

NOTICE OF
VALIDATION

INCH-POUND

MIL-L-26202D(ASG)

NOTICE 1

24 January 1994

MILITARY SPECIFICATION

LIGHT, MARKER, AIRPORT, SEMIFLUSH

GENERAL SPECIFICATION FOR

MIL-L-26202D, dated August 1966, has been reviewed and determined to be valid for use in acquisition.

Custodians:

Air Force - 99

Navy - AS

Preparing activity:

Air Force - 82

Reviewers:

Air Force - 11

Navy - YD

DLA - GS

AMSC: N/A

FSC 6210

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MIL-L-26202D(ASG)
AMENDMENT - 2
2 AUGUST 1966
Superseding
Amendment -1
24 January 1966

MILITARY SPECIFICATION

LIGHT, MARKER, AIRPORT, SEMIFLUSH, SPECIFICATION FOR

This amendment forms a part of Military Specification MIL-L-26202D(ASG), 18 December 1964, and has been approved by the Department of the Air Force and by the Naval Air System Command.

Page 1., paragraph 1.2.2, last sentence: Add "(MS21999)" after "(MS26579)".

Page 2:

(a) Paragraph 2.1: Under Military Standards, add the following:

"MS21999 Lamp, Incandescent, PAR 36 Airport Lighting,
 Screw Terminal"

(b) Paragraph 2.2: Add the following new document:

"American Standards Association

ASA B46.1 - 1962 Surface Texture (Surface Roughness, Waviness
and Lay)

(Copies of the above publication may be obtained from the American Standards Association, Inc., 10 East 40th Street., Now York., N. Y. 10016.)"

Page 5:

(a) Paragraph 3.5.5.1, third line: Delete "type SA" and substitute "type SFF-2".

(b) Paragraph 3.5.8.1, first and second sentences: Delete, and substitute:

"Unless otherwise specified in the contract or order, the housing material shall be ductile iron having a minimum tensile strength of 70,000 pounds per square inch (psi), a minimum yield strength of 50,000 psi, a minimum elongation of 12 percent, and a Brinell hardness of not less than 166 (see 6.2(m))."

Page 6:

(a) Paragraph 3.5.8.1.1.1, second line: Between the words "casting" and "of" insert "or forging".

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(b) Paragraph 3.5.8.3: Delete, and substitute:

"3.5.8.3 Fasteners. - On unidirectional and bidirectional units all bolt heads shall be below the external surface of the housing, and a counterbore shall be provided for the bolt hole in the top of the housing so that a standard 1/2-inch socket wrench can be used. The depth of the counterbore in each of the six holes shall be such that the specified bolts will not bottom on the gasket used between the base and the inner rings."

(a) Paragraph 3.5.8.3.1, seventh line: Add the following at the end of the fourth sentence:

"and threaded high enough for tightening the housing to the locator ring."

Page 9: Add the following new paragraph:

"3.5.13 Surfaces. - AU surfaces facing gaskets shall have a roughness height rating of 125 RHR and a flatness of 0.020 maximum waviness height value in accordance with ASA B46.1 - 1962."

Page 10, paragraph 4.3.1: Add the following to the end of the paragraph:

"When specified by the activities responsible for qualification, qualification samples that have passed all other qualification examinations and tests shall be forwarded as instructed by the activity responsible for qualification for the performance of tests specified in 4.6.9, 4.6.10, 4.6.11, and 4.6.12."

Page 11:

(a) Paragraph 4.3.2: Delete, and substitute:

"4.3.2 Qualification tests. - Qualification tests shall consist of the examinations and tests specified in 4.5 and 4.6, except 4.6.9, 4.6.10, 4.6.11, 4.6.12., and 4.6.13. The tests specified in 4.6.9, 4.6.10, 4.6.11, and 4.6.12 shall be performed as part of the qualification tests only when specified by the activity responsible for qualification."

(b) Paragraph 4.6.3: Add the following to the end of the paragraph:

"The light shall be mounted on the vibration machine by attaching necessary brackets or adapters to the light where the base, clamp ring, and housing join."

Page 12:

(a) Paragraph 4.6.6, fourth line: After "water penetration" insert "(except for class C lights)".

(b) Paragraph 4.6.9, first line: Delete "At the discretion of the activity responsible for qualification,".

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of 3 pages

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Page 13, paragraphs 4.6.10, 4.6.11, and 4.6.12, first line: Delete "At the discretion of the activity responsible for qualification,".

