METRIC

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SUPERSEDING
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DETAIL SPECIFICATION

LIGHT, DOME, VEHICULAR, 24 VOLT DC

Inactive for new design after 11 June 1999

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

1. SCOPE

1.1 Scope. This specification covers one type of dome light used in military vehicles equipped with nominal 24 volt (V) direct current (dc) electrical systems. The dome light contains a white and a blue lamp (see 6.1).

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4, or 5 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3, 4, or 5 of this specification, whether or not they are listed.

Comments, suggestions, or questions on this document should be addressed to: Defense Supply Center Philadelphia, ATTN: DSCP-NASA, 700 Robbins Ave, Philadelphia, PA 19111-5096 or emailed to dscpg&ispeccomments@dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at http://assist.daps.dla.mil/

AMSC N/A FSC 6220

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-PRF-22750 Coating, Epoxy, High Solids
MIL-DTL-53039 Coating, Aliphatic Polyurethane, Single Component, Chemical Agent Resistant

DEPARTMENT OF DEFENSE HANDBOOKS

MIL-HDBK-454 General Guidelines for Electronic Equipment
MIL-HDBK-1184 Electrical Components for Automotive Vehicles; Waterproofness Tests

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-130	Identification Marking of U.S. Military Property
MIL-STD-202	Test Method Standard Electronic and Electrical Component Parts
MIL-STD-810	Environmental Engineering Considerations and Laboratory Tests
MIL-STD-889	Dissimilar Metals
MS51073	Light, Dome: 24 Volt DC

(Copies of these documents are available online at http://assist.daps.dla.mil/quicksearch/ or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.2.2 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 of these documents are those cited in the solicitation or contract.

US ARMY TANK AUTOMOTIVE COMMAND

7064671	Lamp Assembly

(Copies drawings required by the contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting activity.)

2.3 Non-Government publications. The following documents forms a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM B117 Standard Practice for Operating Salt Spray (Fog) Apparatus

(Copies of these documents are available from http://www.astm.org or American Society For Testing And Materials, 100 Barr Harbor Drive, W. Conshohocken, PA 19428-2959.)

AMERICAN SOCIETY FOR QUALITY CONTROL

ASQ Z1.4 Sampling Procedures and Tables for Inspection by Attributes

(Copies of these documents are available from the American Society For Quality Control, 611 East Wisconsin Avenue, Milwaukee, WI 53202.)

IPC – ASSOCIATION CONNECTING ELECTRONICS INDUSTRIES

J-STD-004 Requirements for Soldering Fluxes

(Copies of these documents are available from the IPC – Association Connecting Electronics Industries, 3000 Lakeside Drive, Suite 309S, Bannockburn, IL 60015.)

2.4 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 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 4.3.

3.2 Materials. Materials shall be as specified herein, on referenced drawings and in referenced standards and specifications (see 4.6.1).

3.2.1 Recycled, virgin and reclaimed materials. There are no requirements for the exclusive use of virgin materials. The use of recycled or reclaimed (recovered) materials is acceptable provided that all other requirements of this specification are met (see 4.6.1 and 6.4.1).

3.3 Design and construction. Construction of the dome light shall be as specified on Drawing 7064671 and MS51073 (see 4.6.1 and 4.6.2).

3.3.1 Soldering. Soldering of electrical connections shall be in accordance with guideline 5 of MIL-HDBK -454. The solder shall conform to type RO of J-STD-004 (see 4.6.1 and 4.6.2).

3.3.2 Mechanical interlock. The dome light switch shall incorporate a mechanical interlock to prevent the inadvertent energizing of any part of the light system except the blackout marker lights (see 4.6.2).

3.3.3 Dissimilar metals. The use of dissimilar metals shall be in accordance with MIL-STD-889. Except where necessary to complete an electrical circuit, contact between dissimilar metals, which would encourage galvanic action, shall be avoided. Where such contact is not necessary to complete an electrical circuit, but is otherwise avoidable, parts shall be insulated (see 4.6.1 and 4.6.2).

