

**Printed board assemblies - Part 1: Generic specification
- Requirements for soldered electrical and electronic
assemblies using surface mount and related assembly
technologies**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 61191-1:2013 sisaldab Euroopa standardi EN 61191-1:2013 ingliskeelset teksti.	This Estonian standard EVS-EN 61191-1:2013 consists of the English text of the European standard EN 61191-1:2013.
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English version

**Printed board assemblies -
Part 1: Generic specification -
Requirements for soldered electrical and electronic assemblies using
surface mount and related assembly technologies
(IEC 61191-1:2013)**

Ensembles de cartes imprimées -
Partie 1: Spécification générique -
Exigences relatives aux ensembles
électriques ou électroniques brasés
utilisant les techniques de montage en
surface et associées
(CEI 61191-1:2013)

Elektronikaufbauten auf Leiterplatten -
Teil 1: Fachgrundspezifikation -
Anforderungen an gelötete elektrische
und elektronische Baugruppen unter
Verwendung der Oberflächenmontage
und verwandter Montagetechniken
(IEC 61191-1:2013)

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

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Foreword

The text of document 91/1089A/FDIS, future edition 2 of IEC 61191-1, prepared by IEC/TC 91 "Electronics assembly technology" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61191-1:2013.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2014-03-25
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2016-06-25

This document supersedes EN 61191-1:1998.

EN 61191-1:2013 includes the following significant technical changes with respect to EN 61191-1:1998:

- reference standard EN 61192-1 has been replaced by IPC-A-610;
- some of the terminology has been updated;
- references to EN standards have been corrected;
- the use of lead-free alloys in the assembly have been added.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 61191-1:2013 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60068-2-20:2008	NOTE	Harmonised as EN 60068-2-20:2008 (not modified).
IEC 60068-2-58:2004	NOTE	Harmonised as EN 60068-2-58:2004 (not modified).
IEC 61188-5-1:2002	NOTE	Harmonised as EN 61188-5-1:2002 (not modified).
IEC 61188-5-2:2003	NOTE	Harmonised as EN 61188-5-2:2003 (not modified).
IEC 61188-5-3:2007	NOTE	Harmonised as EN 61188-5-3:2007 (not modified).
IEC 61188-5-4:2007	NOTE	Harmonised as EN 61188-5-4:2007 (not modified).
IEC 61188-5-5:2007	NOTE	Harmonised as EN 61188-5-5:2007 (not modified).
IEC 61188-5-6:2003	NOTE	Harmonised as EN 61188-5-6:2003 (not modified).
IEC 61188-7:2009	NOTE	Harmonised as EN 61188-7:2009 (not modified).
IEC 61189-2:2006	NOTE	Harmonised as EN 61189-2:2006 (not modified).
IEC 61190-1-2:2007	NOTE	Harmonised as EN 61190-1-2:2007 (not modified).
IEC 61193-1:2001	NOTE	Harmonised as EN 61193-1:2002 (not modified).
IEC 61193-3	NOTE	Harmonised as EN 61193-3.
IEC 62326-1:2002	NOTE	Harmonised as EN 62326-1:2002 (not modified).
IEC 62326-4:1996	NOTE	Harmonised as EN 62326-4:1997 (not modified).
IEC 62326-4-1:1996	NOTE	Harmonised as EN 62326-4-1:1997 (not modified).
ISO 9001:2008	NOTE	Harmonised as EN ISO 9001:2008 (not modified).

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60194	-	Printed board design, manufacture and assembly - Terms and definitions	EN 60194	-
IEC 60721-3-1	-	Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities - Section 1: Storage	EN 60721-3-1	-
IEC 61188-1-1	-	Printed boards and printed board assemblies - Design and use - Part 1-1: Generic requirements - Flatness considerations for electronic assemblies	EN 61188-1-1	-
IEC 61189-1	-	Test methods for electrical materials, interconnection structures and assemblies - Part 1: General test methods and methodology	EN 61189-1	-
IEC 61189-3	-	Test methods for electrical materials, printed boards and other interconnection structures and assemblies - Part 3: Test methods for interconnection structures (printed boards)	EN 61189-3	-
IEC 61190-1-1	-	Attachment materials for electronic assembly - Part 1-1: Requirements for soldering fluxes for high-quality interconnections in electronics assembly	EN 61190-1-1	-
IEC 61190-1-2	-	Attachment materials for electronic assembly - Part 1-2: Requirements for soldering pastes for high-quality interconnects in electronics assembly	EN 61190-1-2	-
IEC 61190-1-3	-	Attachment materials for electronic assembly - Part 1-3: Requirements for electronic grade solder alloys and fluxed and non-fluxed solid solders for electronic soldering applications	EN 61190-1-3	-
IEC 61191-2	-	Printed board assemblies - Part 2: Sectional specification - Requirements for surface mount soldered assemblies	EN 61191-2	-