Page 14, paragraph 6.2: Add as last item "(m) Housing material, if other than as specified in paragraph 3.5.8.1."

Custodians:

Navy - AS

Air Force - 11

Preparing activity:

Air Force - 11

Reviewer activities:

Navy - AS

Air Force - 11, 82, 85

MIL-L-26202D(ASG)
18 DECEMBER 1964
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MIL-L-26202C(ASG)
24 July 1962

MILITARY SPECIFICATION

LIGHT, MARKER, AIRPORT, SEMIFLUSH,
GENERAL SPECIFICATION FOR

This specification has been approved by the Department of the Air Force and by the Bureau of Naval Weapons.

1. SCOPE

1.1 Scope. - This specification covers semiflush lights intended for airport installation.

1.2 Classification. - Lights shall be in accordance with the applicable (see 6.2) MS standards for the following classes:

1.2.1 Classes B and BB. - Each class B and class BB light (commonly called "flush prismatic light") shall be a semiflush light with a gradually sloped upper section designed for a 10.25-inch mounting-bolt circle. These lights are designed for mounting on an MS24526 base.

- (a) Classes B3 and BB3 are omnidirectional (MS27033),
- (b) Classes B15 and BB45 are bidirectional (MS26578).
- (c) Classes B25, BB25, and BB55 are unidirectional (MS26578).

1.2.2 Class C (open grid). - A class C light (commonly called "flush open-grid light") shall be a semiflush light with a gradually sloped open grid. Class C is unidirectional (MS26579).

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

QQ-P-416	Plating, Cadmium (Electrodeposited)
QQ-Z-325	Zinc Coating, Electrodeposited
TT-E-489	Enamel, Alkyd, Gloss (for Exterior and Interior Surfaces)

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Military

MIL-E-5272 Environmental Testing, Aeronautical and Associated Equipment, General Specification for
 MIL-R-5847 Rubber, Silicone, High and Low Temperature Resistant
 MIL-C-7989 Covers, Light-Transmitting, for Aeronautical Lights, General Specification for
 MIL-E-17555 Electronic and Electrical Equipment and Associated Repair Parts, Preparation for Delivery of
 MIL-T-27535 Transformer, Power, Isolation; Series Circuit, Airport Lighting, General Specification for
 MIL-D-70327 Drawings, Engineering and Associated Lists

STANDARDS

Federal

FED. STD. NO. 595 Colors

Military

MIL-STD-130 Identification Marking of US Military Property
 MIL-STD-143 Specification and Standards, Order of Precedence for the Selection of
 MIL-STD-202 Test Methods for Electronic and Electrical Component Parts
 MIL-STD-831 Test Reports, Preparation of
 MS24488 Lamp - Incandescent, PAR-56 Bulb, Screw Terminal,
 MS24526 Base, Airport Marker Light
 MS26577 Gasket - Airport Marker, Light Base
 MS26578 Lights, Marker, Airport, Semiflush, Base Mounted, Bidirectional and Unidirectional
 MS26579 Light, Marker, Airport, Semiflush, Open Grid
 MS27033 Light, Marker, Airport Taxiway
 MS33586 Metals, Definition of Dissimilar

(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.)

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:

Federal Aviation Agency

L-823 Plug and Receptacle Cable Connectors

(Copies of FAA documents may be obtained from the Federal Aviation Agency, Washington, D. C. 20553.)

National Bureau of Standards

Handbook H28 Screw Thread Standards for Federal Services

(Copies of Bureau of Standards documents may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C. 20402.)

3. REQUIREMENTS

3.1 Qualification. - Lights furnished under this specification shall be products which have been tested and have passed the qualification tests specified herein, and have been listed on or approved for listing on the applicable Qualified Products List.

3.2 Data. - Unless otherwise specified in the contract or order, no data (other than reports and drawings accompanying qualification samples) are required by this specification or any of the documents referenced in section 2 (see 6.2).

3.3 Selection of specifications and standards. - Specifications and standards for necessary commodities and services not specified herein shall be selected in accordance with MIL-STD-143, except as provided in 3.3.1.

3.3.1 Use of commercial parts. - Bolts, nuts, washers, cotter pins, lock rings and similar fastening devices used for assembly, may be selected from commercial sources, provided military or other standard parts are not specifically called out by this specification or associated standards. If such commercial parts are used, they shall possess suitable properties and shall be replaceable by military standard parts without alteration and provided the corresponding military standard part numbers are referenced in the parts list, and, if practicable, on the contractors drawings.

