



**International  
Standard**

**ISO 17514**

**Time-measuring instruments —  
Photoluminescent deposits — Test  
methods and requirements**

*Instruments de mesure du temps — Dépôts photoluminescents —  
Méthodes d'essais et exigences*

**Second edition  
2024-03**

This document is a preview generated by ISO



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2024

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

Published in Switzerland

# Contents

Page

<b>Foreword</b>	<b>iv</b>
<b>Introduction</b>	<b>v</b>
<b>1 Scope</b>	<b>1</b>
<b>2 Normative references</b>	<b>1</b>
<b>3 Terms and definitions</b>	<b>1</b>
<b>4 Test methods and requirements</b>	<b>2</b>
4.1 Tests on sample	2
4.1.1 General	2
4.1.2 Test sample	2
4.1.3 Colours	2
4.1.4 Luminous intensity	2
4.1.5 Ageing resistance	3
4.1.6 High/low temperature resistance	4
4.2 Tests on complete time-measuring instruments and on components	5
4.2.1 Visibility	5
4.2.2 Legibility	5
4.2.3 Adhesion	6
<b>Annex A (informative) Conditions for the visual examination</b>	<b>7</b>
<b>Annex B (normative) Adhesion</b>	<b>8</b>
<b>Annex C (informative) Visibility and legibility limits</b>	<b>9</b>
<b>Bibliography</b>	<b>10</b>

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at [www.iso.org/patents](http://www.iso.org/patents). ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 114, *Horology*, Subcommittee SC 5, *Luminescence*.

This second edition cancels and replaces the first edition (ISO 17514:2004), which has been technically revised.

The main changes are as follows:

- precisions have been added in the different test methods;
- the method of the ageing resistance test has been changed;
- in [4.2](#), tests on components and on time-measuring instruments has been separated;
- adhesion tests (refers to ISO 3157 in ISO 17514:2004) have been added in this document.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## Introduction

Luminescent deposits on watch components (hands, dial, bezel) give the possibility to read the time in the dark. Radioluminescent deposits were common in the past but are not used anymore except for certain products under certain conditions which may be the subject of national regulations. Nowadays, photoluminescent products are mainly used. Their properties have been considerably improved these last years.

The present document describes test methods performed only on photoluminescent deposits, including some which were described in ISO 3157 and ISO 4168 concerning radioluminescent deposits, these standards having been withdrawn.



# Time-measuring instruments — Photoluminescent deposits — Test methods and requirements

## 1 Scope

This document specifies the test methods of various aspects of the photoluminescent deposits applied to time-measuring instruments, together with the requirements related to them.

## 2 Normative references

There are no normative references in this document.

## 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:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

### 3.1

#### **photoluminescent deposit**

composite material made of photoluminescent pigment and binding, which can accumulate luminous energy and release it as visible light, and destined to be applied on a support

### 3.2

#### **luminous intensity**

light intensity for a remote observer

Note 1 to entry: This is expressed as nanocandelas (ncd), millicandelas (mcd) are also accepted.

Note 2 to entry: The definition given differs from the definition given in ISO 80000-7 and is used only within the scope of this document.

### 3.3

#### **luminance**

ratio of the light intensity to the surface unit of emission for a remote observer

Note 1 to entry: This is expressed as nanocandelas per square centimetre (ncd/cm<sup>2</sup>), millicandelas per square metre (mcd/m<sup>2</sup>) are also accepted.

Note 2 to entry: The definition given differs from the definition given in ISO 80000-7 and is used only within the scope of this document.

### 3.4

#### **legibility**

ability to the time-measuring instrument with luminescent items (hands, dial...) to be read distinctly

### 3.5

#### **legibility limit**

minimum *luminous intensity* (3.2) with which indications from the time-measuring instrument can be read distinctly