MIL-L-7806A
27 NOVEMBER 1956
Superseding
MIL-L-7806
27 November 1951

MILITARY SPECIFICATION

LIGHT, PANEL, PLASTIC PLATE LIGHTING

This specification has been approved by the Department of Defense and is mandatory for use by the Departments of the Army, the Navy, and the Air Force.

1. SCOPE

1.1 This specification covers a light for use in lighting plastic lighting plates for control panels for use in aircraft.

2. APPLICABLE DOCUMENTS

2.1 The following specifications, standards, drawing and publication, of the issue in effect on date of invitation for bids, form a part of this specification to the extent specified herein:

SPECIFICATIONS

Federal

NN-P-515	Plywood, Container Grade
QQ-P-416	Plating, Cadmium (Electrodeposited)
PPP-B-601	Boxes, Wood, Cleated-Plywood
PPP-B-621	Boxes, Wood, Nailed and Lock-Corner
PPP-B-676	Boxes, Set-Up, Paperboard

Military

MIL-P-4185	Paper, Tissue, Wrapping
MIL-D-5028	Drawings and Data Lists: Preparation of Manufacturers' (for Production Aeronautical and Associated Equipment)
MIL-E-5272	Environmental Testing, Aeronautical and Associated Equipment, General Specification for
MIL-L-10547	Liners, Case, Waterproof
MIL-C-25050	Colors, Aeronautical Lights and Lighting Equipment, General Requirements for

FSC 6210

STANDARDS

Military

MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129	Marking for Shipment and Storage
MIL-STD-130	Identification Marking of U. S. Military Property
MS 35010	Light, Panel, Plastic Plate Lighting

DRAWINGS

Air Force-Navy Aeronautical Standard Drawing

AN3140	Lamp, Incandescent, T-1-3/4 Bulb, Midget Flange Base

PUBLICATIONS

Air Force-Navy Aeronautical Bulletin

No. 143	Specifications and Standards; Use of

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

3. REQUIREMENTS

3.1 Qualification.- The lights furnished under this specification shall be a product which has been tested and has passed the Qualification tests specified herein.

3.2 Component parts.- The light shall consist of a mounting base and lamp holder with plastic filter assembled together to provide an assembly suitable for lighting plastic control panels.

3.3 Materials.-

3.3.1 Protective treatment.- When materials are used in the construction of the light that are subject to deterioration when exposed to climatic and environmental conditions likely to occur during service usage, they shall be protected against such deterioration in a manner that will in no way prevent compliance with the performance requirements of this specification. The use of any protective coating that will crack, chip, or scale with age or extremes of climatic and environmental conditions shall be avoided.

3.3.2 Fungus-inert materials.- All materials used in the manufacture of the light shall be of the fungus-inert type.

3.3.3 Selection of materials.- Specifications and standards for all materials, parts, and Government certification and approval of processes and equipment, which are not specifically designated herein and which are necessary for the execution of this specification, shall be selected in accordance with ANA Bulletin No. 143, except as provided in the following paragraph.

3.3.3.1 Standard parts.- Standard parts (MS, AN, and JAN) shall be used wherever they are suitable for the purpose, and shall be identified on the drawing by their part numbers. Commercial utility parts such as screws, bolts, nuts, cotter pins, etc, may be used, provided they possess suitable properties and are replaceable by the standard parts (MS, AN, or JAN) without alteration, and provided the corresponding standard part numbers are referenced in the parts list and, if practicable, on the contractor's drawings. In the event there is no suitable corresponding standard part in effect on date of invitation for bids, commercial parts may be used provided they conform to all requirements of this specification.

3.4 Design and construction.- The light shall be so designed and constructed that no parts will loosen in service. It shall be built to withstand the strains, jars, vibrations, and other conditions incident to shipping, storage, installation, and service.

3.4.1 Light assembly.- The complete light shall be as shown on Standard MS25010.

3.4.2 Mounting base.- The mounting base shall consist of a housing containing a spring-loaded contact for the center terminal of the lamp separated from the shell with an insulating bushing.

3.4.2.1 Housing.- The housing shall be constructed of cadmium- or tin-plated brass to prevent corrosion. A small notch shall be provided on the lower surface of the rim to prevent the light from turning when it is installed. Screw threads shall be provided on the outside of the housing and the housing furnished with a nut and lock washer.

