

**Single crystal wafers for surface acoustic wave (SAW)  
devices applications - Specifications and measuring  
method (IEC 62276:2012)**

## EESTI STANDARDI EESSÕNA

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English version

**Single crystal wafers  
for surface acoustic wave (SAW) device applications -  
Specifications and measuring methods  
(IEC 62276:2012)**

Tranches monocristallines pour  
applications utilisant des dispositifs à  
ondes acoustiques de surface (OAS) -  
Spécifications et méthodes de mesure  
(CEI 62276:2012)

Einkristall-Wafer für Oberflächenwellen-  
(OFW-)Bauelemente -  
Festlegungen und Messverfahren  
(IEC 62276:2012)

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European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
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**Management Centre: Avenue Marnix 17, B - 1000 Brussels**

## Foreword

The text of document 49/1005/FDIS, future edition 2 of IEC 62276, prepared by IEC TC 49, "Piezoelectric, dielectric and electrostatic devices and associated materials for frequency control, selection and detection", was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62276:2013.

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) 2013-08-23
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2015-11-23

This document supersedes EN 62276:2005.

EN 62276:2013 includes the following significant technical changes with respect to EN 62276:2005:

- terms and definitions are rearranged in accordance with the alphabetical order;
- “reduced LN” is appended to terms and definitions;
- “reduced LT” is appended to terms and definitions;
- reduction process is appended to terms and definitions.

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The text of the International Standard IEC 62276:2012 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 60862-1	NOTE	Harmonized as EN 60862-1.
IEC 60862-2	NOTE	Harmonized as EN 60862-2.
IEC 60862-3	NOTE	Harmonized as EN 60862-3.
IEC 61019-1	NOTE	Harmonized as EN 61019-1.
IEC 61019-2	NOTE	Harmonized as EN 61019-2.
ISO 4287	NOTE	Harmonized as EN ISO 4287.

## **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 60410	1973	Sampling plans and procedures for inspection - by attributes		-
IEC 60758	2008	Synthetic quartz crystal - Specifications and guidelines for use	EN 60758	2009

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## INTRODUCTION

A variety of piezoelectric materials are used for surface acoustic wave (SAW) filter and resonator applications. Prior to the 1996 Rotterdam IEC TC 49 meeting, wafer specifications were typically negotiated between users and suppliers. During the meeting, a proposal was announced to address wafer standardization. This standard has been prepared in order to provide industry standard technical specifications for manufacturing piezoelectric single crystal wafers to be used in surface acoustic wave devices.

# SINGLE CRYSTAL WAFERS FOR SURFACE ACOUSTIC WAVE (SAW) DEVICE APPLICATIONS – SPECIFICATIONS AND MEASURING METHODS

## 1 Scope

This International Standard applies to the manufacture of synthetic quartz, lithium niobate (LN), lithium tantalate (LT), lithium tetraborate (LBO), and lanthanum gallium silicate (LGS) single crystal wafers intended for use as substrates in the manufacture of surface acoustic wave (SAW) filters and resonators.

## 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 60410:1973, *Sampling plans and procedures for inspection by attributes*

IEC 60758:2008, *Synthetic quartz crystal – Specifications and guide for use*

## 3 Terms and definitions

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

### 3.1 Single crystals for SAW wafer

#### 3.1.1

##### **as-grown synthetic quartz crystal**

right-handed or left-handed single crystal quartz is grown hydrothermally

Note 1 to entry: The term “as-grown” indicates a state prior to mechanical fabrication.

Note 2 to entry: See IEC 60758 for further information concerning crystalline quartz.

#### 3.1.2

##### **lithium niobate**

##### **LN**

single crystals approximately described by chemical formula  $\text{LiNbO}_3$ , grown by Czochralski (crystal pulling from melt) or other growing methods

#### 3.1.3

##### **lithium tantalate**

##### **LT**

single crystals approximately described by chemical formula  $\text{LiTaO}_3$ , grown by Czochralski (crystal pulling from melt) or other growing methods

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