

W-L-00116D(GSA-FSS)

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SUPERSEDING

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INTERIM FEDERAL SPECIFICATION

LAMPS, FLUORESCENT
(GENERAL SPECIFICATION)

This Interim Federal Specification was developed by the General Services Administration, Federal Supply Service, Washington, DC 20406, based upon currently available technical information. It is recommended that Federal agencies use it in procurement and forward recommendations for changes to the preparing activity at the address shown above.

1. SCOPE

1.1 Scope. This specification covers fluorescent lamps for general lighting service, of the sizes and colors specified in the detailed specifications.

2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issues in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

Federal Specifications:

L-P-378	- Plastic Sheet and Strip (Polyolefin).
W-B-30	- Ballast, Fluorescent Lamp.
W-S-755	- Starter, Fluorescent Lamp.
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, Shipping, Fiberboard.

Federal Standard:

Fed. Std. No. 123 - Marking for Shipment (Civil Agencies).

(Activities outside the Federal Government may obtain copies of Federal Specifications, Standards, and Handbooks as outlined under General Information in the Index of Federal Specifications and Standards and at the prices indicated in the Index. The Index, which includes cumulative monthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

(Single copies of this specification and other Federal Specifications required by activities outside the Federal Government for bidding purposes are available without charge from Business Service Centers at the General Services Administration Regional Offices in Boston, New York, Washington, DC, Atlanta, Chicago, Kansas City, MO, Fort Worth, Denver, San Francisco, Los Angeles, and Seattle, WA.

(Federal Government activities may obtain copies of Federal Specifications, Standards, and Handbooks and the Index of Federal Specifications and Standards from established distribution points in their agencies.)

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Military Specifications:

JAN-P-100 - Packaging and Packing for Overseas Shipment,
General Specification.
MIL-P-116 - Preservation, Methods of.
MIL-B-10377 - Box, Wood-Cleated, Veneer, Paper-Overlaid.

Military Standards:

MIL-STD-129 - Marking for Shipment and Storage.
MIL-STD-105 - Sampling Procedures and Tables for Acceptance by Attributes.
MIL-STD-1186 - Cushioning, Anchoring, Bracing Blocking, and Waterproofing
with Appropriate Test Method.

(Copies of Military Specifications and Standards 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 a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply.

American National Standards Institute, Inc. (ANSI) Publications:

ANSI C78.376 - Chromaticity of Fluorescent Lamps, Specification for the.
ANSI C78.400 to C78.1000 - Dimensional and Electrical Characteristics of
Fluorescent Lamps.
ANSI C82.3 - Fluorescent Lamp Reference Ballasts, Specifications for.

(Copies may be obtained from the American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.)

3. REQUIREMENTS

3.1 Quality control and production. The manufacturer shall have a documented quality control system, approved by the Government. Complete and accurate records of the inspections performed in accordance with this system shall be made available to the Government for a period of three years.

3.2 Required life. The lamps furnished under this specification shall give a life of not less than the required life in hours specified in the detailed specification when tested in accordance with paragraphs 4.2.5, 4.2.5.1, and 4.2.5.2. The life of a lamp is the total number of burning hours to failure.

3.3 Lumens at 100 hours. The lumens at 100 hours of the lamps furnished under this specification shall equal, or exceed, the value specified in the detailed specifications under columns headed "Minimum Lumens at 100 Hours", when tested in accordance with paragraph 4.3.1.

3.4 Lumen maintenance. The lumen output of the lamps furnished under this specification, as determined at 40 percent of required life in accordance with 4.3.2, and 6.2 shall equal, or exceed the value specified in the detailed specifications under columns headed "Minimum Lumens at 40% of required life."

3.5 Dimensions. The dimensions of the lamps furnished under this specification shall be in accordance with the requirements of the applicable ANSI C78 standards. Where an ANSI Standard does not exist for a particular lamp type, the manufacturer's established tolerances shall be used for inspection.

3.6 Color. Lamps furnished under this specification shall conform to the applicable values and tolerances as specified in ANSI C78.376 (see 4.3.3) for color as defined by the International Commission on Illumination chromaticity coordinates, x and y. For wattages other than 40 watts, either the measured color of the lamps shall meet the ANSI C78.376 Standard, or the phosphor used must meet the requirements of ANSI C78.376 when used in a 40 watt lamp.

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3.7 Identification marking. The rating and the manufacturer's name or trademark shall be placed on the bulb of each lamp. The marking shall show the color, type, when applicable, and either the nominal watts or nominal length.

