



IEC 61760-4

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INTERNATIONAL STANDARD

**Surface mounting technology -
Part 4: Classification, packaging, labelling and handling of moisture sensitive
devices**

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CONTENTS

FOREWORD	3
INTRODUCTION	5
1 Scope	6
2 Normative references	6
3 Terms and definitions	6
4 General information	8
4.1 Moisture sensitive devices	8
4.2 Moisture sensitivity level (MSL).....	8
4.3 Relation to other environmental test methods (humidity tests).....	8
5 Assessment of moisture sensitivity	9
5.1 Identification of non-moisture sensitive devices	9
5.2 Classification	9
6 Test procedure	10
6.1 General.....	10
6.1.1 Structurally similar components	10
6.1.2 Verification and validation tests	10
6.1.3 Selection of applicable soak conditions and temperature profile	10
6.2 Drying	10
6.3 Moisture soak	10
6.4 Temperature load.....	11
6.4.1 Classification temperature profile.....	11
6.4.2 Classification temperature profile for special devices.....	12
6.4.3 Reflow	12
6.5 Recovery	13
6.6 Final measurements.....	13
6.6.1 Requirements	13
6.6.2 Visual inspection	13
6.6.3 Electrical measurements.....	14
6.6.4 Non-destructive inspection (if required)	14
6.7 Classification	14
6.8 Information to be given in the relevant specification	14
7 Requirements to packaging and labelling.....	14
7.1 Packaging process.....	14
7.1.1 Drying of MSDs and carrier materials before being sealed in MBBs	14
7.1.2 Evacuation and sealing.....	15
7.2 Packaging material for dry pack	15
7.2.1 Moisture barrier bag (MBB).....	15
7.2.2 Desiccant	16
7.2.3 Humidity indicator.....	18
7.3 Information to be given on labels	18
8 Handling of moisture sensitive devices	19
8.1 Storage.....	19
8.1.1 Recommended storage conditions	19
8.1.2 Shelf life	19
8.1.3 Floor life	20
8.2 ESD	20

8.3	Humidity indication.....	20
8.3.1	Humidity indicator card (HIC).....	20
8.3.2	Moisture indicating desiccant.....	21
8.4	Unpacking and re-packing.....	21
9	Drying	21
9.1	Drying options.....	21
9.2	Methods.....	22
9.2.1	General considerations for baking	22
9.2.2	Bakeout times.....	23
9.2.3	ESD protection	23
9.2.4	Reuse of carriers	23
9.2.5	Solderability limitations.....	23
Annex A (informative)	Moisture sensitivity of assemblies	24
Annex B (informative)	Mass/gain loss analysis.....	25
Annex C (informative)	Baking of devices.....	26
C.1	Baking time and conditions	26
C.2	Example of a baking process	26
Annex D (normative)	Moisture sensitivity labels	27
D.1	Object.....	27
D.2	Graphical symbols and labels	27
D.2.1	Graphical symbols for moisture sensitivity	27
D.2.2	Moisture sensitivity identification label (MSID)	28
D.2.3	Moisture sensitivity caution label (MSCL)	28
Bibliography	30
Figure 1	– Classification temperature profile	11
Figure 2	– Examples of humidity indicator cards	18
Figure C.1	– Baking process.....	26
Figure D.1	– Standardized graphical symbol for Moisture sensitive devices (IEC 60417-6093:2011-10), for use on equipment.....	27
Figure D.2	– Example of a moisture sensitivity symbol used on components and packaging labels (as seen in JEDEC JEP113 [15]).....	28
Figure D.3	– MSID labels (examples).....	28
Table 1	– Moisture sensitivity levels.....	9
Table 2	– Moisture soak conditions	10
Table 3	– Parameters of the classification temperature profile	12
Table 4	– Classification temperatures T_C	12
Table 5	– MBB material properties	16
Table 6	– Conditions for re-bake – Example for one type of plastic encapsulated devices	21
Table 7	– Conditions for baking prior to dry pack – Example for one type of plastic encapsulated devices	22

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**Surface mounting technology -
Part 4: Classification, packaging, labelling and handling of moisture
sensitive devices**

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IEC 61760-4 has been prepared by IEC technical committee 91: Electronics assembly technology. It is an International Standard.

