SLOVENSKI STANDARD
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Sectional specification: Fixed polyethylene-terephtalate film dielectric metal foil capacitors for direct current

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Ta slovenski standard je istoveten z: **EN 130100:1997**

ICS:

31.060.30	Papirni kondenzatorji in folijski kondenzatorji	Paper and plastics capacitors

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Sectional Specification: Fixed polyethylene-terephtalate film dielectric metal foil capacitors for direct current

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Ref. No. EN 130100:1997 E

Foreword

At the request of CLC/TC CECC/SC 40XA (former WG 3), the text of CECC 30 100:1985, Issue 2, with its amendments A1 through A7 and document CECC(Secretariat)3061, was submitted to the formal vote for conversion into a European Standard.

The text of the draft, together with the voting report, circulated as document CECC(Secretariat)3199, was approved as EN 130100 on 1992-10-14.

Based on the positive voting results on prAB to EN 130800, assessment level EZ was accepted for introduction into EN 130100 on 1997-03-11.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1998-04-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1998-04-01

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Section 1 General

1.1 Scope

This European Standard specifies requirements for fixed capacitors for direct current, with electrodes of thin metal foils and a polyethylene-terephthalate film dielectric.

It specifies preferred ratings and characteristics and selects from EN 130000 the appropriate quality assessment procedures, tests and measuring methods and gives general performance requirements for this type of capacitor.

Capacitors for direct connection to the supply mains to provide radio interference suppression are not included.

1.2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publicatons. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

ISO 3:1973	*Preferred numbers - Series of preferred numbers*
IEC 60062:1974	*Marking codes for resistors and capacitors*
IEC 60063:1963 A1:1967 A2:1977	*Preferred number series for resistors and capacitors*
IEC 60068	*Basic environmental testing procedures*
EN 130000:1993 Amendments 1 to 10	*Generic specification: Fixed capacitors*
IEC 60410:1973	*Sampling plans and procedures for inspection by attributes*

1.3 Information to be given in a detail specification

1.3.1 *General*

The detail specification shall be derived from the relevant blank detail specification. Detail specifications shall not specify requirements inferior to those of the generic, sectional or blank detail specification. When more severe requirements are included, they shall be listed in 1.9 of the detail specification and indicated in the test schedules, for example by an asterisk.

NOTE: The information given in 1.3.1 may for convenience be presented in tabular form.

The following information shall be given in each detail specification and the values quoted shall preferably be selected from those given in the appropriate clause of this sectional specification.

1.3.2 *Outline drawing and dimensions*

The detail specification shall give an illustration of the capacitor as an aid to easy recognition and for comparison of the capacitor with others. Dimensions and their associated tolerances, which affect interchangeability and mounting, shall be given in the detail specification. All dimensions shall preferably be stated in millimetres.

Normally the numerical values shall be given for the length, the width and height of the body and the wire spacing or for cylindrical types the body diameter, and the length and diameter of the terminations. When necessary, for example when a number of case sizes are covered by a detail specification, the dimensions and their associated tolerances shall be placed in a table below the drawing.

When the configuration is other than described above, the detail specification shall state such dimensional information as will adequately describe the capacitor. When the capacitor is not designed for use on printed boards, this shall be clearly stated in the detail specification.

1.3.3 *Mounting*

The detail specification shall specify the method of mounting to be applied for the application of the vibration and the bump or shock tests. The design of the capacitor may be such that special mounting fixtures are required in its use. In this case the detail specification shall describe the mounting fixtures and they shall be used in the application of the vibration and bump or shock tests.

NOTE: If recommendations for mounting for "normal" use are made, they shall be included in the detail specification under "1.8 Additional information (Not for inspection purposes)". If they are included, a warning can be given that the full vibration, bump and shock performance may not be available if mounting methods other than those specified in 1.1 of the detail specification are used.

1.3.4 *Ratings and characteristics*

The ratings and characteristics shall be in accordance with the relevant clauses of this specification, together with the following:

a) **Rated capacitance range**

See **2.2.1**.

NOTE: When products approved to the detail specification may have different ranges, the following statement should be added: "The range of values available in each voltage range is given in the Register of Approvals CECC 00200".

b) **Particular characteristics**

Additional characteristics may be listed, when they are considered necessary to specify adequately the component for design and application purposes.

1.3.5 *Marking*

The detail specification shall specify the content of the marking on the capacitor and on the package. Deviations from **1.5** of this sectional specification, shall be specifically stated.