3.4 Materials. -

3.4.1 Fungus-proof materials. - Materials that are nutrients for fungi shall not be used where it is practicable to avoid them. When used and not hermetically sealed, they shall be treated with a fungicidal agent acceptable to the procuring activity. However., if they will be used in a hermetically sealed enclosure, fungicidal treatment will not be necessary.

3.4.2 Metals. - Metals shall be corrosion resistant or shall be treated to resist corrosion caused by fuels, salt spray, or atmospheric conditions encountered in storage or normal service. The use of dissimilar metals shall be avoided wherever practicable. When used, dissimilar metals shall be in accordance with MS33586.

3.4.2.1 Ring material. - If corrosion-resistant steel is not used for the rings,, they shall be plated after machining. Plating shall be zinc class 2, type I of QQ-Z-325 or cadmium plating class 2, type I of QQ-P-416.

3.4.3 Nonmetallic materials. -

3.4.3.1 Gaskets. - All gasket material shall conform to class IIa, grade 60 of MIL-R-5847. One gasket conforming to MS26577 shall be furnished with each base-mounted light. All other gaskets required to provide satisfactory water seal shall be furnished with each light.

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3.4.3.2 Sealing compounds and gaskets. - Compounds when used to seal lenses, prism, or reflectors shall be of a type that will not run after long exposure in the sun, or operation of the lights at full output. The compound shall not harden or check after extended use and shall remain mastic and not lose its water sealing properties after extended use. Prisms shall be cemented or gasketed and securely hold so that excessive stresses are not imposed on the glass during any of the specified load conditions and a satisfactory water seal is maintained.

3.5 Design and construction. - All lights shall be designed in accordance with the applicable military standard (MS) and shall be so designed and constructed that no parts will work loose in service. Lights shall withstand the strains, jars, vibration, and other conditions incident to shipping, storage, installation, and service.

3.5.1 Optional design. - The overall design of the light and internal details are optional provided all requirements are met, interchangeability is not affected, and that the design is approved by the qualifying activity.

3.5.2 Design conditions. - All lights shall be designed for continuous outdoor operation under all weather conditions.

3.5.2.1 No portion of the lights shall project above the surface of the pavement by more than the amount specified on the MS. Portions which do project above the pavement level shall be sloped at an angle not exceeding the values specified on the MS. Base-mounted lights shall present a smooth exterior surface in all directions, but glassware may be recessed. Recesses shall be so shaped that they will be self-cleaning by wind and rain action, and shall include no corners or ridges which would act as dirt traps or cut tires.

3.5.3 Design loads. - All lights shall be designed to withstand a static load of 50,000 pounds due to an aircraft wheel and tire.

3.5.3.1 Loads. - When correctly installed, all lights shall withstand being run over by snow removal equipment, trucks, grass mowers, etc., without damage to the equipment or light. The lights shall withstand being run over from any direction and any part of the snow removal equipment, including dolly wheels or shoes, rotary blades, and tires with chains.

3.5.3.2 All lights shall be designed so that nosewheel, outrigger wheels and main landing gear wheels of aircraft are not subjected to any appreciably greater stresses when hitting or striking a light from any direction than they would be normally subject to when hitting or rolling over the surface of the runway (see 4.6.9 and 4.6.10). A light shall not cause a rolling wheel to change its direction of travel (i.e., a grid shall be so designed that it will not cause a tire to turn and roll parallel to the grid).

3.5.3.3 All lights shall be designed that if the wheel of those aircraft using a 6.00 x 2 tire runs over the light from any direction, the wheel shall not be damaged or caught, and the light shall not be damaged.

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3.5.3.4 All lights shall be designed to provide sufficient supporting surface for aircraft tires and to minimize abrupt changes in tire deflection. A light shall not cause the average deflection of a tire to be more than 30 percent greater than the deflection the tire would normally experience on contact with the surface of a runway with the same total loading.

3.5.3.5 Base-mounted lights shall be provided with a rib, in the area of the glassware to permit aircraft arrestment tailhooks 2 inches or more in width to ride over the light without damaging the light or the tailhook. Recesses shall be so designed that the glassware will not be touched by snowplow blades, or wheels 2 inches or more in width.