3.4.2.2 Contact.- The center contact assembly for the base shall be so designed that the lead to the center contact of the lamp may be soldered or attached by a screw on one end, the other to make contact with the lamp. The lamp contact shall be spring loaded; however, the design shall be such that the spring is not required to carry the current. The center contact shall be positioned in such manner that when the lamp holder is inserted without a lamp, no electrical contact will be made between the contact surface and the lamp holder. The contact assembly shall be fabricated from brass and shall be cadmium or tin plated.

3.4.2.3 Insulating bushing.- The center contact assembly shall be separated from the housing by means of a nonhygroscopic insulating bushing. The bushing shall be such that it will not fail when a 750V a-c potential is applied between the contact assembly and the shell.

3.4.3 Holder assembly.- The holder assembly shall consist of the cap, dull black light seal washer, color filter, and lamp holder assembled together. The design shall be such that the parts will not separate, warp, or otherwise deform in use or under the environmental conditions specified herein. The holder assembly shall be in accordance with Standard MS25010.

3.4.3.1 Cap.- The cap which may be an integral part of the filter or securely attached to the filter shall have a smooth surface around the outer edge with four or more small protrusions as indicated on Standard MS25010. The caps shall be either opaque or transparent as specified by the applicable MS part number. The exposed area of the opaque cap shall have a dull black finish. The light emitted by the transparent cap shall be Identification red in accordance with Specification MIL-C-25050.

3.4.3.2 Filter.- The color shall be Identification red in accordance with Specification MIL-C-25050. The light transmission shall be not less than 70 percent when tested with a light source having a color temperature of 2,355°K.

3.4.3.3 Lamp holder.- The lamp holder shall be designed to hold an AN3140-327 lamp securely in place. The design shall be such that the lamp may be removed by catching the flange on the lamp base with the thumb and finger nails and pulling it out of the holder. The outside of the base of the lamp holder shall be provided with threads by which it may be turned into matching threads in the base of the assembly. The design of the holder shall be such that when it is installed the top edge of the lamp base shall be not lower than the top surface of the mounting base of the assembly.

3.4.3.4 Lamp.- The assembly shall be furnished complete with lamp.

3.4.3.5 Light seal washer.- The light seal washer shall be fabricated from rubber or a suitable synthetic material which will suitably withstand all the tests prescribed elsewhere in this specification. The light seal washer must effectively seal the boundary between the washer and the plastic plate in order that no light escapes. The surface must be black. The light seal washer must be replaceable.

3.5 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 Specification MIL-D-5028.

3.6 Dimensions.- The dimensions of the light shall be as shown on Standard MS25010.

3.7 Weight.- The weight of the light with lamp shall be not more than 0.03 pound.

3.8 Finishes and protective coatings.-

3.8.1 Cadmium plating.- Cadmium plating shall be in accordance with Specification QQ-P-416, type II, or III, and of a class that is adequate to achieve the degree of protection required.

3.8.1.1 Tin plating may be used in lieu of cadmium plating.

3.9 Performance.- Lights shall withstand the following environmental conditions:

(a) Temperature: Temperatures ranging between -62° to +85°C (-80° to +121°F) remaining constant or varying at a rate of as high as 1°C (1.8°F) per second.

(b) Humidity: Relative humidity up to 100 percent, including conditions wherein condensation takes place in the form of water and frost.

(c) Salt spray: Exposure to salt sea atmosphere.

(d) Vibration: Vibration from 5 to 500 cps.

(e) Ozone: Ozone having a concentration of from 0.010 to 0.015 percent by volume.

[illegible] terminals

3.10 Identification of product.- The MS part number and the manufacturer's name or trade-mark, together with the manufacturer's part number shall be permanently and legibly marked on the housing edge. The information shall be marked in accordance with Standard MIL-STD-130.

3.10.1 Use of AN or MIL designations.- AN or MIL designations shall not be applied to a product, except for Qualification test samples, nor referred to in correspondence, until notice of approval has been received from the activity responsible for qualification.

3.11 Workmanship.-

3.11.1 General.- The light, including all parts and accessories, shall be fabricated and finished in a thoroughly workmanlike manner. Particular attention shall be given to freedom from blemishes, defects, burrs, and sharp edges; accuracy of dimensions, radii of fillets, and marking of parts and assemblies; thoroughness of welding, brazing, and alinement of parts and tightness of assembly.