1.4 Definitions

For the purposes of this standard the definitons given in EN 130000 apply, together with the following:

1.4.1 ***rated voltage***: The maximum d.c. voltage which may be applied continuously to a capacitor at the rated temperature.

NOTE: The sum of the d.c. voltage and the peak a.c. voltage applied to the capacitor shall not exceed the rated voltage. The value of the peak a.c. voltage shall not exceed the following percentages of the rated voltage at the frequencies stated and shall not be greater than 280 V:

50	Hz: 20 %
100	Hz: 15 %
1 000	Hz: 3 %
10 000	Hz: 1 %

unless otherwise specified in the detail specification.

1.5 Marking

1.5.1 The information given in the marking is normally selected from the following list; the relative importance of each item is indicated by its position in the list:

a) rated capacitance;

b) rated voltage; (d.c. voltage may be indicated by the symbol _____ or .....);

c) tolerance on rated capacitance;

d) category voltage;

e) year and month (or week) of manufacture;

f) manufacturer's name or trade mark;

g) climatic category;

h) manufacturer's type designation;

i) reference to the detail specification.

1.5.2 The capacitor shall be clearly marked with a), b) and c) above and with as many as possible of the remaining items as is considered necessary. Any duplication of information in the marking on the capacitor should be avoided.

1.5.3 The package containing the capacitor(s) shall be clearly marked with all the information listed in 1.5.1.

1.5.4 Any additional marking shall be so applied that no confusion can arise.

Section 2 Preferred ratings and characteristics

2.1 Preferred climatic categories

The capacitors covered by this specification are classified into climatic categories according to the general rules given in IEC 60068-1.

The lower and upper category temperature and the duration of the damp heat steady state tests shall be chosen from the following:

- lower category temperature: -55 °C, -40 °C and -25 °C;
- upper category temperature: +85 °C, +100 °C and +125 °C;
- duration of the damp heat, steady state test: 4, 10, 21 and 56 days.

The severities for the cold and dry heat tests are the lower and upper category temperatures respectively.

2.2 Preferred values of ratings

2.2.1 *Rated capacitance (C_R)*

Preferred values of rated capacitance are 1; 1,5; 2,2; 3,3; 4,7 and 6,8 and their decimal multiples.

These values conform to the E6 series of preferred values given in IEC 60063.

If other values are required they shall preferably be chosen from the E12 series.

2.2.2 *Tolerance on rated capacitance*

The preferred tolerances on the rated capacitance are ± 5 %, ± 10 % and ± 20 %.

2.2.3 *Rated voltage (U_R)*

The preferred values of rated voltage are 40; 63; 100; 160; 250 and their decimal multiples. These values conform to the basic series of preferred values R5 given in ISO 3.

2.2.4 *Category voltage (U_C)*

The category voltage is:

$0,8U_R$ for upper category temperature 100 °C;

$0,5U_R$ for upper category temperature 125 °C.

2.2.5 *Rated temperature*

The standard value of rated temperature is 85 °C.

Section 3 Quality assurance procedures

3.1 Primary stage of manufacture

The primary stage of manufacture is the winding of the capacitor element or the equivalent operation.

3.2 Structurally similar components

Capacitors considered as structurally similar are capacitors produced with similar processes and materials, though they may be of different case sizes and capacitance and voltage values.

3.3 Certified test records

The information required in 3.9 of EN 130000:1993 shall be made available when prescribed in the detail specification and when requested by a purchaser. After the endurance test the parameters for which variables information is required are the capacitance change, tan δ and the insulation resistance.

3.4 Qualification approval

3.4.1 *General*

The procedures for qualification approval testing are given in 3.5 of the generic specification, EN 130000:1993. The schedule to be used for qualification approval testing on the basis of lot-by-lot and periodic tests is given in 3.5 of this specification. The procedure using a fixed sample size schedule is given in 3.4.2 and 3.4.3.

3.4.2 *Sampling*

The fixed sample size procedure is described in 3.5.3.2 of EN 130000:1993. The sample shall be representative of the range of capacitors for which approval is sought. This may or may not be the complete range covered by the detail specification.

The sample shall consist of specimens having the lowest and highest voltages, and for these voltages the lowest and highest capacitances. When there are more than four rated voltages an intermediate voltage shall also be tested. Thus for the approval of a range, testing is required of either four or six values (capacitance/voltage combinations). When the range consists of less than four values, the number of specimens to be tested shall be that required for four values.