3.5.4 Optical components. - All prisms, lenses, and reflectors shall be grade B of MIL-C-7962, except they shall be tempered to withstand the temperature shock of 4.6.6.

3.5.4.1 Reflectors. - All reflectors used in a light shall be provided with a finish of high specular reflectivity, and shall be protected, insofar as possible from dirt, tarnishing and corrosion.

3.5.5.1 Base-mounted lights. - Each base-mounted light shall be supplied with a 16-inch-long lead assembly consisting of two single leads each having a 12-AWG bunch stranded, type SA conductors. A two-pole, 600-volt (V), 20-amp. plug with pins and mating surfaces in accordance with the plug specified in FAA Specification L-823, figure 1A shall be molded on the lower ends of the assembly. The plug shall be molded from a suitable compound which will not deteriorate at temperatures of 150 deg. C. The top ends of the leads shall be provided with a high-temperature lug suitable for connecting to the screw terminals of a PAR-56 lamp.

3.5.5.2 Open-grid light. - Each open-grid light shall be provided with one lead for each lamp. The lead shall be the same as that specified in 3.5.5.1.

3.5.6 Circuits and transformers. - Each light shall be designed for connection to a series circuit through the isolating transformer specified on the MS. An transformers shall be in accordance with MIL-T-27535. Unless otherwise specified, transformers shall not be furnished with the light (see 6.2).

3.5.7 Adjustment and repairs. - All lights shall be so constructed that routine adjustments and repairs can easily be made with tools normally available commercially.

3.5.8 Base-mounted lights. -

3.5.8.1 Housing. - The housing shall be fabricated of heat-treated ductile steel or equal. The material shall have a minimum tensile strength of 70,000 pounds per square inch (psi), a minimum yield strength of 50,000 psi, a minimum elongation of 12 percent, and a Brinell hardness of not less than 166. If a non-corrosion-proof material is used, the housing shall be plated after machining.

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Plating shall conform to class 2, type I of QQ-Z-325 or class 2, type I of QQ-P-416. The top surface of the housing shall be painted with enamel conforming to TT-E-489; the color shall be aviation orange 12197 of Federal Standard No. 595. Other portions of the housing may be fabricated of any metal satisfactory for the application, and shall be of skeleton construction in order to reduce the weight of the light. Construction shall be such that condensate, or water leaking into the light, will not drip on the lamp.

3.5.8.1.1 Base-mounted lights shall be designed for installation on a MS24526 base. The base will be oat so that its top is 3/4 inch below the surface of the pavement. Unless otherwise specified, the base shall not be furnished with the light (see 6.2).

3.5.8.1.1.1 The housing of each base-mounted light shall consist essentially of a smoothly sloped casting of sufficient strength to withstand the snowplow and aircraft wheel tests, and adequately protect the glass prisms and all other parts of the optical system. The lower portion of the housing shall have a diameter as specified on the MS and halt extend at least 1/4 inch down into the base.

3.5.8.2 Slots. - Two screwdriver slots shall be provided in the bottom rim of the housing in order that the housing can be pried up readily from the base to facilitate removal of the lamp. Slots shall be as specified on the MS.

3.5.8.3 Fasteners. - All bolt heads shall be below the contour of the external surface of the housing. A counterbore shall be provided for the bolt holes in the top of the housing so that a standard 1/2-inch socket wrench can be used. The depth of the counterbore in each of the 6 holes shall be such that the specified bolts will not bottom on the gasket used between the base and the inner rings.

3.5.8.3.1 All bolts, nuts, and fasteners shall be corrosion-resistant steel. The bolts used on unidirectional and bidirectional lights for bolting the clamp ring to the base shall be size 3/8-16, hex head self-sealing. The thickness of the hex head shall not exceed 15/64 inch and the hex head shall be suitably accommodated by a standard 9/16-inch socket wrench. The bolts used for bolting the housing to the locator ring shall be 5/16-18, hex head, equipped with self-sealing washers. The thickness of the hex plus washer shall not exceed 15/64 inch, and the hex head shall be suitably accommodated by a standard 1/2-inch socket wrench. For omnidirectional lights, the bolts used for bolting the housing to the base shall be 3/8-16 hex head equipped with self-sealing washers. All bolts nuts, washers, and fasteners shall be furnished with the light.

