

**Harmonized system of quality
assessment for electronic components:**

Sectional specification: Fixed capacitors with paper and paper/plastics dielectrics

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Electronic Components Standards Policy Committee (ECL/-) to Technical Committee ECL/4, upon which the following bodies were represented:

- British Telecommunications plc
- EEA (the Association of Electronics, Telecommunications and Business Equipment Industries)
- Electronic Components Industry Federation
- Ministry of Defence
- National Supervising Inspectorate
- Society of British Aerospace Companies Limited

This British Standard, having been prepared under the direction of the Electronic Components Standards Policy Committee, was published under the authority of the Standards Board and comes into effect on 29 March 1991

© BSI 08-1999

The following BSI references relate to the work on this standard:
Committee reference ECL/4
Draft for comment 83/29395 DC

ISBN 0 580 18610 5

Amendments issued since publication

Amd. No.	Date	Comments

Contents

	Page
Committees responsible	Inside front cover
National foreword	ii
Foreword	iii
Text of CECC 31600	1
Publication(s) referred to	Inside back cover

National foreword

This British Standard has been prepared under the direction of the Electronic Components Standards Policy Committee. It is identical with CENELEC Electronic Components Committee (CECC) 31600:1986 “*Harmonized system of quality assessment for electronic components: Sectional specification: Fixed capacitors with paper or paper/plastic dielectrics*” (with amendment 1).

This standard is a harmonized specification within the CECC system and should be read in conjunction with BS CECC 30000:1984 “*Harmonized system of quality assessment for electronic components: generic specification: fixed capacitors*”.

Cross-references

The British Standard which implements the CECC system is BS 9000: “*General requirements for a system for electronic components of assessed quality*” — Part 2 “*Specification for national implementation of the CECC system*”.

International Standard	Corresponding British Standard
ISO/R 17:1956	BS 2045:1965 <i>Preferred numbers</i> (Technically equivalent)
IEC 62:1974	BS 1852:1975 <i>Specification for marking codes for resistors and capacitors</i> (Identical)
IEC 63:1963	BS 2488:1966 <i>Schedule of preferred numbers for the resistance of resistors and the capacitance of capacitors for telecommunication equipment</i> (Technically equivalent) BS 2011 <i>Basic environmental testing procedures</i>
IEC 68-1:1982	Part 1.1:1983 <i>General and guidance</i> (Identical)
IEC 68-2-17:1978	Part 2.1 Q:1981 <i>Test Q. Sealing</i> (Identical)
IEC 68-2-30:1980	Part 2.1 Db:1981 <i>Test Db and guidance: Damp heat, cyclic (12 + 12 hour cycle)</i> (Identical)
IEC 384-14:1981	BS 6201 <i>Fixed capacitors for use in electronic equipment</i> Part 3:1982 <i>Specification for fixed capacitors for radio interference suppression. Selection of methods of test and general requirements</i> (Identical)
CECC 30000:1983	BS CECC 30000:1984 <i>Harmonized system of quality assessment for electronic components: generic specification: fixed capacitors</i> (Identical)

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the CECC title page, pages ii to iv, pages 1 to 20, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.



Système Harmonisé d'Assurance de la Qualité
des Composants Electroniques

SPECIFICATION INTERMEDIAIRE:

**CONDENSATEURS FIXES A
DIELECTRIQUE EN PAPIER
OU A DIELECTRIQUE EN
PAPIER ET PLASTIQUE**

Harmonized System of Quality Assessment for
Electronic Components

SECTIONAL SPECIFICATION:

**FIXED CAPACITORS
WITH PAPER OR PAPER/PLASTIC
DIELECTRICS**

Harmonisiertes Gütebestätigungssystem für
Bauelemente der Elektronik

RAHMENSPEZIFIKATION:

**FESTKONDENSATOREN
MIT EINEM DIELEKTRIKUM
AUS PAPIER ODER
PAPIER-/KUNSTSTOFF-FOLIEN**

1 Edition
Issue
Ausgabe

CECC 31600

1986

Contents

	Page
Foreword	iii
Section 1. General	
1.1 Scope	1
1.2 Related documents	1
1.3 Terminology	1
1.4 Marking	1
Section 2. Ratings and characteristics	
2.1 Climate categories	2
2.2 Rated capacitance	2
2.3 Tolerance on rated capacitance	2
2.4 Rated voltage	2
2.5 Category voltage	2
2.6 Ripple voltage	2
2.7 Surge voltage	2
2.8 Charge/discharge	2
Section 3. Quality assessment procedure	
3.1 Primary stage of manufacture	3
3.2 Certified test records	3
3.3 Qualification approval	3
3.4 Quality conformance inspection	3
Section 4. Test and measurement procedures	
4.1 Standard conditions for testing	7
4.2 Visual inspection and check of dimensions	7
4.3 Voltage proof	7
4.4 Capacitance	7
4.5 Tangent of the loss angle	8
4.6 Insulation resistance	8
4.7 Sealing	8
4.8 Inductance	8
4.9 Outer foil termination	8
4.10 Test of Groups 1a and C1a	8
4.11 Test of Groups 1b and C1b	8
4.12 Climatic sequence	9
4.13 Test Ca: Damp heat, steady state	10
4.14 Endurance	11
4.15 Surge voltage	11
4.16 Storage at upper category temperature	12
4.17 Storage at low temperature	12
4.18 Charge and discharge test	13
Appendix A Survey of test methods, severities and requirements	14
Table 1 — Test schedule for qualification approval	4
Table 2 — Lot-by-lot tests	6
Table 3 — Periodic tests	6

Foreword

The CENELEC Electronic Components Committee (CECC) is composed of those member countries of the European Committee for Electrotechnical Standardization (CENELEC) who wish to take part in a harmonized System for electronic components of assessed quality.

The object of the System is to facilitate international trade by the harmonization of the specifications and quality assessment procedures for electronic components, and by the grant of an internationally recognized Mark, or Certificate, of Conformity. The components produced under the System are thereby accepted by all member countries without further testing.

This specification has been formally approved by the CECC, and has been prepared for those countries taking part in the System who wish to issue national harmonized specifications for fixed capacitors with paper or paper/plastic dielectrics. It should be read in conjunction with the current regulations for the CECC System.

At the date of printing of this specification the member countries of the CECC are Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom. Copies of it can be obtained from the addresses shown on the blue fly-sheet.

Preface

This sectional specification was prepared by the British National Committee in accordance with RP4, Part III.

It is based, wherever possible, on the Publications of the International Electrotechnical Commission.

The text of this sectional specification was circulated to the CECC for voting in the document listed below and was ratified by the President of the CECC for printing as a CECC Specification.

Document	Voting Date	Report on the Voting
CECC(Secretariat/UK)01	August 1983	CECC(Secretariat/UK)03 CECC(Secretariat/UK)03A

Section 1. General

1.1 Scope

This document lists methods of test and inspection requirements for fixed capacitors with paper or paper/plastic dielectrics.

They are primarily intended for use with direct voltage. Capacitors for alternating voltage and pulse applications will be covered by supplements to this document.

The following types are included:

- Paper dielectric with foil electrodes
- Paper dielectric metallized electrodes
- Paper and plastic film with foil electrodes
- Paper and plastic film with metallized electrodes

Capacitors for radio interference suppression are not included but are covered by IEC 384-14:1981.

1.2 Related documents

The following documents and any other to which they may relate are mandatory unless otherwise stated. CECC 30000, *Generic specification: Fixed capacitors*.

1.3 Terminology

See 2.2 of CECC 30000.

1.4 Marking

The following marking information, in the order of importance given below, is required:

- a) Rated capacitance (may be indicated by the code given in IEC 62)
- b) Rated voltage: (d.c. voltage may be indicated by the symbol --- or ---).
- c) Category voltage and maximum category temperature.
- d) Tolerance on rated capacitance (may be indicated by the code given in IEC 62).
- e) Indication as to which termination is connected to the outside foil (where applicable). This indication shall be made by a heavy type arrowhead pointing towards the outside foil termination or by any other suitable means.
- f) Manufacturer's name or trade mark.
- g) Climatic category.
- h) Manufacturer's type designation.
- i) Week (or month) and year of manufacture (may be indicated by one of the codes given in IEC 62).
- j) Reference to the national or CECC number of the detail specification.

The capacitor shall be clearly marked with a), b), c), d) above and e) (where applicable) and with as many as possible of the remaining items as are considered useful.

The package containing the capacitor(s) shall be clearly marked with all the information listed above. Any additional marking shall be so applied that no confusion can arise.