

INCH-POUND
MIL-C-25D
AMENDMENT 9
16 July 2001
SUPERSEDING
AMENDMENT 8
7 February 2001

MILITARY SPECIFICATION
CAPACITORS, FIXED, PAPER-DIELECTRIC, DIRECT CURRENT
(HERMETICALLY SEALED IN METAL CASES),
GENERAL SPECIFICATION FOR

This amendment forms a part of Military Specification MIL-C-25D, dated 21 June 1968,
and is approved for use by all Departments and Agencies of the Department of Defense.

PAGE 3

1.2.1.7, line 1: Following "capacitance", add "tolerance".

PAGE 5

Specifications, Military, delete Military section and MIL-C-39028.

Specifications, Standards, Military, delete MIL-STD-105.

PAGE 9

3.12, title, delete and substitute "3.12 Thermal shock and immersion cycling".

PAGE 10

3.18, dissipation factor requirement, delete and substitute:

"Dissipation factor - - - - - Shall not exceed 1 percent when measured as specified in 4.6.5, except for
characteristic F which shall not exceed 1.5 percent."

PAGE 13

Table IX, column 1, Group II, delete "Temperature and immersion cycling" and substitute "Thermal shock and
immersion".

PAGE 14

Table X, column 1, Group II, delete "Temperature and immersion cycling" and substitute "Thermal shock and
immersion".

* 4.5.1, delete and substitute:

"4.5.1 Inspection of product for delivery. Inspection of product for delivery shall consist of group A inspection."

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* 4.5.1.1 and table XI, delete.

* 4.5.1.3.1, Delete and substitute:

"4.5.1.3.1 Sampling plan. The sampling plan shall be performed on an inspection lot basis as specified in table XII."

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* TABLE XII, delete and substitute.

"TABLE XII. Group A inspection."

Inspection	Requirement paragraph	Test method paragraph	Sampling procedure
<u>Subgroup 1</u>			
Thermal shock	3.12	4.6.9.1	100 percent
Seal	3.16	4.6.13	
Dielectric withstanding voltage	3.5	4.6.2	
Insulation resistance (at 25°C)	3.6	4.6.3	
Capacitance	3.7	4.6.4	
Dissipation factor	3.8	4.6.5	
<u>Subgroup 2</u>			
Visual mechanical examination:			13 samples 0 failures
Materials	3.3 to 3.3.2	4.6.1	
Body dimensions	3.1		
Design and construction (other than body dimensions)	3.4 to 3.4.4.2		
Marking ^{1/}	3.20 to 3.20.2		
Workmanship	3.21 to 3.21.2		

^{1/} Marking defects are based on visual examination and shall be charged only for illegible, incomplete, or incorrect marking. Any subsequent electrical defects shall not be used as the basis for determining marking defects."

* 4.5.1.3.2, first sentence, after "rejected" add "for subgroup 2".

* 4.5.1.4 through 4.5.1.4.3 and table XIII, delete.

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* Table XIV: delete and substitute:

TABLE XIV. Group C inspection

Inspection	Requirement paragraph	Method paragraph	Number of samples	Number of defectives allowed
<u>Subgroup 1</u> Vibration <u>1/</u> Immersion <u>2/</u>	3.10 3.12	4.6.7 4.6.9.2	5	0
<u>Subgroup 2</u> Insulation resistance (at high ambient test temperature) Life	3.6 3.18	4.6.3 4.6.15	5	0
<u>Subgroup 3</u> Solderability <u>3/</u> Terminal strength <u>2/</u> Moisture resistance <u>2/</u>	3.13 3.14 3.15	4.6.10 4.6.11 4.6.12	6	1
<u>Subgroup 4</u> Low ambient temperature and capacitance change Salt spray (corrosion) <u>2/</u>	3.17 3.11	4.6.14 4.6.8	6	1

1/ The time period for vibration is a minimum of once every 24 months.

2/ If the manufacturer can demonstrate that this test has been performed five consecutive times with zero failures, this test, with the approval of the qualifying activity, can be deleted. The manufacturer, however, shall perform this test every three years after the deletion as part of long term design verification. If the design, material, construction, or processing of the part is changed, or if there are any quality problems, the qualifying activity may require resumption of the specified testing. Deletion of testing does not relieve the manufacturer from meeting the test requirements in case of dispute.

3/ The manufacturer may request the deletion of the subgroup 3 solderability test, provided an in-line or process control system for assessing and assuring the solderability of leads can be validated and approved by the qualifying activity. Deletion of the test does not relieve the manufacturer from meeting this test requirement in case of dispute. If the design, material, construction, or processing of the part is changed or if there are any quality problems, the qualifying activity may require resumption of the test.

* 4.5.1.5, delete and substitute:

"4.5.1.5 Periodic group C inspection. Periodic group C inspection shall consist of the tests specified in table XIV in the order shown, and shall be performed on sample units selected from lots that have passed group A inspection. Except where the results of this inspection show noncompliance with the applicable requirements (see 4.5.1.5.2), delivery of products which have passed group A shall not be delayed pending the results of this periodic inspection."