3.5.8.4 Ring assembly. - The housing of unidirectional and bidirectional lights shall be designed to be bolted and hold in place upon a base by means of a locator ring and clamp ring arrangement. The ring assembly shall be provided so that the light can be properly aimed at initial installation and that relamping can be accomplished without the necessity for re-aiming the light. The housing shall bolt directly to the locator ring which shall be hold securely on the base when the clamp ring is bolted to the base.

3.5.8.4.1 The locator ring and the clamp ring shall be in accordance with the applicable MS.

3.5.8.5 Prisms. - Optical systems shall contain clear glass reflecting prisms that will accept vertical light from the lamp and redirect the light into essentially horizontal beams that will conform to the specified intensity distribution requirements. All optical components shall be so designed and mounted that they are permanently and accurately aimed with no aiming necessary or possible during installation. The design shall be such that any parts removed can be replaced only in the correct Position. Optical systems using metal reflectors and glass windows in lieu of solid glass prisms are not acceptable on unidirectional and bidirectional lights.

3.5.8.5.1 A gradually sloped recess shall be provided in front of each prism to improve the vertical spread of the beams. When the bottom of the prism of a class B light is masked out to the height at which water would stand in the recess the reduction in light output at any angle shall not exceed 15 percent for class B lights and 30 percent for class BB lights of that obtained when the bottom of the prism is not masked. The external surface of the exit window shall be smooth.

3.5.8.5.2 High quality workmanship, methods, and materials shall be used in processing the prism. The reflecting surface should be provided with a high quality coating of evaporated aluminum which is protected with a suitable coating. All prisms shall be uniform and shall not require individual adjustment when installed by production methods.

3.5.8.6 Lampholder. - A lampholder shall be suspended from the housing and shall securely and accurately position the lamp. The holder shall be so designed as to permit easy relamping after the housing has been lifted out of the base, without disturbing the color filter or any other elements of the optical system. The holder shall be indexed to prevent improper assembly and shall position the lamp so that the beams emitted by the reflecting prism are wider in the horizontal plane than in the vertical plane. The material for the lampholder shall be corrosion-resistant steel and capable of withstanding the temperature developed within the light. All screws, bolts, nuts, washers, and clips shall be corrosion resistant steel.

3.5.8.7 Filters. - Lights shall be designed to use a color filter conforming to the MS. The color filter shall be securely hold in place between the housing and lamp by 3 spring clips, which are so designed that a filter can be readily installed and removed. All lights shall be provided with the filter clips (and necessary screws for attaching the clips) so that any light can be converted to a light of the desired color by inserting the proper color filter. The clips and screws shall be fabricated of corrosion-resistant steel. Glass tape shall not be provided on the clips or filters. Unless otherwise specified, filters shall not be furnished with the light (see 6.2).

3.5.8.8 Stray light shields. - When required to prevent light leakage around the filters, stray light shields shall be provided.

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3.5.9 Open-grid lights. -

3.5.9.1 Housing. - Dimensions of the light housing shall be as specified on the MS. Unless otherwise specified (see 6.2), the thickness of steel used shall be 3/8 inch. The housing shall be hot-dip galvanized after fabrication.

3.5.9.2 Heaters. - When specified (see 6.2) heaters shall be furnished with the lights. Heaters shall be 240V, 1,500 watts (W) and located as specified on the MS. They shall be terminated in a waterproof junction box as shown on the MS. Heaters shall not project more than 1/4 inch above the base plate of the grid section.

3.5.9.3 Grid. - The grid section shall be provided with four symmetrically spaced flutes projecting from a sloping bottom surface which, with the sides, will provide five channels for directing the beams. The tops of the flutes and sides shall be flat and the top surfaces contained in the same plane. The corners shall be rounded in order to eliminate sharp edges. The maximum separation between adjacent flutes and sides at any point shall be 1-5/8 inches. The flutes shall be rigid and sturdy and capable of withstanding the forces which might be applied during service, without twisting, binding, or spreading.

3.5.9.4 Lamp compartment. - The top of the lamp compartment shall be a flat, smooth surface contained in the same plane as the top of the flutes in the grid section. A suitable length of this flat, top surface plate shall be readily removable in order to facilitate relamping, installing transformers, or cleaning out debris. The bottom of the lamp compartment may be either open skeleton or closed construction. If the compartment is of open construction, a reinforced concrete pit with drainage sump shall be used. The open bottom shall be such that the transformers can be placed in the lamp below the light and the necessary duct work or direct burial cables can be brought into the light. If the compartment is of closed construction, space shall be provided inside the housing for the transformers, and facilities for adequate drainage shall be provided.

