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**Enokristalne rezine za površinske zvočnovalovne naprave (SAW) -  
Specifikacije in merilne metode (IEC 62276:2005)**

**(istoveten EN 62276:2005)**

Single crystal wafers for surface acoustic wave (SAW) device applications -  
Specifications and measuring methods (IEC 62276:2005)

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EUROPEAN STANDARD

**EN 62276**

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2005

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English version

**Single crystal wafers  
for surface acoustic wave (SAW) device applications -  
Specifications and measuring methods  
(IEC 62276:2005)**

Tranches monocristallines pour  
applications utilisant des dispositifs  
à ondes acoustiques de surface -  
Spécifications et méthodes de mesure  
(CEI 62276:2005)

Einkristall-Wafer für Oberflächenwellen-  
(OFW-)Bauelemente -  
Festlegungen und Messverfahren  
(IEC 62276:2005)

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Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**Central Secretariat: rue de Stassart 35, B - 1050 Brussels**

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## Foreword

The text of document 49/720/FDIS, future edition 1 of IEC 62276, prepared by IEC TC 49, Piezoelectric and dielectric devices for frequency control and selection, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 62276 on 2005-11-01.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2006-08-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2008-11-01

Annex ZA has been added by CENELEC.

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## Endorsement notice

The text of the International Standard IEC 62276:2005 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:

<u>SIST EN 62276:2007</u>		
IEC 60862-1	NOTE	Harmonized as EN 60862-1:2003 (not modified).
IEC 60862-2	NOTE	Harmonized as EN 60862-2:2002 (not modified).
IEC 60862-3	NOTE	Harmonized as EN 60862-3:2003 (not modified).
IEC 61019-1	NOTE	Harmonized as EN 61019-1:2005 (not modified).
IEC 61019-2	NOTE	Harmonized as EN 61019-2:2005 (not modified).

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## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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.

NOTE Where 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 60758	- <sup>1)</sup>	Synthetic quartz crystal - Specifications and guide to the use	EN 60758	2005 <sup>2)</sup>
IEC 60410	- <sup>1)</sup>	Sampling plans and procedures for inspection by attributes	-	-
ISO 4287	- <sup>1)</sup>	Geometrical Product Specifications (GPS) - Surface texture: Profile method - Terms, definitions and surface texture parameters	EN ISO 4287	1998 <sup>2)</sup>

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<sup>1)</sup> Undated reference.

<sup>2)</sup> Valid edition at date of issue.

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# INTERNATIONAL STANDARD

# IEC 62276

First edition  
2005-05

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## Single crystal wafers for surface acoustic wave (SAW) device applications – Specifications and measuring methods

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 62276 has been prepared by IEC technical committee 49: Piezoelectric and dielectric devices for frequency control and selection.

This standard cancels and replaces IEC/PAS 62276 published in 2001. This first edition constitutes a technical revision.

The text of this standard is based on the following documents:

FDIS	Report on voting
49/720/FDIS	49/724/RVD

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

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

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

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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 document 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.

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# 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 referenced documents are indispensable for the application 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 60758, *Synthetic quartz crystal – Specifications and guide to the use*

IEC 60410, *Sampling plans and procedures inspection by attributes*

ISO 4287, *Geometrical Product Specifications (GPS) – Surface texture: Profile method – Terms, definitions and surface texture parameters*

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## 3 Terms and definitions

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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. The term “as-grown” indicates a state prior to mechanical fabrication

NOTE 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