3.4 Performance.

3.4.1 Current draw. When supplied with an input voltage of 28 ± 1 V dc, the current draw of the dome light shall be no more than 0.45 amperes (A) in the blackout position, 0.75 A in the white light position and 0.0001 A in the off position (see 4.6.2).

3.4.2 Photometric. The photometric properties of the dome light shall meet the requirements on Drawing 7064571 (see 4.6.3.2).

3.5 Environmental.

3.5.1 High temperature. The insulation of the switch, electrical wiring and bulb sockets, and isolators shall show no evidence of melting, deformation, or cracking and the dome light shall meet the requirements of 3.4.1 and 3.4.2 after storage and during and after operation at temperatures as high as 75 degrees Celsius (ºC) (see 4.6.4.1).

3.5.2 Low temperature. The insulation of the switch, electrical wiring and bulb sockets, and isolators shall show no evidence of deformation, or cracking and the dome light shall meet the requirements of 3.4.1 and 3.4.2 after storage and during and after operation at temperatures as low as minus (-) 55ºC (see 4.6.4.2).

3.5.3 Shock. The dome light shall evidence no cracking, breakage, loosened or distorted parts or other physical damage and shall meet the requirements of 3.4.1 and 3.4.2 after exposure to sawtooth shock pulses having a peak value of 25 gravity units (g) and duration of 7 milliseconds(ms) (see 4.6.4.3).

3.5.4 Vibration. The dome light shall evidence no cracking, breakage, loosened or distorted parts or other physical damage and shall meet the requirements of 3.4.1 and 3.4.2, after exposure to simple harmonic motion having an amplitude of 0.75 millimeters (mm) (1.5 mm maximum total excursion) in the frequency range of 10 to 55 to 10 hertz (Hz) with a sweep time of 1 minute (see 4.6.4.4).

3.5.5 Corrosion. The dome light shall meet the requirements of 3.4.1 and 3.4.2, after prolonged exposure to a salt laden atmosphere (see 4.6.4.5).

3.5.6 Waterproofness. The dome light shall meet the waterproofness requirements compatible to the guidance of MIL-HDBK-1184 for type II, class 1 components and 3.4.1 and 3.4.2 (see 4.6.4.6).

3.5.7 Fungus. The dome light shall meet the requirements of 3.4.1 and 3.4.2 and evidence no microbial growth after exposure to conditions favorable to fungal growth (4.6.4.7).

3.6 Finish. Unless otherwise specified (see 6.2), all exposed surfaces requiring a paint topcoat shall conform to MIL-C-22750, or MIL-DTL-53039 (see 4.6.1 and 4.6.2).

3.7 Identification marking. Identification marking shall be in accordance with MIL-STD-130 and shall include the following (see 4.6.2).

Dome light – 24 volts DC
Federal stock number
Date of manufacturer (month, year)
Military part number
Manufacturer’s identification
US

3.8 Workmanship. Workmanship shall be such as to assure a product free of burrs, scratches, sharp edges, and chips (see 4.6.2).

4. VERIFICATION

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

a. First article inspection (see 4.3).
b. Conformance inspections (see 4.4).
c. Control tests (see 4.5).

4.2 Inspection conditions. Unless otherwise specified herein, all inspections shall be conducted under the following conditions:

a. Temperature 25 ± 10ºC.
b. Relative humidity: Uncontrolled room ambient.
c. Atmospheric pressure: Site pressure.

4.2.1 Temperature stabilization. Except as otherwise specified herein or in referenced specifications, test specimens shall be thermally stabilized for 1hour prior to being subjected to tests.

4.3 First article inspection. When first article is required (see 3.1), first article inspection shall be performed on three first article samples. Unless otherwise specified (see 6.2), first articles samples shall be inspected as specified in table I.

TABLE I. Classification of inspection.

Title	Requirement	Inspection	First article sample			Conformance		Control
			1	2	3	Examination	Tests	
Materials and construction	3.2 thru 3.3.1.2, 3.3.3, and 3.6	4.6.1	X	X	X			
Defects	3.3 thru 3.3.3 and 3.6 thru 3.8	4.6.2	X	X	X	X		

TABLE I. Classification of inspection. – Continued.

