

INCH-POUND

MIL-M-5755C
16 April 1990
 SUPERSEDING
 MIL-M-5755B(ASG)
 5 July 1978

MILITARY SPECIFICATIONS

MIRROR, REARVIEW, NONMAGNETIC, GENERAL REQUIREMENTS FOR
 (FOR AERONAUTICAL USE)

This specifications is approved for use by all
 Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers the general requirements for aircraft nonmagnetic rearview mirrors.

2. APPLICABLE DOCUMENTS

2.1. Government documents.

2.1.1 Specification and standards. The following specifications and standards form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents shall be those 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).

SPECIFICATIONS

FEDERAL

PPP-B-636 Box, Shipping, Fiberboard.

MILITARY

MIL-P-116 Preservation, Methods of.
 DOD-D-1000 Drawing, Engineering and Associated List.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Support Division, San Antonio ALC/MDEM, Kelly AFB TX 78241-5000 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 1680

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

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STANDARDS

MILITARY

MIL-STD-129	Marking for Shipment and Storage.
MIL-STD-130	Identification Marking of U.S. Military Property.
MIL-STD-810	Environmental Test Methods and Engineering Guidelines.

(Unless otherwise indicated copies of federal and military specifications and standards are available from the Standardization Documents Order Desk, Bldg 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094).

2.1.2 Other Government documents, drawings and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in solicitation.

DRAWINGS

U.S. Air Force

50B6219	Mirror Assembly - Rearview, Nonmagnetic Type A-2.
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(Application for copies should be addressed to SA-ALC/MMDEM, Kelly AFB, TX 78241-5000.)

U.S. Navy

SD-24	General Specification for Design and Construction of Naval Aircraft.
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(Application for copies should be addressed to Commander, Naval Air Systems Command (AIR 51122), Washington, DC 20361-5110).

2.2 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 issue of documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN SOCIETY FOR TESTING AND MATERIAL (ASTM)

ASTM-D-3951	Packaging, Commercial.
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(Application for copies of ASTM publications should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103).

2.3 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

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precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3 REQUIREMENTS

3.1 First article. When specified (see 6.2), a sample shall be subjected to first article inspection (see 6.3) in accordance with 4.5.

3.1.1 Component parts. The rearview vision mirror shall consist of a mirror enclosed in a frame with a mounting bracket.

3.2 General. The requirements shall be as specified herein and also as specified in Specification SD-24 for Naval procurement, and in Drawing 50B6219 for Air Force procurement.

3.3 Design and construction. The mirror assembly shall be built to withstand the strains, jars, vibrations, and other conditions incident to shipping, storage, installation, and service.

3.3.1 Mirror. The mirror shall be of the first-surface type. The reflecting surface shall be uniform in color, and shall be free from stains and defects.

3.3.2 Demagnification. The reduction in image size of demagnification shall be as specified by the procuring activity.

3.3.3 Image. The image shall be sharp and uniform on all parts of the mirror, and shall be free from any distortion noticeable to the unaided eye under normal daylight conditions.

3.3.4 Reflectivity. The 45-degree specular reflectivity of the mirror surface shall be 50 ± 3 percent of the total visible incident light.

3.3.5 Shatter resistance. The rearview mirror shall be provided with a shatter-resistant backing. The border clinched over the reflecting surface shall not exceed $3/32$ inch in width.

3.3.6 Provision for mounting. The portion of the mounting bracket built integral with or attached to the mirror shall be sufficiently rigid to preclude mirror vibration when the aircraft is in flight.

3.3.7 Corrosion. The mirror surface shall not tarnish nor discolor, and the optical qualities shall not be impaired by continued exposure to service conditions.

3.3.8 Abrasion. The reflecting surface shall be sufficiently durable to withstand cleaning, with such solvents as cleaning acetone, grain alcohol, or 1 to 3 percent aqueous solution of a detergent such as Aersol OT or Arvus paste, or equal, followed by drying with a soft cloth.

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3.3.9 Humidity. The clarity of the image shall not be affected, the specular reflectivity reduced, or the shatter-resistant backing separated from the mirror when subjected to the humidity test.

