IEC 61249-6-3

Edition 1.0 2023-06

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Materials for printed boards and other interconnecting structures – Part 6-3: Sectional specification set for reinforcement materials – Specification for finished fabric woven from "E" glass for printed boards

Matériaux pour circuits imprimés et autres structures d'interconnexion – Partie 6-3: Ensemble de spécifications intermédiaires pour matériaux de renfort – Spécification des tissus finis en verre "E" pour circuits imprimés



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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MATERIALS FOR PRINTED BOARDS AND OTHER INTERCONNECTING STRUCTURES –

Part 6-3: Sectional specification set for reinforcement materials – Specification for finished fabric woven from "E" glass for printed boards

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IEC 61249-6-3 has been prepared by IEC technical committee 91: Electronics assembly technology. It is an International Standard.

This first edition cancels and replaces the IEC/PAS 61249-6-3 published in 2011. This edition constitutes a technical revision.

The text of this International Standard is based on the following documents:

Draft	Report on voting
91/1680/CDV	91/1828A/RVC

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

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- reconfirmed,
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- amended.

MATERIALS FOR PRINTED BOARDS AND OTHER INTERCONNECTING STRUCTURES –

Part 6-3: Sectional specification set for reinforcement materials – Specification for finished fabric woven from "E" glass for printed boards

1 Scope

This part of IEC 61249 covers finished fabrics woven from ‘‘E’’ glass electrical grade glass fibre yarns that are intended as a reinforcing material in laminated plastics for electrical and electronic use. All fabrics covered by this specification are plain weave.

This specification determines the nomenclature, definitions, general and chemical requirements for the glass, and physical requirements for finished woven glass fibre fabrics.

Annex A of this document provides a style designator for each finished fabric glass style, with specifications on yarn, fabric count, thickness and weight in both SI and US system.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at https://www.electropedia.org/
- ISO Online browsing platform: available at https://www.iso.org/obp

3.1
AQL
Acceptable Quality Level
maximum number of defects per hundred units that can be considered satisfactory as a process average

3.2
bias
filling yarns are off-square to the warp ends

3.3
bow
filling yarns lie in an arc across the width of the fabric

3.4
creases
ridge in the fabric caused by a fold or wrinkle being placed under pressure

3.5
defect
substandard area in a fabric

3.5.1
major defect
defect that is likely to result in failure, or to reduce materially the usability of the unit of product for its intended purpose

3.5.2
minor defect
defect that is not likely to reduce materially the usability of the unit of product for its intended purpose

3.6
E-glass
Electrical Glass which is to be used for printed board applications, is a continuous filament glass yarn with a chemical composition by weight that is within the following limits:

B_2O_3	5 % to 10 %
CaO	16 % to 25 %
Al_2O_3	12 % to 16 %
SiO_2	52 % to 56 %
MgO	0 % to 5 %
Na_2O / K_2O	0 % to 2 %
TiO_2	0 % to 0,8 %
Fe_2O_3	0,05 % to 0,4 %
F_2	0 % to 10 %

Note 1 to entry: For convenience, the composition of borosilicate glass is often expressed in terms of oxides (B_2O_3, SiO_2, Al_2O_3, Na_2O, CaO, etc.). This does not imply anything about the nature and structure of glass. Borates are network formers and are part of the structure of borosilicate glass. All raw materials are completely consumed during manufacturing, and no raw materials are present in the final product.

3.7
permittivity for bulk form E glass
reference dielectric constant to be used for printed board applications

3.8
feather length
distance from last warp end to the end of the pick

3.9
fabric finish
treatment of fabric to aid in compatibility with resins

3.10
fish eye
small area of fabric which resists resin wetting and can be caused by the resin system, fabric or treatment

3.11
hollow filament
individual filament within a glass yarn bundle that contains a longitudinal void

3.12
Leno end out
missing wrapper warp end from the edge of the fabric

3.13
lot
collection of units produced in one continuous, uninterrupted finish run from which a sample is drawn and inspected or tested to determine conformance with the acceptability criteria.

3.14
mark
heavy or light area in fabric due to excessive or less filling yarns

3.14.1
heavy mark
filling defect extending across the width of the fabric containing two picks/inch in excess of the nominal count

3.14.2
light mark
filling defect extending across the width of the fabric containing two picks/inch less than the nominal count

3.15
pick
filling yarn running crosswise the entire width of a fabric

3.16
broken pick
filling yarn missing from a portion of the width of the fabric

3.17
mis-picks
break in the pattern of cloth from selvage to selvage caused by a missing filling yarn

3.18
plain weave
fabric configuration where each warp end should go over one pick and under the next, and each pick should go over one warp end and under the next

3.19
split
opening in the fabric resulting from either the pick or end breaking in two

3.20
spread glass fabric
woven glass fabric, the warp and/or fill yarns of which, through mechanical action, are flattened (spread out) such that the radial cross sectional aspect ratio (ratio of length of major and minor axes) is increased and the percentage of open space between yarns per unit area is decreased, as compared to a non-spread fabric of the same style