3.5.9.5 Lampholder. - Open-grid lights shall be provided with three individual PAR 36 lampholders. The lampholders shall be located so as to provide the specified intensity distribution. Lampholders shall be permanently and accurately located at time of manufacture. Each lampholder shall include provisions for securely holding a color filter.

3.5.9.6 Color filters. - Color alters shall be as specified on the MS. Unless otherwise specified, color filters shall not be furnished with the light (see 6.2).

3.5.10 Lamps. - All lights shall be designed to accommodate the lamp as specified on the MS. Unless otherwise specified, lamps shall not be furnished with the light (see 6.2).

3.5.10.1 Lamp replacement. - All lights shall be so constructed that burned out lamps can be readily replaced. Open grid lights shall be so constructed that it is not necessary to disturb the grid during relamping or routine maintenance.

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3.5.11 Lamp identification mark. - A metal or plastic disk or plate shall be permanently attached to all lampholders, and shall be permanently and legibly marked with the complete MS part number (not dash number) of the lamp to use for replacement. Letters shall be black on white background, and extra white space shall be provided so that the detail identification can be shown. The surface shall be suitable for marking with pencil or waterproof ink.

3.5.12 Light aiming. All components shall be indexed or keyed so that the light cannot be incorrectly assembled or improperly aligned. No adjustments shall be provided except as follows.

3.5.12.1 Bidirectional and unidirectional lights, classes B and BB, will be aimed horizontally before the holddown ring is tightened. Omnidirectional lights require no horizontal aiming. All classes B and BB lights shall not have any provisions for Leveling or vertical aiming. (The base will be level when it is installed in the pavement.)

3.5.12.2 Open lights will be leveled and aimed when installed.

3.6 Performance. - The lights shall be capable of performing satisfactorily under the following conditions:

3.6.1 Environmental. -

- (a) Thermal shock (see 4.6.6).
- (b) Relative humidity up to 100 percent including conditions wherein condensation takes place in form of both water and frost (see 4.6.2.2).
- (c) Vibration (see 4.6.3).

3.6.2 Twenty-four hour operation. - When tested as specified in 4.6.5, the lights shall be capable of withstanding 24 hours of continuous operation without any evidence of cracking, blackening of reflective coatings of the prisms; or damage to the gaskets, or running or pulling away of the sealing compound, or blistering of the print.

3.6.3 Operation under load and stress conditions. - The lights shall be capable of operating satisfactorily under all load conditions specified in 4.6.7 through 4.6.12.

3.6.3.1 Leakage. - When base-mounted lights are tested as specified in 4.6.4 and 4.6.8, there shall be no evidence of leakage.

3.6.4 Light distribution and chromaticity. -

3.6.4.1 Intensity distribution (white lights). - When the light is operated at rated current with specified lamp and all components have reached normal operating temperatures, the intensity distribution shall be as specified on the applicable MS and in 3.5.8.5.1.

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3.6.4.2 Chromaticity. When the light is operated at rated current and all components have reached normal operating temperature, there shall be no leakage of light past the filters or the stray light shields.

3.7 Screw threads. - All screw threads shall be a class 2 fit in accordance with Handbook H-28.

3.8 Interchangeability. - All parts functionally and dimensionally interchangeable shall be identified by one part number. The item identification and part number requirements of MIL-D-70327 shall govern the manufacturer's part number and changes thereto.

3.9 Identification of product. - All lights shall be marked for identification in accordance with MIL-STD-130, except that the serial number need not be included.

3.10 Workmanship. - 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, burrs, sharp edged or corners, marking of parts and assemblies, thoroughness of soldering, welding, brazing, painting, wiring, riveting, alignment of parts, and tightness of assembly screws and bolts.

3.10.1 Cleaning. - The light shall be thoroughly cleaned, and loose, spattered or excess solder, metal chips, and other foreign material removed during and after final assembly.

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.

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

- (a) Qualification tests (4.3)
- (b) Quality conformance tests (4.4)

4.3 Qualification tests. -

4.3.1 Sampling instructions. - The qualification tests samples shall consist of two lights of each manufacturers part number upon which qualification is desired, together with specified lamps, filters and installation instructions. Sample lights of classes B3 and BB3 shall be equipped with blue filters, and all other samples shall be equipped with green filters. The green and blue filters shall be installed during the 24-hour operation test. Unless otherwise specified (see 6.2), samples which have been subjected to qualification tests shall be identified and retained by the manufacturer.