3.3.10 Adhesion of reflecting film. The reflecting film shall not separate from the supporting medium.

3.4 Interchangeability. All parts having the same manufacturer's part number shall be directly and completely interchangeable with each other with respect to installation and performance. Changes in manufacturer's part numbers shall be governed by the drawing number requirements of DOD-D-1000.

3.5 Weight. The weight of the mirror assembly shall not exceed 0.65 ounce per square inch of reflecting surface.

3.6 Performance. The mirror shall meet the performance requirements specified in Section 4 when subjected to the applicable tests.

3.7 Identification of product. Equipment, assemblies, and parts shall be marked for identification in accordance with MIL-STD-130.

3.8 Workmanship. The mirror, including all parts and accessories, shall be constructed and finished in a thoroughly workmanlike manner. Particular attention shall be given to neatness and freedom of parts from burrs and sharp edges.

3.9 Reclaimed materials. The use of reclaimed materials shall be encouraged to the maximum extent possible.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements (examinations and tests) 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 supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items must meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does commit the Government to acceptance of effective material.

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

- a. First article inspection (see 4.3).
- b. Quality conformance inspection (see 4.4).

4.3 First article. Five mirrors as specified in the contract shall be inspected for design approval by the procuring activity, or when so specified in the contract, at the contractor's plant under the supervision of the procuring activity.

4.4 Quality conformance inspection. Quality conformance inspection shall include the examination of 4.6 and the tests of 4.7.1 through 4.7.1.8.

4.5 Examination of product. Each mirror shall be inspected to determine compliance with the requirements specified herein with respect to material, workmanship, and marking.

4.6 Inspection conditions. Whenever the pressure and temperature existing at the time of the test are not specified definitely, it is understood that the test is to be made at ambient room temperature and pressure.

4.7 Abrasion. The reflecting surface shall be cleaned with a soft unbleached Canton flannel cloth, dusted on the nap side with dry soil which has passed through a 200-mesh sieve. The entire reflecting surface shall be rubbed lightly with the cloth for 30 seconds using a rotary motion. The foregoing cleaning cycle shall be repeated 30 times. The reflectivity shall not be reduced more than 2 percent as determined in accordance with the Reflectivity test.

4.7.1 Temperature shock. The mirror shall be subjected to the Temperature shock test, Procedure I, Method 503.2 of MIL-STD-810. There shall be no separation of the reflecting film from the supporting medium nor other detrimental effects on the serviceability of the mirror.

4.7.1.1 Humidity. The mirror shall be subjected to the Humidity test, Procedure I, Method 503.2 of MIL-STD-810. The clarity of the image shall not be affected and the specular reflectivity shall not be reduced, as determined by the tests entitled Image and Reflectivity, respectively.

4.7.1.2 Salt spray. The mirror shall be subjected to the Salt spray test, Procedure I, Method 509.2 of MIL-STD-810 for 50 hours. There shall be no reduction in clarity when subjected to the Image test. The reflectivity shall not be reduced more than 2 percent as determined in accordance with the test for reflectivity. The residue remaining on the mirror after completion of the tests shall be removed by cleaning with a soft unbleached Canton flannel cloth before the results of the tests are determined.

4.7.1.3 Vibration. The mirror shall be subjected to the Vibration test, Procedure I, Method 514.3 of MIL-STD-810. There shall be no detrimental effect on the serviceability of the mirror assembly.

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4.7.1.4 Adhesion of reflecting surface. At the completion of the foregoing Temperature shock test, tape conforming to Commercial Item Description, A-A-113B; 23 Feb 82, 1 inch wide, shall be applied firmly to the reflecting surface and stripped off quickly at room temperature. The mirror shall be examined for detachment of the reflective cologne.

4.7.1.5 Demagnification. The radius of curvature shall be determined with a dial-type gage with the plunger near the center determined by three fixed legs that need not be equispread, with an accurately formed template, or with any other means acceptable to the Inspector.

4.7.1.6 Image. Clarity of image shall be determined by viewing with the naked eye the reflection of an object in the mirror. Examination for noticeable distortion of the image shall be made as the mirror is rotated 45 degrees both to right and left of the line of sight.

