

INCH-POUND

MIL-PRF-26F
AMENDMENT 6
10 July 1998
SUPERSEDING
AMENDMENT 5
13 February 1998

PERFORMANCE SPECIFICATION
RESISTORS, FIXED, WIRE-WOUND (POWER TYPE)
GENERAL SPECIFICATION FOR

This amendment forms a part of MIL-PRF-26F, dated 16 November 1993, and is approved for use by all Departments and Agencies of the Department of Defense.

PAGE 1

1.1, line 6: Delete "275°C" and substitute "250°C".

PAGE 2

2.1.1, SPECIFICATIONS, MILITARY, delete "MIL-R-39032" and "MIL-C-45662", and their corresponding titles.

After 2.1.1, add the following new paragraph:

"2.1.1.1 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).

"AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

"ANSI/NCSL Z540-1 - Calibration Laboratory and Measuring and Test Equipment,
General Requirements for.

"INTERNATIONAL ORGANIZATION FOR STANDARDS (ISO)

"ISO 10012-1 - Quality Assurance Requirements for Measuring Equipment,
Part 1: Meteorological Confirmation System for Measuring
Equipment.

"(Application for copies should be addressed to the American National Standards Institute,
11 West 42nd Street, New York, NY 10036.)"

PAGE 3

- * 3.4, from Amendment 5, last sentence, delete "wound by the Ayrton-Perry method or equivalent." and substitute, "noninductively wound to minimize inductive effects. The Ayrton-Perry method would be one way of achieving this requirement."

3.4.1, delete in its entirety.

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MIL-PRF-26F
AMENDMENT 6

PAGE 3

3.4.1.2, delete in its entirety.

3.4.1.3, delete in its entirety.

- * 3.4.1.5.1, third line between "process" and "has" insert "(see appendix)".

PAGE 3 and 4

- * 3.4.1.5.2 and 3.4.1.5.3, delete in their entirety.

PAGE 4

3.4.1.6, delete and substitute:

"3.4.1.6 Ferrule-terminal resistors. Ferrule-terminal type resistors shall be designed to meet the requirements of this specification and figure 1 herein (see 3.1)."

3.4.1.7, delete and substitute:

"3.4.1.7 Flat (stack mounting) and tubular, tab-terminal resistors. These resistors shall be designed to meet the requirements of this specification (see 3.1)."

PAGE 7

4.1.2, delete and substitute:

"4.1.2 Test equipment and inspection facilities. The supplier shall establish and maintain a calibration system in accordance with ANSI/NCSS Z540-1, ISO-10012-1, or equivalent system as approved by the qualifying activity."

MIL-PRF-26F
AMENDMENT 6

PAGE 8

TABLE I, delete and substitute:

Inspection	No. of sample units for inspection	Requirement paragraph	Method paragraph	Number of defectives allowed <u>1/</u>
<u>Group I</u> DC resistance Visual and mechanical inspection <u>2/</u> Thermal shock Short-time overload	All sample units except groups II and VI <u>3/</u>	3.6 3.1, 3.3 to 3.4.1.7 inclusive, 3.21 to 3.22.1 inclusive 3.7 3.8	4.6.1 4.6.2 4.6.3 4.6.4	1
<u>Group II</u> Solderability (when applicable) <u>4/</u> Terminal strength	5 high 5 low	3.9 3.10	4.6.5 4.6.6	1
<u>Group III</u> Resistance temperature characteristics <u>5/</u> Dielectric withstanding voltage <u>5/</u> Insulation resistance <u>5/</u> Moisture resistance Low temperature storage Mechanical strength (not applicable to axial - terminal resistors)	5 high 5 low	3.11 3.12 3.13 3.15 3.16 3.17	4.6.7 4.6.8 4.6.9 4.6.11 4.6.12 4.6.13	1
<u>Group IIIA</u> High temperature exposure	5 high 5 low 10 critical (as applicable)	3.14	4.6.10	1
<u>Group IV</u> (Applicable to axial-terminal resistors only) Shock, specified pulse Vibration, high frequency	5 high 5 low	3.18 3.19	4.6.14 4.6.15	1
<u>Group V</u> Life	5 high 5 low	3.20	4.6.16	1
<u>Group VI</u> Visual and mechanical inspection	2 unenclosed or uncoated units	3.1, 3.3 to 3.4.1.7 inclusive, 3.21 to 3.22.1 inclusive		

