

This document has been approved  
for public release and sale; its  
distribution is unlimited.

MIL-L-573E  
11 June 1971  
SUPERSEDING  
MIL-L-573D  
7 January 1960  
(See 6.4)

MILITARY SPECIFICATION  
LIGHTS, MARKER, DISTRESS AND  
NIGHT REPLENISHMENT

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

1. SCOPE

1.1 Scope. This specification covers lights for marking personnel in distress and for night replenishment at sea operations.

1.2 Classification. Lights shall be of the following types as specified (see 6.2):

Type I - Metallic case:  
Type II - Plastic case:  
Class 1 - Clear lens (watertight).  
Class 2 - Red lens (watertight).  
Class 3 - Amber lens (watertight).  
Class 4 - Blue lens (watertight).  
Class 5 - Green lens (watertight).  
Class 6 - White lens (watertight).

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 the specification to the extent specified herein.

SPECIFICATIONS

FEDERAL

PPP-B-566 - Boxes, Folding, Paperboard.  
PPP-B-576 - Box, Wood, Cleated, Veneer, Paper Overlaid.  
PPP-B-585 - Boxes, Wood, Wirebound.  
PPP-B-591 - Boxes, Fiberboard, Wood-Cleated.  
PPP-B-601 - Boxes, Wood, Cleated-Plywood.  
PPP-B-621 - Boxes, Wood, Nailed and Lock-Corner.  
PPP-B-636 - Boxes, Fiberboard.  
PPP-B-665 - Boxes, Paperboard, Metal-Stayed (Including Stay Material).  
PPP-B-676 - Boxes, Setup.  
PPP-T-76 - Tape, Pressure-Sensitive Adhesive, Paper, (For Carton Sealing).  
PPP-T-97 - Tape, Pressure-Sensitive Adhesive, Filament Reinforced.

MILITARY

MIL-B-18/9 - Battery, Dry, BA-30.  
MIL-P-116 - Preservation, Methods of.  
MIL-C-3955 - Cans, Fiber, Spirally Wound.  
MIL-L-10547 - Liners, Case, and Sheet, Overwrap; Water-Vaporproof or Water-proof, Flexible.

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.)

FSC 6230

MIL-L-573E

2.2 Other publications. The following document forms 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.

UNIFORM CLASSIFICATION COMMITTEE  
Uniform Freight Classification Rules.

(Application for copies should be addressed to the Uniform Classification Committee, 202 Union Station, 516 West Jackson Boulevard, Chicago, Illinois 60606.)

### 3. REQUIREMENTS

3.1 Material. The material shall be of the best quality, suitable for the purpose intended, and in accordance with the requirements specified herein.

3.2 Construction. The light shall be as simple and rugged in construction as practicable. The completed light shall comprise a case, switch, lens, and lamp assembly. The light shall be furnished complete, except that batteries will not be required. The light shall be of the nonshort circuiting type, that is, battery circuit cannot be closed by metallic contact outside the case. The insulation shall be a thermosetting plastic material (paper base). The maximum overall dimension shall not exceed 5 inches. The volume based on a cylinder, using the overall dimensions, shall not exceed 18 cubic inches.

3.2.1 The light shall be watertight when tested as specified in 4.4.3. The lights shall be operable after the test.

#### 3.3 Case.

3.3.1 The light case shall be suitable to receive a standard BA-30 dry battery in accordance with MIL-B-18/9 and shall have a minimum inside diameter, excluding all switch parts and contact strip, of 1.44 inches. It shall be as light as possible and show no cracks or flaws when subjected to the test specified in 4.4.1. After completion of the impact test, the light shall be capable of being readily disassembled and reassembled. The ends of the case shall be at right angles to the axis. Attachment of metal parts to the case shall be done in a secure and neat manner.

3.3.2 Type I, metallic case. The type I case shall be made of drawn or impact extruded metal.

3.3.3 Type II, plastic case. The type II case shall be made of plastic of the color specified (see 6.2), and the distortion point of materials used shall be not less than 150° Fahrenheit (F.).

