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Printed boards design, manufacture and assembly – Vocabulary – Part 1: Common usage in printed board and electronic assembly technologies

Conception, fabrication et assemblage de cartes imprimées – Vocabulaire – Partie 1: Usage commun des techniques d'assemblage des composants électroniques et des cartes imprimées

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Part 1: Common usage in printed board and electronic assembly technologies

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PRINTED BOARDS DESIGN, MANUFACTURE AND ASSEMBLY – VOCABULARY –

Part 1: Common usage in printed board and electronic assembly technologies

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International Standard IEC 60194-1 has been prepared by IEC technical committee 91: Electronics assembly technology.

This document, together with IEC 60194-2:2017, cancel and replace IEC 60194:2015. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) exclusion of 32 general terms better served by other TCs;
b) exclusion of 47 terms no longer used by the electronic assembly industry;
c) inclusion of 14 new terms related with device embedded substrate technology;
d) inclusion of 113 synonymous terms;
e) removal of identification codes for terms and annexes.

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

FDIS	Report on voting
91/1688/FDIS	91/1705/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 60194 series, published under the general title *Printed boards design, manufacture and assembly – Vocabulary*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
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INTRODUCTION

The committee decided to split the revision of IEC 60194:2015 into two separate documents: IEC 60194-1 and IEC 60194-2. This document is the first part of the revision (IEC 60194-1). It is composed of terms and definitions closely related with TC 91 technology.

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PRINTED BOARDS DESIGN, MANUFACTURE AND ASSEMBLY – VOCABULARY –

Part 1: Common usage in printed board and electronic assembly technologies

1 Scope

This part of IEC 60194 covers terms and definitions closely related with TC 91 technology.

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.

IEC 60050 (all parts), *International Electrotechnical Vocabulary*

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3 Terms and definitions

For the purposes of electronics assembly technology, the following terms and definitions apply.

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3.1 A

3.1.1
abrasion resistance
ability of a material to withstand surface wear

3.1.2
absorption coefficient
for a parallel beam of specified radiation in a given substance, the quantity μ_{abs} describes the fraction of energy absorbed in passing through a thin layer of thickness Δx

Note 1 to entry: The absorption coefficient is primarily energy dependent.

Note 2 to entry: According to whether the thickness Δx is expressed in terms of length, mass per unit area, moles per unit area or atoms per unit area, it is called the linear, mass, molar or atomic absorption coefficient.

Note 3 to entry: This entry was numbered 393-14-46 in IEC 60050-393:2003.

[SOURCE: IEC 60050-395:2014, 395-01-26]

3.1.3
absorptivity
<infrared> ratio (or percentage) of the amount of energy absorbed by a substrate as compared with the total amount of incident energy

3.1.4
accelerated equivalent soak
environmental soak of a component at a higher temperature for a shorter time (compared to the standard soak) to provide roughly the same amount of moisture absorption

Note 1 to entry: See also "soak"

3.1.5
accelerated test
test to check the life expectancy of an electronic component or electronic assembly in a short period of time by applying physically severe condition(s) to the unit under test

3.1.6
access hole
series of holes in successive layers of a multilayer board, each set having their centres on the same axis

SEE: Figure 1

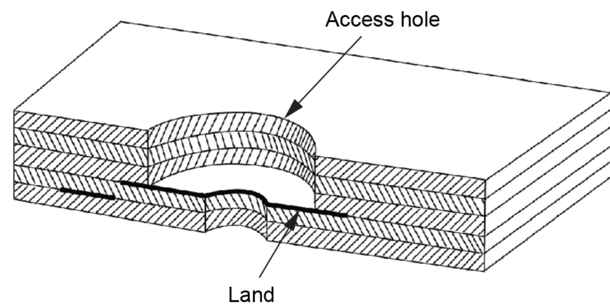

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Figure 1 – Access hole

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Note 1 to entry: These holes provide access to the surface of the land on one of the layers of the board.

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3.1.7
access protocol
protocol, used at the user-network interface, to enable the user to employ the services and/or facilities of a telecommunication network

[SOURCE: IEC 60050-716:1995, 716-04-18]

3.1.8
accordion contact
type of connector contact that consists of a flat spring formed into a "Z" shape in order to permit high deflection without overstress

3.1.9
acid flux
solution of an acid and an inorganic, organic, or water-soluble organic flux

Note 1 to entry: See also "inorganic flux", "organic flux", and "water-soluble flux".

3.1.10
acid number
acid value
number of milligrams of potassium hydroxide (KOH) required to neutralize the acid components present in one gram of a liquid, under standardized conditions

[SOURCE: IEC 60050-212:2010, 212-18-15, modified – The term "acid value" has been used instead of the term "neutralization value".]

3.1.11
acid-core solder
wire solder with a self-contained acid flux

3.1.12
acoustic microscope
equipment that creates an image using ultrasound to view a specimen's surface or subsurface features, including defects and damage

3.1.13
actinic radiation
light energy that reacts with a photosensitive material in order to produce an image

3.1.14
activated rosin flux
mixture of rosin and small amounts of organic-halide or organic-acid activators

Note 1 to entry: See also "synthetic activated flux"

3.1.15
activating
catalysing
initiating
seeding
sensitizing
treatment that renders nonconductive material receptive to electroless deposition

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3.1.16
activating layer
seed layer
layer of material that renders a nonconductive material receptive to electroless deposition

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3.1.17
activator
substance that improves the ability of a flux to remove surface oxides from the surfaces being joined

3.1.18
active desiccant
desiccant that is either fresh (new) or has been baked according to the manufacturer's recommendations to renew it to original specifications

3.1.19
active metal
metal that has a very high electromotive force

3.1.20
active trimming
adjusting the value of a film circuit element in order to obtain a specified functional output from the circuit while it is electrically activated

3.1.21
actual size
measured size

3.1.22
additive process
chemically deposited printed circuit
chemically deposited printed wiring
process for obtaining conductive patterns by the selective deposition of conductive material on unclad base material

Note 1 to entry: See also "semi-additive process" and "fully additive process."