- 1/ Failure of an individual resistor in one or more tests in group I to group V inclusive, shall be charged as a single failure. Failures for each resistance value shall be permitted as specified in each group, but not more than one failure shall be permitted in group I through group V combined.
- 2/ Marking shall be considered defective only if the marking or any portion thereof is illegible. Marking shall remain legible at the end of all tests.
- 3/ The exception shall apply only to the solderability test in group II.
- 4/ This test applicable to both leads.
- 5/ Nondestructive examinations and tests."

MIL-PRF-26F
AMENDMENT 6

PAGE 9

4.4.2, delete and substitute:

"4.4.2 Inspection routine. Sample units shall be subjected to the qualification inspection specified in table I in the order shown. All coated or enclosed sample units, except those for the solderability test in group II and the uncoated or unenclosed for group VI, shall be subjected to the inspection of group I. The 30 tab-terminal sample units, 15 of the highest resistance value and 15 of the lowest resistance value or 10 ohms, whichever is higher, 50 axial-terminal units of the critical value, 10 each for group II through group V (when applicable) (see 20.1.2), and 50 axial-terminal sample units, 25 of the highest resistance value and 25 of the lowest resistance value or 10 ohms, whichever is higher, shall be divided as specified in table I, for group II through group V, and subjected to the inspection of their particular group. The two uncoated or unenclosed sample units shall then be subjected to the visual and mechanical examination of group VI inspection only."

PAGE 11

4.5.1.3.1, delete and substitute:

"4.5.1.3.1 Sampling plan. A sample of 13 parts shall then be randomly selected. If one or more defects are found, the lot shall be rescreened and defects removed. A new sample of 13 parts shall then be randomly selected. If one or more defects are found in the second sample, the lot shall be rejected and shall not be supplied to this specification."

TABLE V, delete in its entirety.

Delete paragraph: "4.5.1.3.3."

PAGE 12

Delete paragraphs: " 4.5.1.4, 4.5.1.4.1, 4.5.1.4.1.1, 4.5.1.4.1.1.1, 4.5.1.4.1.2, 4.5.1.4.1.2.1, 4.5.1.4.1.3, 4.5.1.4.2, and 4.5.1.4.3."

4.5.3, delete and substitute:

"4.5.3 Retention of qualification. Every year, the manufacturer shall compile a summary of the results of quality conformance inspections in the form of a retention of qualification report, and forward it to the qualifying activity within 30 days from the end of the reporting period as the basis of continued qualification approval. In addition, the manufacturer shall immediately notify the qualified activity whenever the group B inspection data indicates failure of the qualified product to meet the requirements of the specification. Retention shall be based on evidence that over the 1-year period, the following has been met:

- a. The manufacturer has not modified the design of the item.
- b. The specification requirements for the item have not been amended so far as to affect the character of the item.
- c. Lot rejection for group A inspection does not exceed the group A sampling plan.
- d. The requirements for group B inspection are met.

When group B requirements are not met and the manufacturer has taken corrective action satisfactory to the government, group B retesting shall be instituted. A summary of the retesting shall be forwarded to the qualifying activity within 30 days after completion of the retest. All reports are to be certified by a responsible company official and the government inspector."

MIL-PRF-26F
AMENDMENT 6

PAGE 13

TABLE VI, delete in its entirety.

PAGE 14

TABLE VII, delete in its entirety.

4.6.1a., delete and substitute:

"a. Measuring apparatus: Different type of measuring test equipment (multimeters, bridges, or equivalent) are permitted to be used on the initial and final readings of this test, provided the equipment is the same style, model, or if it can be shown that the performance of the equipment is equivalent or better."