4.3.2 Qualification tests. - Qualification tests shall consist of the examinations and tests specified in 4.5 and 4.6.

4.3.3 Test report. - Upon completion of the qualification tests, a test report shall be prepared in accordance with MIL-STD-831 and five complete copies of the report furnished the activity responsible for qualification.

4.4 Quality conformance tests. - Quality conformance tests shall consist of individual and sampling tests.

4.4.1 Individual test. - Each light shall be subjected to examination of product as specified in 4.5.1.

4.4.2 Sampling tests. - One light shall be selected at random from each 100, or fraction thereof produced, and shall be subjected to the assembly and operation test specified in 4.6.1.

4.5 Examinations. -

4.5.1 Examination of product. - Each light shall be examined to determine conformance to this specification with respect to materials, workmanship, cleaning, and marking.

4.6 Test methods. -

4.6.1 Assembly and operation. - The light shall be completely assembled with lamps and filters installed upon the applicable base, and operated to determine that components fit properly and design requirements are met.

4.6.1.1 Intensity distribution. - The light shall be operated without filter to determine that it meets the requirements of the MS, and of 3.5.8.5.1.

4.6.1.2 Chromaticity. - The light shall be operated with filter to determine that it meets the requirements of 3.6.4.2, and the MS.

4.6.2 Environmental. - One light of each class shall be subjected to the following tests, conducted in accordance with MIL-E-5272, to determine proper operation and freedom from adverse effects resulting from environmental exposure.

4.6.2.1 Low temperature. - The low temperature test shall be conducted in accordance with low temperature test Procedure II for 48 hours, followed immediately by operation and examination of the light. Any evidence of damage shall be cause for rejection.

4.6.2.2 Humidity. - The humidity test shall be conducted in accordance with humidity test Procedure III for 360 hours. Any evidence of damage, rusting, or corrosion shall be cause for rejection.

4.6.3 Vibration. - Vibration shall be conducted in accordance with Method 204A, test condition B of MIL-STD-202.

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4.6.4 Leakage. - Sample lights of all classes except class C shall be bolted to a base or special test ring, submerged under water, and subjected to an internal air pressure of 7 +/- 2 psi for 10 minutes and shall meet the requirements of 3.6.3.1. Following this test, the 24-hour operation test shall be conducted. Any indication of leakage shall be a cause for rejection.

4.6.5 24-Hour operation. - The light shall meet the requirements of 3.6.2 when installed in a simulated operating environment as follows: A base in accordance with MS24526 shall be buried in dry builders sand in a suitable container so that there is at least 6 inches of sand around the side and bottom of the base. The top of the base shall be 3/4 inch below the top surface of the sand after the light is installed. The light shall be bolted to the base with the necessary hardware and gaskets in place. If a transformer is used, it shall not be inside the base. The light shall be operated continuously with an MS24488-5 lamp at rated current for 24 hours. High temperature leads shall be used to connect the transformer to the lamp. The ambient temperature shall not fall below 55 deg. F. The container shall be shielded from the wind if the test is conducted outdoors.

4.6.6 Temperature shock. - One light of each class with filters installed shall be operated at rated current at room temperature for not less than 4 hours, after which, the light shall be immediately splashed with water at 32 deg. F. Any glass breakage or evidence of water penetration shall be cause for rejection.

4.6.7 Static load. - Sample class B and BB lights, less any components which would not affect test results, shall be mounted upon a rigid steel ring having an inside diameter of 8 inches. A compressive load shall be applied at a rate of approximately 20,000 pounds per minute to the top of the light by means of a flat-plate (not to exceed the centermost 20 square inches of the top of the light unit), through a rubber or synthetic rubber block 1-1/2 inches thick, having a Shore A hardness of 55-70. The block shall be at least as large as the flat plate. A light shall be considered unsatisfactory if failure, as evidenced by cracking or breaking of the casting, prisms, lenses, or other components, occurs before the applied load reaches 50,000 pounds. If the light unit under test does not provide a flat surface of 20 square inches or more, all of which is concentric around the center of the light and parallel to the plane through which the load is applied, means may be employed to provide uniform load distribution over the centermost area, not to exceed 20 square inches.