Title	Requirement	Inspection	First article sample			Conformance		Control
			1	2	3	Examination	Tests	
Current draw	3.4.1	4.6.3.1	X	X	X		X	X
Photometric	3.4.2	4.6.3.2	X	X	X		X	X
High temperature	3.5.1	4.6.4.1	X					X
Low temperature	3.5.2	4.6.4.2	X					X
Shock	3.5.3	4.6.4.3		X				
Vibration	3.5.4	4.6.4.4			X			
Corrosion	3.5.5	4.6.4.5			X			
Waterproofness	3.5.6	4.6.4.6		X				
Fungus	3.5.7	4.6.4.7	X	X	X			

4.4 Conformance inspection.

4.4.1 Sampling.

4.4.1.1 Lot formation. An inspection lot shall consist of all the dome lights from an identifiable production period, from one manufacturer, submitted at one time for acceptance.

4.4.1.2 Sampling for examination. Samples for conformance examination shall be selected in accordance with general inspection level II of ASQ Z1.4.

4.4.1.3 Sampling for testing. Samples for conformance testing shall be selected in accordance with inspection level S-3 of ASQ Z1.4.

4.4.2 Examination.

4.4.2.1 Acceptable quality level (AQL). Unless otherwise specified, the AQLs listed in this section shall be used to established the sample size, however, the acceptance number shall be zero. Each sample selected in accordance with 4.5.1.2 shall be examined to determined conformance to the following AQL's:

Classification	AQL
Major	1.0
Minor	2.5

4.4.2.2 Classification of defects. For examination purposes, defects shall be classified as listed in table II.

TABLE II. Classification of defects.

Category	Defect	Method of examination
Critical	None	
Major	AQL 1.0% Defective	
101	Dimensions affecting interchangeability, out of tolerance (see 3.3).	SIE 1/
102	Nonconformance in design and construction (see 3.3 thru 3.3.3).	Visual
103	Faulty workmanship affecting performance (see 3.8).	Visual
Minor	AQL 2.5% Defective	
201	Dimensions not affecting interchangeability, out of tolerance (see 3.3).	SIE
202	Improper finish (see 3.6).	Visual and functional
203	Improper marking (see 3.7)	Visual
204	Faulty workmanship affecting appearance (see 3.8).	Visual

1/ SIE = Standard Inspection Equipment.

4.4.3 Test. Samples selected in accordance with 4.4.1.3, shall be subjected to the conformance tests specified in table I, and shall conform to an AQL of 1.0.

4.5 Control tests. Control tests shall be conducted on 2 dome lights from each 100 produced except that not more than 4 or less than 2 may be selected in any 30-day period. Samples shall be selected from a lot which has passed the conformance examination specified in 4.4.2 and the quality conformance tests specified in 4.4.3, and shall be subjected to the control tests specified in table I.

4.6 Methods of inspection.

4.6.1 Materials and construction. Conformance to 3.2 through 3.3.1.2, 3.3.3, and 3.6 shall be determined by inspection of contractor records providing proof or certification that design, construction, processing, and materials conform to requirements. Applicable records shall include drawings, specifications, design data, receiving inspection records, processing and quality control standards, vendor catalogs and certifications, industry standards, test reports, and rating data.

4.6.2 Defects. Conformance to 3.3 through 3.3.3 and 3.6 through 3.8 shall be determined by examination for the defects listed in table II. Examination shall be visual, functional, or by measurement with standard inspection equipment.

4.6.3 Performance.

4.6.3.1 Current draw. To determine conformance to 3.4.1, 28 ± 1V dc shall be applied to the input connection of the dome lamp. The electrical circuit shall be completed by making electrical contact with the body and door of the dome lamp. The dome lamp switch shall be rotated from the off to blackout and white light positions.

4.6.3.2 Photometric. To determine conformance to 3.4.2, the dome light shall be operated in the circuit specified in 4.6.3.1, and tested at a distance of 1.2 meters (m) from the filament as specified on Drawing 7064671.