PAGE 16

4.6.10.2, delete and substitute:

"4.6.10.2 Procedure. DC resistance shall be measured as specified in 4.6.1 at room ambient temperature. Resistors shall be exposed to an ambient temperature of $250^{\circ}\text{C} \pm 7^{\circ}\text{C}$ (for characteristic U) and $350^{\circ}\text{C} \pm 7^{\circ}\text{C}$ (for characteristic N and characteristic V) for a period of 250 hours \pm 8 hours. Not less than 2 hours after the end of the exposure period, the dc resistance shall again be measured as specified in 4.6.1 at room ambient temperature. For axial-terminal resistors, the wire leads may be cleaned before the resistance measurement."

PAGE 18

4.6.14, line two, delete "205" and substitute "213".

4.6.14c., delete and substitute:

"c. Test condition letter I."

PAGE 19

4.6.16f., delete and substitute:

"f. Measurement during test: Resistance shall be measured at the end of one-half hour off periods, after, 250 hours +72 hours, -24 hours; 500 hours +72 hours, -24 hours; 1,000 hours + 72 hours, -24 hours; 2,000 hours +96 hours, -24 hours, and compared to the similar reading taken in 4.6.16b. Measurement shall be made as near as possible to the specified time but may be adjusted so that measurement need not be made during other than normal working days."

PAGE 20

5, delete and substitute the following:

"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 of 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."

MIL-PRF-26F
AMENDMENT 6

PAGE 20

6.2, last sentence, delete and substitute:

"The activity responsible for the qualified product list is the Defense Supply Center, Columbus, DSCC-VQP, 3990 E. Broad St., Columbus, OH 43213-1199. DSCC-VQP may be reached at the DSCC web site, www.dscclia.mil/V/Vq/Vqp."

PAGES 21, 22, AND 23

TABLE IX, delete in its entirety.

PAGE 25

20.1.2, delete and substitute:

"20.1.2 Critical value. If the lowest resistance value (see 20.1.1) is below the critical value specified (see 3.1) and the highest resistance value is above the critical value specified (see 3.1), then 50 sample units of the critical value shall also be submitted and shall consist of 10 each from group II through group V."

PAGE 26

* after table XII add the following new paragraphs:

"30.2 Qualifying activity approval. Approval of the solder dip/retin process will be based on one of the following options:

- a. When the original lead finish qualified was hot solder dip lead finish 52 of MIL-STD-1276 (NOTE: The 200 microinch maximum thickness is not applicable). The manufacturer shall use the same solder dip process for retraining as is used in the original manufacture of the product.
- b. When the lead originally qualified was not hot solder dip lead finish 52 of MIL-STD-1276 as prescribed in a., approval for the process to be used for solder dip shall be based on the following test procedure:
 - (1) Thirty samples of any resistance value for each style and lead finish are subjected to the manufacturer's solder dip process. Following the solder dip process, the resistors are subjected to the dc resistance test and other group A electricals.
 - (2) Ten of the thirty samples are then subjected to the solderability test. No defects are allowed.
 - (3) The remaining 20 samples are subjected to the resistance to solder heat test followed by the moisture resistance test.
- c. The manufacturers may designate and authorize a MIL-STD-790, category B or category C distributor listed under MIL-PRF-39007 QPL to solder dip/retin MIL-PRF-26 resistors as long as the procedure is one qualified in a. or b. above and is identified and approved by the manufacturer.

MIL-PRF-26F
AMENDMENT 6

30.3 Solder dip/retraining options. The manufacturer may solder dip/retin as follows:

- a. After the group A tests: Following the solder dip/retraining process, the electrical measurements required in group A, subgroup 1 shall be repeated on the lot. The group A, subgroup 1, lot rejection criteria shall be used. Following this test, the manufacturer shall submit the lot to the group A solderability test as specified in 4.6.5.
- b. As a corrective action if the lot fails the group A solderability test."

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 - 85

Preparing activity:

DLA - CC

Review activities:

Army - AR, AT, AV, CR4, MI
Navy - AS, MC, OS
Air Force - 17, 19, 99

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