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Radioluminescence for time measurement instruments — Specifications

Radioluminescence pour les instruments horaires — Spécifications



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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 3157 was prepared by Technical Committee ISO/TC 114, *Horology*, Sub-Committee SC 5, *Luminescence*.

This second edition cancels and replaces the first edition (ISO 3157:1975), which has been technically revised.

Annex A of this International Standard is for information only.

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Radioluminescence for time measurement instruments — Specifications

1 Scope

This International Standard specifies requirements for the optical, mechanical and radioactive characteristics of the radioluminescent deposits fixed on time measurement instruments, together with the test methods relating to them.

Clause 3 applies to all time measurement instruments which include components (hands, dials, bezels, etc.) bearing radioluminescent deposits.

Clause 4 applies to the deposits themselves, whether they are fixed on the time measurement instruments in question, or on special supports.

2 Definitions

For the purposes of this International Standard, the following definitions apply.

2.1 radioluminescence: Luminescence caused by the radiation of a radionuclide within certain crystalline powders (ZnS, Zn₂SiO₄, etc.).

2.2 radioluminescent deposit: A radioluminescent substance in powder form mixed with a binder and fixed on a support.

2.3 special time measurement instruments: Instruments designed for uses which require considerable luminosity. Because of this, the quantity of radioactive substance used is greater.

NOTE 1 In this International Standard, the terms in italics have the same meaning as in current international documents. It is specified that the *luminous intensities* are, until further notice, defined on the basis of $V(\lambda)$, the photopic luminous efficiency function defining the mean eye for photometry. Certain terms must, however, be specially defined.

3 Specifications and test methods for time measurement instruments

3.1 General

This clause gives specifications for time measurement instruments bearing radioluminescent deposits, as well as the test methods which shall be used.

3.2 Legibility

3.2.1 For watches using radioluminescent substances, the following quality criteria apply.

- a) At least four hour markings shall be used. It is permissible to use only three, however, when the instrument includes an aperture.
- b) The 12 shall be differentiated from the other markings.
- c) The hour-hand shall be differentiated from the minute-hand.
- d) If only four markings are used, the total *luminous intensity*, i.e. that of the whole (hands + markings) shall be at least 25 ncd. However, in the case of three markings, permitted above, this lower limit is reduced to 22 ncd.
- e) If more than four markings are used, the above threshold is increased by 3 ncd per additional marking.
- f) The pair of hands, taken in isolation, shall have a *luminous intensity* of 10 ncd or more.

3.2.2 For time measurement instruments not worn on the person, the minimum values of the *luminous intensities* above are doubled; points a), b) and c) of 3.2.1 also remain valid.