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- * 4.5.1.5.1, delete and substitute:

"4.5.1.5.1 Sampling plan. For subgroup 1 and subgroup 2, sample units shall be taken from production every six months. The time period for vibration shall be a minimum of every 24 months. For subgroup 3 and subgroup 4, sample units shall be taken from production every year. A different set of sample units shall be selected for each subgroup. Sample units of the same style (any one style covered by a specification sheet may be representative of any other style specified therein; see table XVII) shall be selected in each characteristic, irrespective of voltage and capacitance. These sample units may be in any capacitance tolerance. If the number of defectives exceeds those allowed in table XIV, the sample shall be considered to have failed."

4.5.1.5.1.1 and 4.5.1.5.1.2: Delete in their entirety.

PAGE 17

- * 4.5.3, delete and substitute.

"4.5.3 Verification of qualification. Every 12 months, the manufacturer shall provide verification of qualification to the qualifying activity. Continuation of qualification shall be based on meeting the following requirements:

- a. Group A inspection.
- b. Periodic group C inspection.

In the event that there is no production of a single style device during a reporting period and the manufacturer is listed for more than one style on the QPL, a report shall be submitted certifying that the manufacturer still has the capabilities and facilities necessary to produce that product. If during three consecutive reporting periods there has been no production of a given style, the manufacturer may be required, at the discretion of the qualifying activity, to submit a representative product of that style to testing."

- * 4.6.4a, last sentence, delete "60 ±6 Hz" and substitute "100 Hz ±10 Hz".

PAGE 19

- * 4.6.5, last sentence, delete "60 ±6 Hz" and substitute "100 Hz ±10 Hz".

PAGE 20

4.6.9 through 4.6.9.1c, delete and substitute:

"4.6.9 Thermal shock and immersion cycling (see 3.12).

4.6.9.1 Thermal shock. Capacitors shall be tested in accordance with method 107 of MIL-STD-202. The following details and exceptions shall apply:

- a. Conditioning prior to first cycle: 15 minutes at room ambient.
- b. Test condition: A, except that in step 3, sample capacitors shall be conditioned at high ambient test temperature (see 3.1).
- c. Measurement after cycling: Not applicable."

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4.6.9.2, delete and substitute:

“4.6.9.2 Immersion. Following thermal shock, capacitors shall be tested in accordance with method 104 of MIL-STD-202. The following details and exceptions shall apply:”.

PAGE 22

5 and 5.1, delete and substitute:

“5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of materiel is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Department or Defense Agency, or within the Military Department's System Command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.”

PAGE 23

6.2, last sentence, delete and substitute:

“Information pertaining to qualification of products may be obtained from the Defense Supply Center, Columbus (DSCC-VQP), 3990 East Broad Street, Columbus, OH 43213-1199.”

PAGE 24

6.14, line 2: Delete “ ± 0.2 kHz at a level of 1 ± 0.5 ” and substitute “ 1 ± 0.2 kHz at a level of 1 ± 0.2 ”.

PAGE 25

TABLE XVII: “Delete column heading “Style group” and substitute “Style group 1”. Add the following footnote to the bottom of table XVII:

“1/ Style groups D and E may be combined for acceptance test purposes allowing selection from any one of the six styles.”

PAGE 26

20.1.5, line 3: Delete “4.6.17” and substitute “4.6.16”.

PAGE 28

30.1f, line 1: Delete “C67 and C91” and substitute “CP67 and CP91”.

30.1g, line 1: Delete “CP87” and substitute “CP78”.

PAGE 30

TABLE XX, columns 2 and 5, line 4: Delete “CP12A1KE105K-“ and “0.08” and substitute “CP12A1KE474K-“ and “0.04”, respectively.

TABLE XX, columns 2 and 5, line 6: Delete “CP13A1KE105K-“ and “0.08” and substitute “CP13A1KE474K-“ and “0.04”, respectively.

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TABLE XX, columns 2, 4, and 5, line 12: Delete "CP13A1KE684K-", "IB", and "0.122" and substitute "CP13A1KF474K-", "IA", and "0.08", respectively.

TABLE XX, column 2, line 13: Delete "CP28A1EG104K1" and substitute "CP28A1EH104K1".

TABLE XX, columns 2, 5, and 6, line 24: Delete "CP70D1ER105K1", "2.8", and "7,500" and substitute "CP70E1EM504K1", "4", and "4,000", respectively.

TABLE XX, columns 2, 5, and 6, line 29: Delete "CP72D1ER105K1", "2.8", and "7,500" and substitute "CP72E1EM504K1", "4", and "4,000", respectively.

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TABLE XXI, column 2, lines 1 and 2: Delete "CP091FA6" and CP091SA6" and substitute "CP091FB6" and "CP091SB6", respectively.

TABLE XXI, column 2, line 16: Delete "CP072SJ3" and substitute "CP072SJ11".

NOTE: The margins of this amendment are marked with asterisks to indicate where changes from the previous amendment were made. This was 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 irrespective of the marginal notations and relationship to the last previous amendment.

Custodians:
Army - CR
Navy - EC
Air Force - 11
DLA - CC

Preparing activity:
DLA-CC

(Project 5910-2135)

Review activities:
Army - AR, MI
Navy - AS, MC, OS
Air Force - 19, 99