3.3.4 Switch. A switch shall be mounted on the side of the case. The switch shall be a slide type, and shall have three distinct positions: "Off", "Flashing", and "On". All parts of the switch except contacts and springs shall be made of corrosion-resisting metal. Contacts and springs shall be made of corrosion-resisting metal or metal treated to prevent corrosion. The complete switch shall be as small as practicable and the overall height above the outside surface of the case shall not exceed 9/16 inch. All metal parts of the switch extending to the inside of the case shall be suitably insulated or protected to prevent short-circuiting of the switch in case metal-clad cells are used. The switch shall be of a permanent contact type; that is, the contact strip shall be insulated from the case and shall make a firm, permanent contact with the metal disk in which the lamp is mounted when the light is completely assembled. The opening and closing of the circuit shall be accomplished in the switch itself. Switches shall be capable of operating through 5000 cycles at 15 cycles per minute.

3.3.4.1 Switches shall be of watertight construction; that is, the switch contacts shall be sealed to prevent exposure to moisture. After the test specified in 4.4.3, the switches shall remain watertight and shall operate properly.

3.3.5 Lens end. The lens end of the case shall be provided with a screw-type watertight joint with NOT less than five threads for securely mounting the lens. A synthetic rubber gasket shall be provided at the joint.

3.3.6 Pin. The case shall be provided with a metal safety pin for securing the complete light to a fabric. The pin shall be made of continuous, spring tempered wire, looped over on itself to form a securing loop for the pin and shall have an overall length of not less than 2 inches. The point of the pin shall be rounded to prevent puncturing of inflatable fabrics. When in the closed position, the point of the pin shall be adequately covered to protect operating personnel. The pin shall be mounted on the case in such a manner that

MIL-L-573E

the major axis of the pin is parallel to the axis of the case. There shall be no movement of the pin in excess of 3/16 inch in a direction parallel to its major axis. The point of the pin shall point toward the closed end of the case. When secured to a fabric the light shall be capable of withstanding a pull of 50 pounds without becoming detached.

3.3.7 Pressed or rolled screw threads. Pressed or rolled screw threads shall be smooth and close fitting.

3.4 Lens.

3.4.1 Color. Color for the lenses shall be as follows:

Class 1 - Clear.  
 Class 2 - Red.  
 Class 3 - Amber.  
 Class 4 - Blue.  
 Class 5 - Green.  
 Class 6 - White.

3.4.2 Material.

3.4.2.1 Class 1 lights. The lens for class 1 lights shall be of molded modified acrylic plastic compound with a heat distortion of not less than 170°F.

3.4.2.2 Class 2 lights. The lens for class 2 lights shall be red, transparent, acrylic plastic having transmission characteristics that essentially follow the curve shown on figure 1 with the cut-off at 590 millimicrons (MU) and the peak at 700 MU.

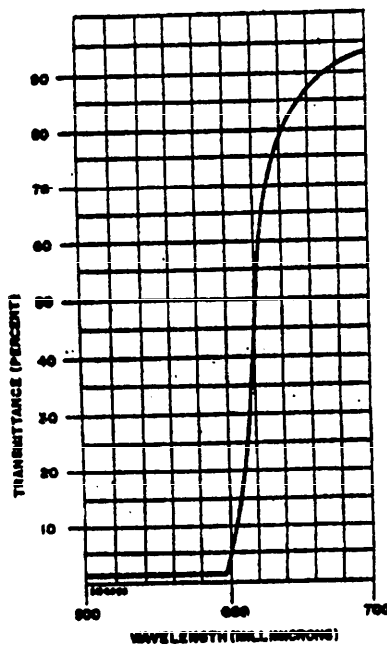


Figure 1. Curve of light transmission of red material.

3.4.2.3 Class 3 lights. The lens for class 3 lights shall be amber, transparent, acrylic plastic having  $90 \pm 5$  percent transmission in the range of 525 to 700 MU wavelengths.

3.4.2.4 Class 4 lights. The lens for class 4 lights shall be blue, transparent, acrylic plastic having  $50 \pm 5$  percent transmission in the range of 425 to 475 MU wavelengths.

MIL-L-573E

3.4.2.5 Class 5 lights. The lens for class 5 lights shall be green, transparent, acrylic plastic having  $40 \pm 5$  percent transmission in the range of 475 to 550 MU wavelengths.

3.4.2.6 Class 6 lights. The lens for class 6 lights shall be white, translucent, acrylic plastic having a minimum of  $66.5 \pm 5$  percent light transmission.

3.4.2.7 All plastic parts shall be free of defects such as imbedded particles, bubbles, scratches, blemishes, and striations such as will affect its optical properties.