3.11.2 Riveting.- Riveting operations shall be carefully performed to insure that the rivets are tight and satisfactorily headed.

3.11.3 Cleaning.- The light shall be thoroughly cleaned and metal chips and other foreign material removed during and after final assembly.

4. QUALITY ASSURANCE PROVISIONS

4.1 Classification of tests.- The inspection and testing of lights shall be classified as follows:

(a) Qualification tests: Qualification tests are tests performed on samples submitted for approval as qualified products.

(b) Acceptance tests: Acceptance tests are those tests performed on individual lots which have been submitted for acceptance.

4.2 Test conditions.-

4.2.1 Atmospheric conditions.- Unless otherwise specified, each test of this section shall be conducted in still air at approximately sea level altitude and at an ambient temperature of approximately 25°C (77°F).

4.2.2 Tolerances.- Tolerances on test condition measurements shall be as required by Specification MIL-E-5272.

4.3 Qualification tests.-

4.3.1 Sampling instructions.- Qualification test samples shall consist of 10 lights of the part number on which qualification is desired, together with one 2- by 2-inch flat sheet, having the same thickness as the wall of the filter and of the same material as the filter. Samples of each part number shall be identified as required and forwarded to the activity responsible for qualification designated in the letter of authorization from that activity (see 6.3), and plainly identified by securely attached durable tags marked with the following information:

(a) Procedure used in disassembly of the light.

Sample for Qualification tests
LIGHT, PANEL, PLASTIC PLATE LIGHTING
Manufacturer's Part No.
Name of manufacturer
Submitted by (name) (date) for Qualification test in accordance with Specification MIL-L-7806A under authorization (reference authorizing letter)

4.3.2 Tests.- The Qualification tests shall consist of all the tests specified under Acceptance tests and, in addition, the following tests.

4.3.2.1 Dielectric.- The light shall be subjected to a 750V, 50-cycle, a-c potential for a period of 2 minutes without failure.

4.3.2.2 Color and transmittance.- The color and transmittance of the 2- by 2-inch-flat filter shall be tested with a standard lamp, having a color temperature of 2,355°K to determine that it is within the specified limits.

4.3.3.3 Temperature shock: Procedure I.- The light shall be subjected to the Temperature shock test in accordance with Procedure I, of Specification MIL-E-5272, except that the low temperature shall be -62°C (-80°F). Following the high-temperature portion of the Temperature shock test, stretching of the lamp holder and filter by more than 0.005 inch shall be cause for rejection.

4.3.3.4 Humidity: Procedure I.- The Humidity test in accordance with Procedure I, of Specification MIL-E-5272 shall be performed.

4.3.3.5 Salt spray: Procedure I.- The Salt spray test in accordance with Procedure I, of Specification MIL-E-5272 shall be performed.

4.3.3.6 Vibration: Procedure I.- The light shall be mounted as shown on Standard MS25010. Tests in accordance with Procedure I, of Specification MIL-E-5272 shall be performed.

4.3.3.7 Ozone resistance.- The assembly, including the light seal washer, shall be subjected to ozone having a concentration of from 0.010 to 0.015 percent by volume for 2 hours at room temperature. At the end of this period, the samples shall be examined for evidence of deterioration such as cracking or hardening of the washer. (See 6.4.)

4.4 Acceptance tests.-

4.4.1 Sampling.- A random sample shall be selected from the inspection lot in accordance with Standard MIL-STD-105, table III, Inspection level III, AQL of 2.5 percent.

4.4.2 Lot.- For the purpose of sampling, an inspection lot shall consist of all lights submitted for acceptance at one time.

4.4.3 Tests.-

4.4.3.1 Examination of product.- The light shall be inspected to determine compliance with respect to materials, workmanship, and marking, and as specified herein:

Dimensions (See 3.6.)
Weight (See 3.7.)

4.5 Rejection and retest.- The failure of a light to meet the specified requirements of any of the tests shall constitute failure of the light. Further testing shall be at the discretion of the activity responsible for qualification.

5. PREPARATION FOR DELIVERY

5.1 Application.- The requirements of section 5 apply only to direct purchases by or direct shipments to the Government.

5.2 Packaging.-

5.2.1 Level A.- Each light shall be unit packaged for physical and mechanical protection only. Unless otherwise specified, each light shall be wrapped in tissue paper conforming to Specification MIL-P-4185 and packaged in units of 10 in paperboard boxes conforming to Specification PPP-B-676.