3.8 Lamps furnished the Navy. All lamps furnished the Navy for use on Shipboard or more specifically in a submarine are to be certified as follows: "All lamps supplied shall contain amounts of mercury within the allowable limit as shown below."

<u>Nominal watts</u>	<u>Average Hg Content (max.)*</u>
6	30 mg
8	30 mg
15	50 mg
20	50 mg

*The average mercury content per lamp, on a lot basis, shall not exceed the specified amounts.

A lot may be rejected if the contractor fails to supply the above certification. Certification stating that the above requirement has been met shall accompany each shipment of lamps when requested by the Department of the Navy.

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 inspection set forth in the specification where such inspections are deemed necessary to assure that supplies and services conform to prescribed requirements.

4.2 Acceptance inspection.

4.2.1 Sampling for acceptance inspection. Unless otherwise specified, sampling shall be performed in accordance with the provisions set forth in MIL-STD-105.

4.2.2 Inspection lot. Inspection lot shall consist of lamps of one design, size, and color from an identifiable production period, from one manufacturer, and one plant, submitted for acceptance.

4.2.3 In process inspection. Inspection shall be performed throughout the manufacturing process to assure that lamps produced meet the requirements of this specification.

4.2.4 Tests (Color and Initial Lumens). Each month during the contract, while the lamps are in the process of manufacture, lamps shall be tested for color (4.3.3), and initial lumens (4.3.1). The sample size for each specified lamp shall be a minimum of 8 lamps, and the acceptance number for each test shall be 2. When larger sample sizes are used, an AQL of 10.0 percent defective per test shall apply. In case of test failure, the contractor shall suspend offering lamps of the same designation until corrective measures, as necessary, have been taken and another sample of at least 13 lamps has been tested and passed, with an AQL of 10.0 percent defective used for acceptance.

4.2.5 Visual examination and life testing. Visual examination and life testing shall be a requirement of the manufacturer's quality control system (see 3.1). Assuming the quality control system is acceptable to the Government, no additional visual examination or life testing will be required for acceptance except as might be conducted under the provisions of 4.1.

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4.2.5.1 Life test conditions. Life-test lamps shall be operated with selected lamp ballast at their design voltage on a 60-cycle voltage supply meeting the requirements of 4.3.1. 15-and 20-watt lamps shall be operated on lag circuits; 40-watt lamps shall be operated in series-lead rapid start circuits; 90-watt lamps shall be operated, half of them leading and half of them lagging on two-lamp ballasts. The ballasts shall be in accordance with W-B-30 and shall fall within one-half the range established in that specification. The operating cycle shall be 3 hours with power applied and 20 minutes with power off. Lamps of the preheat type shall be started by means of starters providing preheat times in accordance with W-S-755.

4.2.5.2 Failure to meet life requirements. No more than 10 percent of the life-test lamps shall fail at 40 percent of the required life specified in the detailed specifications and no more than 50 percent of the lamps shall fail at 100 percent of the required life specified in the detailed specifications, or the lamp type shall fail. In case of test failure the contractor shall suspend offering lamps of the same designation until corrective measures, as necessary, have been taken and satisfactory evidence is provided to show production is in compliance with the specification.

4.2.6 Dimensions. A deviation in dimension from the applicable ANSI C78 standard shall be considered a defect. The Inspection Level shall be S-3 and the Acceptance Quality Level (AQL) 4.0 percent defective.

4.2.7 Examination of preparation for delivery. An examination shall be made to determine that packaging, packing, and marking comply with section 5 of this specification.

4.2.7.1 Packaging. The lot shall consist of the number of packages prepared for delivery. The Inspection Level shall be S-4, and the Acceptance Quality Level (AQL) 4.0 percent defective. Examination shall be in accordance with table III.

4.2.7.2 Packing. The lot shall consist of the number of shipping containers fully prepared for delivery. The Inspection Level shall be S-4, and the Acceptance Quality Level (AQL) shall be 4.0 percent defective. Examination shall be in accordance with table I.

TABLE I. Examination of preparation

Examination	Defect
Level of packaging and packing	Not as specified
Packaging	Wrong type Wrong quantity Protection of each lamp not adequate Marking omitted, illegible, incorrect, or incomplete
Packing	Wrong box Wrong quantity per box Inadequate cushioning Wrong weight Inadequate or wrong strapping Closures not secure Damaged, bulged, or distorted Marking omitted, illegible, incomplete or incorrect

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4.3 Tests

4.3.1 Measurement of minimum lumens at 100 hours (initial lumens test). The initial lumens test shall be made after the lamps have been burned or seasoned for 100 hours. Lamps shall be operated with a reference ballast at its design line voltage from a 60-cycle supply. Preheat lamps shall be started with proper cathode preheating. The reference ballast shall be in accordance with ANSI C82.3. The supply voltage shall be such that the r.m.s. summation of harmonic components shall not exceed 3 percent of the fundamental components. Lamps and ballasts shall have reached stable conditions before readings are taken. Lamps shall be measured at an ambient temperature between 24 and 26 degrees C. No more than 10 percent or two of the lamps, whichever is the larger number, shall consume higher than rated wattage as specified in the applicable ANSI C78 standard by more than 5 percent or fall below the minimum lumens value at 100 hours as specified in the detailed specifications, or the lamps shall fail.