3.4.3 Distribution of light beam. The lens shall have a domed shape so proportioned that the light issuing from the completely assembled lighted unit shall have a beam width of not less than 180 degrees, measured on any plane through the axis of the lens. Actual figuring of the lens design as to surface curvatures and fluting shall be at the option of the manufacturer.

### 3.5 Lamp assembly.

3.5.1 Lamp. The lamp shall be Industry No. 131.

3.5.2 Lamp socket. The lamp socket shall provide for holding the lamp securely in place within the lens, and shall maintain good electrical contact during rough handling of the light. The design shall permit ready replacement of the lamp.

3.5.3 Contact springs. Contact springs shall be of corrosion-resisting material or shall be treated to be adequately corrosion resistant.

3.6 Weight. The weight of the light, without battery, shall not exceed 4 ounces.

### 3.7 Finish.

3.7.1 Interior. All interior metal parts shall be treated to prevent corrosion.

#### 3.7.2 Exterior.

3.7.2.1 Type I. Exterior parts shall be properly cleaned and prepared and followed with two coats of a good commercial grade of deck enamel. Unless otherwise specified (see 6.2), the color shall be light gray.

3.7.2.2 Type II. Unless otherwise specified (see 6.2), the exterior of the case shall be light gray. The color may be impregnated in the molding material.

3.7.2.3 Metal parts. Exterior metal parts such as switch, switch housing, rivets, and safety pin shall, wherever possible, be given a black oxide finish.

3.8 Marking. Each light shall be permanently and distinctly stamped or marked with the letters "U.S." in letters 1/2 inch high and the name of the manufacturer or brand name marked in letters 3/16 inch high.

3.9 Workmanship. The workmanship shall be first class in every respect. All parts shall be free from blemishes, deformations, and other defects which would affect the appearance or serviceability.

## 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 in the contract or order, the supplier 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 the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

### 4.2 Quality conformance inspection.

#### 4.2.1 Sampling.

4.2.1.1 Sampling for examination. A random sample of lights shall be selected from each inspection lot of lights offered for examination with lot acceptance based on sampling inspection requirements in accordance with MIL-STD-105, and table I.

MIL-L-573E

Table I. Sampling for examination AQL (approx.)  
= 1.5 percent defective in accordance  
with MIL-STD-105.

Number of lights in the lot	Number of lights in the sample
40 and under	Inspection level III
41 to 300	Inspection level II
301 and over	Inspection level I

NOTE. Tightened or reduced examination in accordance with MIL-STD-105 may be instituted.

4.2.1.2 Sampling for tests. From each lot (see 4.2.1.2.1), 10 representative samples shall be selected at random. Five of these shall be subjected to the impact test of 4.4.1 and five to the switch performance test of 4.4.2. Upon completion of the impact and switch performance tests, all 10 lights shall be subjected to the watertightness test of 4.4.3. If any light fails in any test, the lot represented by the samples shall be rejected.

4.2.1.2.1 Lot. For the purposes of sampling, a lot shall consist of 1,000 lights or fraction thereof offered for delivery at any one time.

4.3 Examination. Each sample light selected in accordance with 4.2.1.1 shall be examined to verify compliance with all the requirements not requiring tests of this specification. Defects are classified as shown in table II. Each sample light that fails to meet the requirements shall be rejected, and if the number of nonconforming lights exceeds the acceptance number for that lot, the entire lot shall be rejected. Rejected lots may be resubmitted only after all lights in the lot have been examined and all nonconforming lights have been removed.

Table II. Classification of defects.

Categories	Defects
Critical: 1	None defined.
Major:	
101	Type and class of light not as specified.
102	Materials defective or not as specified; evidence of cracks, flaws, open seams, holes, deep pits, or corrosion.
103	Insulation missing, incomplete, insecure, or not as specified.
104	Inside diameter less than the specified minimum; failure of case to accommodate the specified battery.
105	Switch defective, not the specified type, not securely mounted, or not sealed.
106	Lens defective, not dome shaped, cannot be securely threaded onto case, gasket missing, or number of threads on lens end of case less than required.
107	Lamp socket defective, not securely mounted, or socket fails to firmly retain the lamp.
108	Lamp missing, defective, or not the specified type.
109	Safety pin not securely mounted on case, point of pin not rounded, pin position (in relation to case) not as specified, or point of pin when closed not adequately covered.
110	Threads defective, not well defined, not smooth, or threaded parts (when mated) not close fitting.
111	Interior metal parts not treated to resist corrosion.
112	Painting missing, incomplete, defective, or not as specified; evidence of peeling, cracking, flaking, uncoated or nonadherent areas.
Minor:	
201	Switch position marking missing, illegible, incorrect, or not as specified.
202	Overall height of switch above the outside surface of the case exceeds the maximum permissible.
203	Length of safety pin less than required.
204	Maximum overall dimension (length and width of light) exceeds the maximum allowable.
205	Volume of light exceeds the maximum allowable.
206	Weight of light exceeds the maximum allowable.
207	Color of case not as specified.
208	Marking, manufacturer's name or trademark missing, illegible, incorrect, or not permanent.

