS

<u>Test</u>	<u>Packaging Method</u>
Heat seal	IC-3
Determination of cleanliness	IC-3

5. PREPARATION FOR DELIVERY

This section is not applicable to this specification.

6. NOTES

6.1 Intended use.- This document is intended to be used in the packaging of optical components weighing less than one pound.

6.2 Ordering data.- Procurement documents should specify the following:

- (a) Title, number, and date of this specification.
- (b) Selection of applicable levels of packaging and packing.
- (c) If first article sample is required (see 3.2).

Custodians:

Army - MU
Navy - SH
Air Force - 82

Preparing activity:

Army - MU (FA)

Project No. 6650-0184

Review activities:

Army - MU
Navy - AS, SH
Air Force - 82

Code "C"

User activities:

Army - ME, WC
Navy - MC
Air Force - None

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NOTE: This form may not be used to request copies of documents, nor to request 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.

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3a. NAME OF SUBMITTING ORGANIZATION

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5. PROBLEM AREAS

a. Paragraph Number and Wording:

b. Recommended Wording:

c. Reason/Rationale for Recommendation:

6. REMARKS

7a. NAME OF SUBMITTER Last, First, MI - Optional

5. WORK TELEPHONE NUMBER (Include Area Code) - Optional

7. MAILING ADDRESS Street City, State, ZIP Code - Optional

8. DATE OF SUBMISSION (YYMMDD)