4.3.2 Lumen maintenance test. Life-test lamps, cycled in accordance with 4.5.2.1, shall be measured for lumen maintenance (see 3.4 and 6.2) under the test conditions of 4.3.1, when they have burned for 40 percent of the required life specified in the detailed specifications. No more than 10 percent of the life test lamps still burning shall fall below the value specified in the detailed specification under the column headed "minimum lumens at 40% of required life" or the lamps shall fail.

4.3.3 Measurement for color. Lamps shall be tested for compliance with paragraph 3.6 under the test conditions of 4.3.1. A 10-inch section at the middle of each lamp shall be measured. No more than 20 percent of the lamps shall fail to meet the requirements of 3.6.

5. PREPARATION FOR DELIVERY

5.1 Packaging. Packaging shall be level A, B, or C, as specified (See 6.1).

5.1.1 Level A. Fluorescent lamps up to and including 48 inches in length shall be packaged in quantities of 24 each. Lamps 60 inches and over in length shall be packaged in quantities of 12 each. Circline lamps shall be packaged in quantities of 12 each. Each lamp shall be protected by a commercial grade corrugated paperboard sleeve. Lamps of like description in the quantities as specified above shall be packaged in conformance with MIL-P-116, method IC-2, using boxes conforming to PPP-B-636, class weather-resistant, enclosed in a heated sealed polyolefin bag conforming to L-P-378. The pins shall be adequately protected against damage with noncorrosive cushioning material.

5.1.2 Level B. Fluorescent lamps up to and including 40 inches in length shall be packaged in quantities of 24 each. Lamps 60 inches and over in length shall be packaged in quantities of 12 each. Circline lamps shall be packaged in quantities of 12 each. Each lamp shall be placed in a corrugated paperboard sleeve or protected with molded pulp separators. The pins shall be suitably protected by noncorrosive cushioning material or molded pulp protectors. Lamps of like description in the quantities as specified above, shall be packaged in a snug-fitting box conforming to PPP-B-636, class domestic. The container shall be closed in accordance with the appendix to the box specification.

5.1.3 Level C. The fluorescent lamps shall be packaged to afford protection against damage during shipment from the supplier to the initial destination.

5.2 Packing. Packing shall be level A, B, or C, as specified (see 6.1).

5.2.1 Level A. The lamps packaged as specified in 5.1, shall be packed in a close-fitting box conforming to PPP-B-601, overseas type. The contents shall be cushioned and braced in accordance with MIL-STD-1186. The boxes shall be closed and strapped in accordance with the appendix to the box specification.

5.2.2 Level B. The lamps, packaged as specified in 5.1.2 shall not require additional packing for shipment.

5.2.3 Level C. The lamps shall be packed to insure carrier acceptance and safe delivery at destination, in containers complying with the rules and regulations applicable to the mode of transportation.

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5.3 Marking.

5.3.1 Civil agencies. In addition to the markings required by the contract or order, the shipping container shall be marked in accordance with Fed. Std. No. 123.

5.3.2 Military agencies. In addition to markings required by the contract or order, the interior packaging and shipping container shall be marked in accordance with MIL-STD-129.

6. NOTES

6.1 Ordering data. Purchasers should select the preferred options permitted herein and include the following information in procurement documents:

- (a) Title, number, and date of this specification.
- (b) Title, number, and date of the applicable detailed specification.
- (c) Responsibility for inspection (see 4.1).
- (d) Selection of applicable levels of packaging and packing (see 5.1 and 5.2).
- (e) Marking and labeling (see 5.3).

6.2 If the routine testing practice of the manufacturer is to make lumen maintenance measurements at other than 40% of the required life specified in the detailed specification, the drop in lumens to 40% of required life shall be computed on the assumption that this drop is proportional to the number of elapsed hours from 100 hours (when initial lumen measurements are made) to the time when maintenance readings are made.

Review Activity

Defense General Supply Center - GS

Preparing Activity

GSA-FSS