MIL-L-573E

4.4 Test procedures.

4.4.1 Impact. Sample lights, after being maintained at a temperature of minus 40°C. for 2 hours, shall be subjected at this temperature to a 12 inch-pound impact using a 1-pound steel ball. The point of impact shall be normal to any plane through the axis of the tubular body midway between the bottom and top of the case. Impact tests shall be conducted on assembled lights (without batteries) to determine compliance with 3.3.1.

4.4.2 Switch performance. Switches shall be operated in a normal manner through 5,000 operating cycles at a rate not to exceed 15 cycles per minute, to determine compliance with 3.3.4.

4.4.3 Watertightness. Each sample light shall be submerged for a period of 1 hour in sea water or equivalent salt water solution having a specific gravity of 1.025, to such a depth that the highest point of the light is under a 3-foot head. After removal from the water, the light shall be examined for leakage of water into the switch (see 3.3.4), and into the interior (see 3.2).

4.5 Possible test failures. Possible test failures are defined as follows:

- (a) Impact. Evidence of cracks or flaws when chilled light is subjected to the specified impact. Not readily disassembled and reassembled after the specified impact.
- (b) Switch performance. Failure of switch to operate throughout the required number of cycles at the specified rate of operation.
- (c) Watertightness. Evidence of water leakage into the switch or case when the light is submerged in the specified solution for the required length of time. Failure of switch to operate following test.

4.6 Inspection of preservation and packaging. Sample lights and packages shall be selected and inspected in accordance with MIL-P-116 to verify conformance with the requirements of section 5 herein.

## 5. PREPARATION FOR DELIVERY

(The preparation for delivery requirements specified herein apply only for direct Government procurements. For the extent of applicability of the preparation for delivery requirements of referenced documents listed in section 2 see 6.3.)

5.1 Preservation and packaging (see 6.2).

5.1.1 Level A. Lights shall be individually preserved and packaged in accordance with method III of MIL-P-116.

5.1.1.1 Unit containers. Unit containers shall conform to PPP-B-566, PPP-B-676, PPP-B-665, PPP-B-636, or MIL-C-3955 at the option of the contractor, provided that the various requirements of the container specification are complied with. Sealing and closure of unit containers shall conform to the applicable container specification and appendix thereto.

5.1.1.2 Intermediate containers. Unit quantities in an intermediate container shall be as specified (see 6.2). Intermediate containers shall conform to PPP-B-665 or PPP-B-636, at the option of the contractor. Box closures shall conform to the applicable box specification or the appendix thereto. The gross weight of paperboard boxes shall not exceed 10 pounds and fiber boxes shall not exceed 20 pounds.

5.1.2 Level C. Lights shall be preserved and packaged in accordance with the manufacturer's commercial practice.

5.2 Packing (see 6.2).

5.2.1 Level A. Lights, packaged as specified (see 6.2), shall be packed in overseas type, wood cleated fiberboard, nailed wood, fiber, wirebound wood, wood cleated veneer paper overlaid, or wood cleated plywood boxes conforming to PPP-B-591, PPP-B-621, weather-resistant class of PPP-B-636, PPP-B-585, PPP-B-576, or PPP-B-601, respectively, at the option of the contractor. Shipping containers shall have case liners conforming to MIL-L-10547. Case liners for boxes conforming to PPP-B-636 may be omitted provided all joints and corners of the boxes are sealed with minimum 1-1/2-inch wide tape conforming to PPP-T-76. Boxes shall be closed and strapped in accordance with the applicable box specification or appendix thereto, except that fiber boxes shall be banded with tape conforming to type III of PPP-T-97 and the appendix thereto. The gross weight of wood or wood cleated boxes shall not exceed



MIL-L-573E

200 pounds; fiber boxes shall not exceed the weight limitations of the applicable box specification. Intermediate fiber boxes conforming to the weather-resistant class of PPP-B-636, closed, sealed and banded as specified herein, and used as the shipping container need not be overpacked.