4.6.8 Leakage. - The leakage test of 4.6.4 shall be repeated.

4.6.9 Tire load. - At the discretion of the activity responsible for qualification, one light of each class, less any contents which would not affect test results, shall be suitably mounted on a testing machine. The testing machine shall apply a slowly increasing load to the light by means of a 32 x 8.8 tire, inflated to an initial pressure of 325 psi. The final wheel loading shall be 50,000 pounds. There shall be no damage to the tire or to the light.

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4.6.10 Tire deflection. - At the discretion of the activity responsible for qualification, a light shall be suitably mounted on a testing machine and a load applied by means of a 20 x 4.4, 10-ply tire, inflated to an initial air pressure of 155 psi. The deflection of the tire on the light and upon a flat steel plate shall be measured when the load is 3,750 pounds and when the load is 10,000 pounds. The average deflection of the tire on the light shall not exceed the deflection on the plate by more than 30 percent. The tire shall be oriented on the light so that maximum deflection is obtained. Average tire deflection shall be determined by measuring changes in wheel height produced by the different conditions.

4.6.11 Vehicle. - At the discretion of the activity responsible for qualification, a light shall be properly installed in the pavement and ran over in any direction by the methods specified below. Any serious damage to the light or vehicle, or evidence that the light is unsatisfactory for the intended application, shall be cause for rejection:

- (a) By a 3/4-ton truck, with snow chains on the tires. One run shall be made at 5 miles per hour (mph) and another at 30 mph.
- (b) By a Walter Snow Fighter, Model FBCS, or equal, with snow chains on the tires, and the snowplow blade set so there is approximately 3/16 inch clearance with the surface of the runway. Five passes shall be made over the light at speeds up to 10 mph. During at least two of the passes, tires and shoe shall run over the light.

4.6.12 Aircraft stress. - At the discretion of the activity responsible for qualification, a properly installed light shall be run over by any aircraft considered necessary to determine that tailwheels, nosewheels, outrigger wheels, main landing gear wheels and tailhooks are not subjected to abnormal stresses which would result in damage to the aircraft or the light. Any serious damage to the light or aircraft or evidence that the light is unsatisfactory for the intended application shall be cause for rejection.

4.6.13 Inspection for delivery. - The lights shall be inspected for preservation, packaging, packing, and marking in accordance with section 5.

5. PREPARATION FOR DELIVERY

5.1 Preservation, packaging, packing, and marking. - All items of equipment shall be preserved, packaged, packed, and marked in accordance with MIL-E-17555 for the level of shipment specified in the contract or order. (See 6.2)

6. NOTES

6.1 Intended use. - These lights are intended for use as approach, and taxiway lights within the pavement of runways, thresholds, overrun areas and taxiways.

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6.2 Ordering data. - Procurement documents should specify:

- (a) Title, number and date of this specification.
- (b) MS Part No. (see 1.2).
- (c) Data requirements (see 3.2).
- (d) Whether lamps should be shaded with the light (see 3.5.10).
- (e) Whether transformers should be furnished with the light (see 3.5.6).
- (f) Whether the MS24526 base should be furnished with the light (see 3.5.8.1.1).
- (g) Whether filters are to be provided and the color desired (see 3.5.8.7 and 3.5.9.6).
- (h) Whether the thickness of steel used should be 318 inch (see 3.5.9.1).
- (i) Whether heaters should be furnished (see 3.5.9.2).
- (j) Brief, but complete installation, leveling, and aiming instructions be furnished with each light. The contents of the sheet will be subject to approval by the activity responsible for qualification prior to shipment of light (see 4.3.1).
- (k) Levels of preservation and packaging, and packing (see 5.1).
- (l) When test samples are to be forwarded to activity responsible for qualification (see 4.3.1).

6.3 Qualification. - With respect to products requiring qualification, awards will be made only for such products as have, prior to the time met for opening of bids, 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. The attention of the 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. The activity responsible for the Qualified Products List is the Systems Engineering Group), Wright-Patterson Air Force Base, Ohio, and information pertaining to qualification of products may be obtained from that activity.

Custodians:

Navy - WP
Air Force - (11)

Preparing activity:

Air Force - (11)

Review activity:

Navy - WP
Air Force - (11, 85)

Review/user information is current as of the date of this document. For future coordination of changes to this document, draft circulation should be based on the information in the current Federal Supply Classification U sting of DoD Standardization Documents.