[SOURCE: IEC 60050-541:1990, 541-04-03, modified – Two terms "chemically deposited printed circuit" and "chemically deposited printed wiring", as well as a note to entry, have been added.]

3.1.23
adhesion
<pressure-sensitive tape> bond produced by contact between pressure-sensitive adhesive and a surface

3.1.24
adhesion failure
rupture of an adhesive bond such that the separation appears to be at the adhesive-adherent interface

3.1.25
adhesion layer
metal layer that adheres a barrier metal to a metal land on the surface of an integrated circuit

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3.1.26
adhesion promotion
chemical process of preparing a surface to enhance its ability to be bonded to another surface or to accept an over-plate

3.1.27
adhesive coated substrate
base material upon which an adhesive coating is applied, for the purpose of retaining the conductive material (either additively applied or attached as foil for subtractive processing), that becomes part of a metal-clad dielectric

3.1.28
adhesive transfer
<pressure-sensitive tape> transfer of adhesive from its normal position on the pressure-sensitive tape to the surface to which the tape was attached, either during unwind or removal

3.1.29
adhesive-coated catalyzed laminate
base material with a thin polymer coating, which contains a plating catalyst, that is subsequently treated in order to obtain a microporous surface

3.1.30
adhesive-coated uncatalyzed laminate
base material with a thin polymer coating, which does not contain a plating catalyst, that is subsequently treated in order to obtain a micro-porous surface.

3.1.31
adsorbed contaminant
contaminant attracted to the surface of a material that is held captive in the form of a gas, vapour or condensate

3.1.32
advanced statistical method
statistical process analysis and control technique that is more sophisticated and less widely applicable than basic statistical methods

3.1.33
aging
ageing
change of a property (for example, solderability) with time

3.1.34
air pollution
air contamination
contamination of the atmosphere with substances that are toxic or otherwise harmful

3.1.35
algorithm
finite set of well-defined rules for the solution of a problem in a finite number of steps

[SOURCE: IEC 60050-171:2019, 171-05-07]

3.1.36
alignment mark
stylized pattern that is selectively positioned on a substrate material to assist in alignment

SEE: Figure 2

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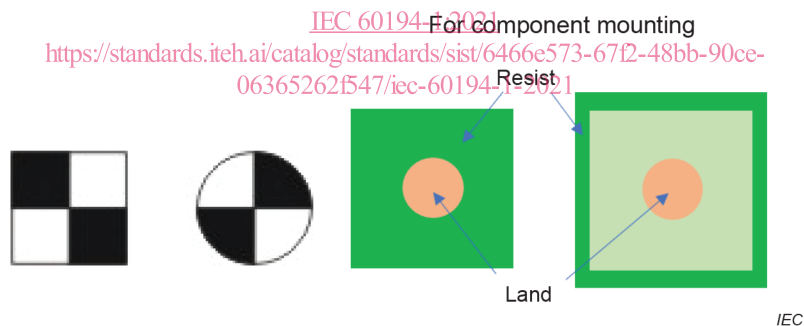

Figure 2 – Alignment mark

3.1.37
aliphatic solvents
"straight chain" solvents, derived from petroleum, of low solvent power

3.1.38
alkaline cleaner
material blended from alkali hydroxides and alkaline salts

3.1.39
alloy
Sn-Bi
<tin bismuth> alloy that is used as a lead-free solder and consisting of tin and bismuth as its main constituents

Note 1 to entry: Sn-Bi58 has a low melting point of 138 °C, but is not widely used because of its brittle properties.

3.1.40
alloy
Sn-Cu
<tin copper> alloy that is used as a lead-free solder consisting of tin and copper considered to be applicable for wave or reflow soldering

3.1.41
alloy
Sn-Ag
<tin silver> alloy that is used as a lead-free solder, consisting of tin and silver as its main constituents, and used as a high-temperature solder

3.1.42
alloy
Sn-Ag-Bi
<tin silver bismuth> alloy that is used as a lead-free solder and consisting of tin, silver and bismuth as its main constituents

Note 1 to entry: The Bi in Sn-Ag-Bi alloy reduces the melting temperature. The higher the Bi content, the higher the mechanical strength, but with poorer elongation capability. There is a limit to Bi content.

3.1.43
alloy
Sn-Ag-Cu
<tin silver copper> alloy that is used as a lead-free solder consisting of tin, silver and copper as its main constituents

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3.1.44
alloy
Sn-Zn
<tin zinc> alloy that is used as a lead-free solder and consisting of tin and zinc as its main constituents

Note 1 to entry: Zn09 alloy has the melting point of 199 °C, closest to the melting point of Sn-Pb alloy among lead-free solders, which allows soldering work at present soldering temperatures, but tends to form a stable oxide film, causing difficulty in securing a good solder wetting.

3.1.45
alpha error
producer's risk
size of a Type I error or the probability of rejecting a hypothesis that is true

3.1.46
alternative hypothesis
supposition that a significant difference exists between the desired results of two comparable populations

Note 1 to entry: See also "null hypothesis" and "statistical hypothesis."

3.1.47
alumina substrate
aluminium oxide used as a ceramic substrate material

3.1.48
amorphous polymer
polymer with a random and unstructured molecular configuration