5.2.2 Level C.- Each light shall be packaged in accordance with standard commercial practice.

5.3 Packing.- Shipping containers, insofar as practical, shall be uniform in size and shape, shall contain an identical number of like items only, and shall be snugly packed. Gross weight of shipping containers shall not exceed 200 pounds.

5.3.1 Level A.- Lights, packaged as specified in 5.2.1, shall be overpacked in a cleated plywood or nailed wood box conforming to Specification PPP-B-601 (overseas type) or PPP-B-621 (style 2 or 4). Plywood, if used, shall be type II, class 1, of Specification MN-P-515. Boxes shall be case lined in accordance with Specification MIL-L-10547.

5.3.2 Level B.- Lights, packaged as specified in 5.3.1, shall be overpacked in a domestic-type cleated plywood or nailed wood box conforming to Specification PPP-B-621.

5.3.3 Level C.- Lights shall be packed in commercial shipping containers conforming to the requirements of Consolidated Freight Classification Rules in effect at time of shipment and shall be designed to insure acceptance by common or other carrier for safe transportation, at the lowest rate, to the point of delivery.

5.4 Marking of shipments.- Interior packages and exterior shipping containers shall be marked in accordance with Standard MIL-STD-129. The identification shall be composed of the following information listed in the order shown:

Stock No. or other identification number as specified in the purchase document*
LIGHT, PANEL PLASTIC PLATE LIGHTING
MS Part No.
Manufacturer's Part No.
Contract or Order No.
Quantity
Date of manufacture
Manufacturer's name or trade-mark
Name of contractor (if different from the manufacturer)

*NOTE: The contractor shall enter the Federal Stock No. specified in the purchase document or as furnished by the procuring activity. When the Federal Stock No. is not provided or available from the procuring activity, leave space therefor and enter the Stock No. or other identification when provided by the procuring activity.

6. NOTES

6.1 Intended use.- The light covered by this specification is intended for use in edge lighting panels conforming to Specification MIL-P-7788.

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

(a) Title, number, and date of this specification.

(b) MS Part No.

(c) Whether domestic or overseas packing is required. (See 5.3.)

6.3 Provisions for qualification.- With respect to products requiring qualification, awards will be made only for such products as have, prior to the bid opening date, been tested and approved for inclusion in the applicable Qualified Products List whether or not such products have actually been so listed by that date.

6.3.1 The attention of suppliers is called to this requirement and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government, tested for qualification in order that they may be eligible to be awarded contracts or orders for the products covered by this specification. Requests for information pertaining to qualification of products covered by this specification should be addressed to the Bureau of Aeronautics, Navy Department, Washington 25, D.C., the activity responsible for qualification, with a copy to the Commander, Wright Air Development Center, Wright-Patterson Air Force Base, Ohio.

6.4 Ozone test.- A satisfactory method of producing and testing the ozone concentration required is described in ASTM Standard Method of Test Designation D1170-54T.

Custodians:
Army - Transportation Corps
Navy - Bureau of Aeronautics
Air Force

Other interest:
Navy - SH

Preparing activity:
Navy - Bureau of Aeronautics

SPECIFICATION ANALYSIS SHEET

Form Approved
Budget Bureau No. 119-R004

INSTRUCTIONS

This sheet is to be filled out by personnel either Government or contractor, involved in the use of the specification in procurement functions for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse, staple in corner, and send to preparing activity (as indicated on reverse hereof).

SPECIFICATION

ORGANIZATION (of submitter) | CITY AND STATE

CONTRACT NO. | QUANTITY OF ITEMS PROCURED | DOLLAR AMOUNT $

MATERIAL PROCURED UNDER A

☐ DIRECT GOVERNMENT CONTRACT ☐ SUBCONTRACT

1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?

A. GIVE PARAGRAPH NUMBER AND WORDING.

B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES.

2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID

3. IS THE SPECIFICATION RESTRICTIVE?

☐ YES ☐ NO IF "YES", IN WHAT WAY?

4. REMARKS (*Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity*)

SUBMITTED BY (*Printed or typed name and activity*) | DATE

DD, FORM 1 APR 63 1426 REPLACES NAVSHIPS FORM 4863, WHICH IS OBSOLETE C-8279

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