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61191-3	-	Printed board assemblies - Part 3: Sectional specification - Requirements for through-hole mount soldered assemblies	EN 61191-3	-
IEC 61191-4	-	Printed board assemblies - Part 4: Sectional specification - Requirements for terminal soldered assemblies	EN 61191-4	-
IEC 61249-8-8	-	Materials for interconnection structures - Part 8: Sectional specification set for non- conductive films and coatings - Section 8: Temporary polymer coatings	EN 61249-8-8	-
IEC 61340-5-1	-	Electrostatics - Part 5-1: Protection of electronic devices from electrostatic phenomena - General requirements	EN 61340-5-1	-
IEC/TR 61340-5-2	-	Electrostatics - Part 5-2: Protection of electronic devices from electrostatic phenomena - User guide	CLC/TR 61340-5-2	-
IEC 61760-2	-	Surface mounting technology - Part 2: Transportation and storage conditions of surface mounting devices (SMD) - Application guide	EN 61760-2	-
IPC-A-610E	2010	Acceptability of Electronic Assemblies	-	-

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PRINTED BOARD ASSEMBLIES –

Part 1: Generic specification – Requirements for soldered electrical and electronic assemblies using surface mount and related assembly technologies

1 Scope

This part of IEC 61191 prescribes requirements for materials, methods and verification criteria for producing quality soldered interconnections and assemblies using surface mount and related assembly technologies. This part of IEC 61191 also includes recommendations for good manufacturing processes.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60194, *Printed board design, manufacture and assembly – Terms and definitions*

IEC 60721-3-1, *Classification of environmental conditions – Part 3: Classification of groups of environmental parameters and their severities – Section 1: Storage*

IEC 61188-1-1, *Printed boards and printed board assemblies – Design and use – Part 1-1: Generic requirements – Flatness considerations for electronic assemblies*

IEC 61189-1, *Test methods for electrical materials, interconnection structures and assemblies – Part 1: General test methods and methodology*

IEC 61189-3, *Test methods for electrical materials, printed boards and other interconnection structures and assemblies – Part 3: Test methods for interconnection structures (printed boards)*

IEC 61190-1-1, *Attachment materials for electronic assembly – Part 1-1: Requirements for soldering fluxes for high-quality interconnections in electronics assembly*

IEC 61190-1-2, *Attachment materials for electronic assembly – Part 1-2: Requirements for soldering pastes for high-quality interconnects in electronics assembly*

IEC 61190-1-3, *Attachment materials for electronic assembly – Part 1-3: Requirements for electronic grade solder alloys and fluxed and non-fluxed solid solders for electronic soldering applications*

IEC 61191-2, *Printed board assemblies – Part 2: Sectional specification – Requirements for surface mount soldered assemblies*

IEC 61191-3, *Printed board assemblies – Part 3: Sectional specification – Requirements for through-hole mount soldered assemblies*

IEC 61191-4, *Printed board assemblies – Part 4: Sectional specification – Requirements for terminal soldered assemblies*

IEC 61249-8-8, *Materials for interconnection structures – Part 8: Sectional specification set for non-conductive films and coatings – Section 8: Temporary polymer coatings*

IEC 61340-5-1, *Electrostatics – Part 5-1: Protection of electronic devices from electrostatic phenomena – General requirements*

IEC/TR 61340-5-2, *Electrostatics – Part 5-2: Protection of electronic devices from electrostatic phenomena – User guide*

IEC 61760-2, *Surface mounting technology – Part 2: Transportation and storage conditions of surface mounting devices (SMD) – Application guide*

IPC-A-610E:2010, *Acceptability of Electronic Assemblies*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60194 as well as the following apply.

3.1

bow

deviation from flatness of a board characterized by a roughly cylindrical or spherical curvature so that, if the product is rectangular, its four corners are in the same plane

3.2

manufacturer assembler

individual or company responsible for the procurement of materials and components, as well as all assembly process and verification operations necessary to ensure full compliance of assemblies with this standard

3.3

objective evidence

documentation, agreed to between user and manufacturer

Note 1 to entry: The documentation can be in the form of a hard copy, computer data, computer algorithms, video or other media.

3.4

process indicator

detectable anomaly, other than a defect, that is reflective of material, equipment, personnel, process and/or workmanship variation

3.5

proficiency

capability to perform tasks in accordance with the requirements and verification procedures detailed in this standard

3.6

shadowing

phenomenon where parts create a shadow of leads, lands, or other parts, which obstruct heating at reflow soldering or spreading solder at flow soldering

3.7

supplier

individual or company responsible for assuring, to the manufacturer (assembler), full compliance of components and base materials with the requirements and verification procedures of this standard