This second edition cancels and replaces the first edition published in 2015 and Amendment 1:2018. This edition constitutes a technical revision.

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

- a) The content is updated to cover the classification conditions given in the new editions of J-STD-020F and IEC 60068-2-58.

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

FDIS	Report on voting
91/2101/FDIS	91/2111/RVD

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/publications.

A list of all parts in the IEC 61760, published under the general title *Surface mounting technology*, 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 webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
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- revised.

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INTRODUCTION

Due to the higher temperature profiles of reflow soldering processes using tin-silver-copper alloys or other lead-free solder alloys with higher melting temperatures than Sn-Pb eutectic solder, the sensitivity of components against soldering heat, when being exposed to moisture before soldering, becomes an increasingly important factor.

The currently existing standards describing the moisture sensitivity classification of devices are applicable for plastic encapsulated semiconductors and similar solid state packages (e.g. [IEC 60749-20 \[1\]](#)), but not for other types of components.

This part of IEC 61760 also extends the classification and packaging methods as described in [J-STD-020F \[2\]](#) and [J-STD-033 \[3\]](#). It is intended to be used for such type of components, where [J-STD-020F \[2\]](#) and [J-STD-033 \[3\]](#) are not required or not appropriate.

It is important to note that [moisture sensitivity levels](#) existing in both [J-STD-020F \[2\]](#) and this document are equivalent.

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1 Scope

This part of IEC 61760 specifies the classification of **moisture sensitive device** into **moisture sensitivity level** related to soldering heat, and provisions for packaging, labelling and handling.

It extends the classification and packaging methods to such components, where currently existing standards are not required or not appropriate. For such cases, this document introduces additional moisture sensitivity levels and an alternative method for packaging.

This document applies to devices intended for reflow soldering, like surface mount devices, including specific through-hole devices (where the device supplier has specifically documented support for reflow soldering), but not to

- semiconductor devices,
- devices for flow (wave) soldering.

NOTE Background of this document and its relation to currently existing standards, e.g. IEC 60749-20 [1] or J-STD-020F [2] and J-STD-033 [3], are described in the [Introduction](#).

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 60068-1:2013, *Environmental testing - Part 1: General and guidance*

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

moisture sensitive device

MSD

device where during soldering the evaporation of absorbed moisture is likely to deteriorate its electrical or mechanical performance compared to what is given in the relevant specification

Note 1 to entry: This note applies to the French language only.

3.2

moisture sensitivity level

MSL

rating indicating a device's susceptibility to damage due to absorbed moisture when subjected to reflow soldering

Note 1 to entry: This note applies to the French language only.

**3.3
moisture barrier bag**

MBB

bag designed to restrict the transmission of water vapour and used to pack [moisture sensitive devices \(3.1\)](#)

Note 1 to entry: This note applies to the French language only.

**3.4
manufacturer's exposure time**

MET

maximum time after baking that the component manufacturer requires to process components prior to sealing of the bag

Note 1 to entry: The manufacturer's exposure time also includes the maximum time allowed at the distributor in order to keep the bag open to split up its content into smaller shipments.

Note 2 to entry: This note applies to the French language only.

**3.5
floor life**

allowable time for a device or semi-finished assembly to be exposed to normal room environment humidity and temperature after removal from a [moisture barrier bag \(3.3\)](#) or storage chamber and before a solder reflow process

**3.6
shelf life**

recommendation of time that products can be stored in the original packaging, during which the defined quality of the goods remains acceptable under specified conditions of transportation, storage and handling

**3.7
active desiccant**

absorbent material used to maintain a low relative humidity

**3.8
moisture indicating desiccant**

desiccant whose colour (hue) changes perceptibly, when a certain relative humidity is exceeded

Note 1 to entry: Typically a colour change due to a moisture indicating desiccant is from blue to pink, when the change from dry state to wet state is detected.

**3.9
humidity indicator card**

HIC

card on which a moisture sensitive chemical is printed such that it changes colour from dry to wet when the indicated relative humidity is exceeded

Note 1 to entry: This note applies to the French language only.

**3.10
water vapour transmission rate**

WVTR

measure of the permeability of a plastic film material to moisture, used to specify a [moisture barrier bag \(3.3\)](#) for dry packing

Note 1 to entry: This note applies to the French language only.