4.7.1.7 Reflectivity. The specular reflectivity shall be determined by directing a substantially collimated beam of incandescent light at approximately 45 degrees onto the specimen and directing the fraction of this beam specularly reflected into a receptor which shall have a spectral sensitivity approximating the luminosity function of the standard observer of the International Commission on Illumination. The fraction of the beam specularly reflected shall be determined either by actual measurement of the incident and reflected beams or by comparison of the beams reflected by the test specimen and with that from a suitably calibrated standard mirror.

4.7.2 Rejection and retest. Items which have been rejected may be reworked or replaced to correct the defects, and resubmitted for acceptance. Before resubmitting, full particulars concerning previous rejection and the action taken to correct the defects found in the original shall be furnished to the Inspector. Units rejected after retest shall not be resubmitted without the specific approval of the procuring activity.

4.8 Samples. All parts, specimens, or assemblies destroyed in making tests required by this specification, to determine compliance with the specification and drawing listed in paragraph 3.2 shall be in addition to the quantity specified in the contract or purchase order and shall be furnished without increasing the cost of the contract or order.

4.9 Packaging inspection. The preservation, packing, and marking shall be inspected to verify conformance to the requirements of Section 5.

5. PACKAGING

5.1 Preservation. Preservation shall be Level A, or Industrial as specified (see 6.2).

5.1.1 Level A.

5.1.1.1 Cleaning. Mirrors shall be cleaned in accordance with MIL-P-116.

5.1.1.2 Drying. Mirrors shall be dried in accordance with MIL-P-116.

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5.1.1.3 Preservative applications. Preservatives shall not be used.

5.1.1.4 Unit packs. Each mirror shall be individually packaged in accordance with Method IIC of MIL-P-116. Wrap and cushion as required for maximum protection.

5.1.2 Industrial. The industrial preservation of mirrors shall be in accordance with ASTM-D-3951.

5.2 Packing. Packing shall be Level B, C or Industrial as specified (see 6.2.).

5.2.1 Level B. The packaged mirrors shall be packed in fiberboard containers conforming to PPP-B-636, Class Weather Resistant, Style Optional special requirements.

5.2.2 Level C. The packaged mirrors shall be packed in fiberboard containers conforming to PPP-B-636, Domestic, Style Optional.

5.2.3 Industrial. The preserved mirrors shall be packed in accordance with ASTM-D-3951.

5.3 Marking.

5.3.1 Levels B and C. In addition to any special or other identification marking required by the contract (see 6.2) each unit pack and exterior container shall be marked in accordance with MIL-STD-129.

5.3.2 Industrial. Industrial marking shall be in accordance with ASTM-D-3951.

5.4 General.

5.4.1 Exterior containers. Exterior containers shall be of a minimum size and cube consistent with the protection required and shall contain equal quantities of identical stock numbered items to the greatest extent possible.

6. NOTES.

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

6.1 Intended use. The mirrors covered by this specification are intended for use in aircraft for rear vision purposes.

6.2. Acquisition requirements. Acquisition documents should specify the following:

a. Title, number and date of this specification and should state the conditions for the following.

b. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1).

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c. First article sample. It is expected that the contract or purchase orders will specify that five mirrors will be required as first article samples (see 4.4) and that these samples will be subjected to the quality conformance inspection (see 4.5 and 4.8) to determine compliance with the requirements of this specification. The invitation for bids and the contract should specify the point of inspection for these tests.

6.3 First article. When first article inspection is required, the contracting officer should provide specific guidance to offerors whether the item(s) should be a preproduction sample, a first article sample, a first production item, a sample selected from the first production items, a standard production item from the contractor's current inventory (see 3.1), and the number of items to be tested as specified in 4.4.1. The contracting officer should also include specified instructions in acquisition documents regarding arrangements for examinations, approval of first article test results, and disposition of first articles. Invitations for bids should provide that the Government reserves the right to waive the requirement for samples for first article inspection to those bidders offering a product which has been previously acquired or tested by the Government, and that bidders offering such products, who wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending contract. Bidders should not submit alternate bids unless specifically requested to do so in the solicitation.

6.4 Subject term (key word) listing.

Mirror
Nonmagnetic
Rearview

6.5 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.

Custodians:
Army - AV
Navy - AS
Air Force - 99

Preparing activity:
Air Force - 82
(Project 1680-0529)