5.2.2 Level B. Lights, packaged as specified (see 6.2), shall be packed in domestic type wood cleated fiberboard, nailed wood, wirebound wood, cleated plywood or wood cleated veneer paper overlaid boxes or domestic class fiber boxes conforming to PPP-B-591, PPP-B-621, PPP-B-585, PPP-B-601, PPP-B-576, or PPP-B-636, respectively, at the option of the contractor. Box 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 200 pounds; fiber boxes shall not exceed the weight limitations of the applicable box specification. Intermediate fiber boxes conforming to PPP-B-636, closed as specified herein, and used as the shipping container need not be overpacked.

5.2.3 Level C. Lights, packaged as specified (see 6.2), shall be packed in containers which will insure acceptance by common carrier and safe delivery at destination. Shipping containers shall comply to the Uniform Freight Classification Rules or other regulations as applicable to the mode of transportation.

5.3 Marking. In addition to any special marking required by the contract or order, interior and exterior shipping containers shall be marked in accordance with MIL-STD-129.

## 6. NOTES

### 6.1 Intended use.

6.1.1 Class 1 lights. Markers provided with clear lenses are intended for use in marking personnel adrift at sea.

6.1.2 Classes 2 through 6 lights. Markers provided with red, amber, blue, green or white lenses are intended for use in night replenishment at sea operations.

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

- (a) Title, number, and date of this specification.
- (b) Type and class required (see 1.2).
- (c) Color of case (see 3.3.3, 3.7.2.1 and 3.7.2.2).
- (d) Level of shipment required (see 5.1 and 5.2).

6.3 Sub-contracted material and parts. The preparation for delivery requirements of referenced documents listed in Section 2 do not apply when material and parts are procured by the supplier for incorporation into the equipment and lose their separate identity when the equipment is shipped.

6.4 CHANGES FROM PREVIOUS ISSUE. THE OUTSIDE MARGINS OF THIS DOCUMENT HAVE BEEN MARKED "\*" TO INDICATE WHERE CHANGES (DELETIONS, ADDITIONS, ETC.) FROM THE PREVIOUS ISSUE HAVE BEEN MADE. THIS HAS BEEN DONE AS A CONVENIENCE ONLY AND THE GOVERNMENT ASSUMES NO LIABILITY WHATSOEVER FOR ANY INACCURACIES IN THESE NOTATIONS. BIDDERS AND CONTRACTORS ARE CAUTIONED TO EVALUATE THE REQUIREMENTS OF THIS DOCUMENT BASED ON THE ENTIRE CONTENT AS WRITTEN IRRESPECTIVE OF THE MARGINAL NOTATIONS AND RELATIONSHIP TO THE LAST PREVIOUS ISSUE.

#### Custodians:

Army - ME  
Navy - SH

#### Review activities:

Navy - AS, OS

#### User activities:

Army - AT  
Navy - YD, MC

#### Preparing activity:

Navy - SH  
(Project 6230-0073)





**INSTRUCTIONS:** In a continuing effort to make our standardization documents better, the DoD provides this form for use in submitting comments and suggestions for improvements. All users of military standardization documents are invited to provide suggestions. This form may be detached, folded along the lines indicated, taped along the loose edge (*DO NOT STAPLE*), and mailed. In block 5, be as specific as possible about particular problem areas such as wording which required interpretation, was too rigid, restrictive, loose, ambiguous, or was incompatible, and give proposed wording changes which would alleviate the problems. Enter in block 6 any remarks not related to a specific paragraph of the document. If block 7 is filled out, an acknowledgement will be mailed to you within 30 days to let you know that your comments were received and are being considered.

**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.

(Fold along this line)

(Fold along this line)

DEPARTMENT OF THE NAVY



NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES

OFFICIAL BUSINESS  
PENALTY FOR PRIVATE USE \$300

**BUSINESS REPLY MAIL**  
FIRST CLASS PERMIT NO. 12503 WASHINGTON D. C.

POSTAGE WILL BE PAID BY THE DEPARTMENT OF THE NAVY

Commander  
Naval Ship Engineering Center  
Center Building-Sec 61247  
Prince George's Center  
Hyattsville, MD 20782