4.6.4 Environmental.

4.6.4.1 High temperature. To determine conformance to 3.5.1, the dome light shall be stored at a temperature of 75 ± 3ºC for a period of 24 hours and then operated continuously at this temperature for 4 hours with input voltage at 28 ± 1 V dc. Subsequently, the dome light shall be subjected to the tests specified in 4.6.3.1 and 4.6.3.2 and examined for evidence of damage.

4.6.4.2 Low temperature. To determine conformance to 3.5.2, the dome light shall be stored at a temperature of -55 ± 3ºC for a period of 24 hours and then operated continuously at this temperature for 4 hours with input voltage at 28 ± 1V dc. Subsequently, the dome light shall be subjected to the tests specified in 4.6.3.1 and 4.6.3.2 and examined for evidence of damage.

4.6.4.3 Shock. To determine conformance to 3.5.3, the dome light shall be mounted to simulate actual installation in use and subjected to 12 shocks according to MIL-STD-202, method 213, test condition G, except the peak value shall be 25 g, the nominal duration shall be 7 ms and the velocity change shall be 0.8 meter per second (m/s). Subsequently, the dome light shall be subjected to tests specified in 4.6.3.1 and 4.6.3.2 and examined for evidence of damage.

4.6.4.4 Vibration. To determine conformance to 3.5.4, the dome lights shall be mounted to simulate actual installation in use using suitable mounting apparatus to assure that the mounting is free from resonances over the test frequency range. The specimens shall be subjected to a simple harmonic motion having an amplitude of 0.76 mm (1.5 mm maximum total excursion), the frequency being varied uniformly between the approximate limits of 10 and 55 Hz. The entire frequency range from 10 to 55 to 10 Hz shall be traversed in approximately 1 minute. This motion shall be applied for a period of 2 hours in each of three mutually perpendicular directions for a 6 hour total. Subsequently, the dome light shall be subjected to the tests specified in 4.6.3.1 and 4.6.3.2 and examined for evidence of damage.

4.6.4.5 Corrosion. To determine conformance to 3.5.5, the dome light shall be subjected to the salt spray (fog) specified in ASTM B117 for a period of 200 hours. Subsequently, the dome light shall be subjected to the tests specified in 4.6.3.1 and 4.6.3.2.

4.6.4.6 Waterproofness. To determine conformance to 3.5.6, the dome light shall be subjected to the test compatible to MIL-HDBK-1184., method 100, procedure 1. Subsequently, it shall be subjected to the tests specified in 4.6.3.1 and 4.6.3.2.

4.6.4.7 Fungus. To determine conformance to 3.5.7, the dome light shall be subjected to the test as specified in MIL-STD-810, method 508.3 for a period of 90 days. Subsequently, it shall be subjected to tests specified in 4.6.3.1 and 4.6.3.2 and examined for evidence of microbial growth.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2).

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 dome light covered by this specification is intended for use in military vehicles to provide interior vehicle lighting. The blue (blackout) lamp maintains blackout security while providing illumination to permit operational tasks within the vehicle.

6.2 Ordering data. Acquisition documents should specify the following:

a. Title, number, and date of this specification.
b. The specific issue of individual documents referenced (see 2.1.1 and 2.2).
c. If first article samples are required (see 3.1).
d. If finish shall be other than specified (see 3.6).
e. If first article sample size and specific tests for each sample shall be other than specified (see 4.3 and 6.3).
f. Arrangements for first article inspection, approval of test results and disposition of first article (see 6.3).
g. Packaging requirements (see 5.1).

6.3 First article. When first article inspection is required, the contracting officer should provide specific guidance to offerers whether the first article sample (s) should be a preproduction sample, an initial production sample, a first production item or a standard production item from the contractor's current inventory ; the number of samples to be inspected as specified in 4.3; and (when applicable) the specific tests to be performed on each sample. The contracting officer should also include specific 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.

Illumination, vehicular
Current draw
Waterproofness

6.5 Changes from previous issue. Asterisks (or vertical lines) are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Custodians:
Army – AT
DLA – IS

Preparing activity:
DLA – IS

(Project 6220-2006-001)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at http://assist.daps.dla.mil