BS EN 61190-1-2:2014

BSI Standards Publication

Attachment materials for electronic assembly

Part 1-2: Requirements for soldering pastes for high-quality interconnects in electronics assembly

bsi.

...making excellence a habit.™

Document Sharing Hub

National foreword

This British Standard is the UK implementation of EN 61190-1-2:2014. It is identical to IEC 61190-1-2:2014. It supersedes BS EN 61190-1-2:2007 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee EPL/501, Electronic assembly technology & Printed Electronics.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2014.
Published by BSI Standards Limited 2014

ISBN 978 0 580 77840 7
ICS 31.190

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 June 2014.

Amendments/corrigenda issued since publication

Amd. No.	Date	Text affected

Documents
Document Sharing Hub

Full document details: BS EN 61190-1-2:2014

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61190-1-2

May 2014

ICS 31.190

Supersedes EN 61190-1-2:2007

English Version

Attachment materials for electronic assembly - Part 1-2: Requirements for soldering pastes for high-quality interconnects in electronics assembly (IEC 61190-1-2:2014)

Matériaux de fixation pour les assemblages électroniques - Partie 1-2: Exigences relatives aux pâtes à braser pour les interconnexions de haute qualité dans les assemblages de composants électroniques (CEI 61190-1-2:2014)

Verbindungsmaterialien für Baugruppen der Elektronik - Teil 1-2: Anforderungen an Lotpaste für hochwertige Verbindungen in der Elektronikmontage (IEC 61190-1-2:2014)

This European Standard was approved by CENELEC on 2014-03-26. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

© 2014 CENELEC All rights of exploitation in any form and by any means reserved worldwide for CENELEC Members.

Ref. No. EN 61190-1-2:2014 E

AVA Documents Document Sharing Hub

Full document details: BS EN 61190-1-2:2014

Foreword

The text of document 91/1154A/FDIS, future edition 3 of IEC 61190-1-2, prepared by IEC/TC 91 "Electronics assembly technology " was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61190-1-2:2014.

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) 2014-12-26
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2017-03-26

This document supersedes EN 61190-1-2:2007.

EN 61190-1-2:2014 includes the following significant technical changes with respect to EN 61190-1-2:2007:

a) modification of the solder powder size in Table 2;

b) addition of the information of “Reflow condition and profile” in Annex B;

c) addition of a new Annex C.

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 61190-1-2:2014 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 61189-5:2006	NOTE	Harmonised as EN 61189-5:2006 (not modified).
IEC 61189-6:2006	NOTE	Harmonised as EN 61189-6:2006 (not modified).

Documents
Document Sharing Hub
Full document details: BS EN 61190-1-2:2014

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.

Publication	Year	Title	EN/HD	Year
IEC 60194	-	Printed board design, manufacture and assembly - Terms and definitions	EN 60194	-
IEC 61189-5-3	-	Test methods for electrical materials, interconnection structures and assemblies - Part 5-3: Test methods for printed board assemblies: Soldering paste	EN 61189-5-3	-
IEC 61190-1-1	-	Attachment materials for electronic assemblies - Part 1-1: Requirements for soldering fluxes	-	-
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	-
ISO 9454-2	-	Soft soldering fluxes - Classification and requirements - Part 2: Performance requirements	EN ISO 9454-2	-

Documents
Document Sharing Hub
Full document details: BS EN 61190-1-2:2014

CONTENTS

INTRODUCTION 6
1 Scope 7
2 Normative references 7
3 Terms and definitions 7
4 Standardized description for products 8
5 Test methods 8
6 Requirements 9
6.1 General 9
6.2 Conflict 9
6.3 Alloy composition 9
6.4 Flux characterization and inspection 9
6.4.1 General 9
6.4.2 Shelf life 10
6.5 Solder powder particle size 10
6.5.1 Powder size determination 10
6.5.2 Powder size 10
6.5.3 Solder powder particle shape 11
6.6 Metal per cent 11
6.7 Viscosity 11
6.7.1 General 11
6.7.2 Methods of determining viscosity 11
6.8 Slump and smear test 12
6.8.1 General 12
6.8.2 Test with 0,2 mm thick stencil 12
6.8.3 Test with 0,1 mm thick stencil 12
6.9 Solder ball test 13
6.9.1 General 13
6.9.2 Type 1-4 powder 13
6.9.3 Type 5-7 powder 13
6.10 Tack test 14
6.11 Wetting 14
6.12 Labelling 14
7 Quality assurance provisions 15
7.1 Responsibility for inspection 15
7.1.1 General 15
7.1.2 Responsibility for compliance 16
7.1.3 Test equipment and inspection facilities 16
7.1.4 Inspection conditions 16
7.2 Classification for inspections 16
7.3 Inspection report form 16
7.4 Qualification inspection 16
7.4.1 General 16
7.4.2 Sample size 17
7.4.3 Inspection routine 17
7.5 Quality conformance 17

AVA Documents
Document Sharing Hub
Full document details: BS EN 61190-1-2:2014

7.5.1 General ... 17
7.5.2 Sampling plan ... 17
7.5.3 Rejected lots ... 17
8 Preparation for delivery ... 17
9 Additional information – Performance and shelf life extension inspections ... 18
Annex A (normative) Test report on solder paste ... 19
Annex B (informative) Reflow condition and profile ... 20
Annex C (informative) Typical comparison of particle size distributions between laser diffraction method and screen method ... 21
Bibliography ... 22

Figure 1 – Slump test stencil thickness, 0,20 mm ... 12
Figure 2 – Slump test stencil thickness, 0,10 mm ... 13
Figure 3 – Solder ball test standards ... 15
Figure C.1 – Typical comparison between laser diffraction and sieving ... 21

Table 1 – Standardized solder paste description ... 8
Table 2 – Standard solder powders ... 10
Table 3 – Test methods for particle size distribution ... 11
Table 4 – Solder paste qualification inspection ... 17
Table 5 – User inspection for solder paste prior to use ... 18
Table A.1 – Solder paste inspection report form ... 19

Documents
Document Sharing Hub
Full document details: BS EN 61190-1-2:2014

INTRODUCTION

This part of IEC 61190 defines the characteristics of solder paste through the definitions of properties and specification of test methods and inspection criteria. Materials include solder powder and solder paste flux blended to produce solder paste. Solder powders are classified according to both shape and size distribution of the particles. It is not the intention of this standard to exclude those particle sizes or distributions not specifically listed. For flux properties of solder paste, including classification and testing, see IEC 61190-1-1.

The requirements for solder paste are defined in general terms. In practice, where more stringent requirements are necessary, additional requirements may be defined by mutual agreement between the user and supplier. Users are cautioned to perform tests (beyond the scope of this specification) to determine the acceptability of the solder paste for specific processes.

This standard is intended to be applicable to all types of solder paste used for soldering in general, as well as for soldering in electronics assembly. The solder pastes involved relate to all aspects of application. Generic specifications for soldering pastes are given in ISO 9454-2.

Documents
Document Sharing Hub
Full document details: BS EN 61190-1-2:2014