

INTERNATIONAL STANDARD

ISO
5799

Second edition
1991-08-01

Photography — Direct-exposing medical and dental radiographic film/process systems — Determination of ISO speed and ISO average gradient

Sample Document

*Photographie — Ensembles film/traitement destinés à la radiographie
médicale sans écran et à la radiographie dentaire — Détermination de
la sensibilité ISO et du contraste moyen ISO*

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Reference number
ISO 5799:1991(E)

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.

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 5799 was prepared by Technical Committee ISO/TC 42, *Photography*.

This second edition cancels and replaces the first edition (ISO 5799:1981), which has been technically revised.

Annexes A, B, C and D of this International Standard are for information only.

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Introduction

This revision of ISO 5799 has been primarily necessitated by the decision to adopt the recommendation of the International Commission of Radiation Units and Measurements to use the gray as a measure of X and γ radiation in place of coulombs per kilogram of air. This has required changing the speed constant. The International Standard now includes updated references, and speed and average gradient tables compatible with the format of other radiographic film standards.

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Photography — Direct-exposing medical and dental radiographic film/process systems — Determination of ISO speed and ISO average gradient

1 Scope

This International Standard specifies methods for determining the ISO speed and ISO average gradient of the film/process combinations used in medical and dental radiography other than mammography. Sensitometric procedures are described for films exposed directly to X-rays. The purpose of this International Standard is to provide a method for the measurement of ISO speed and ISO average gradient so that the characteristics of the film/process system can be obtained reproducibly and can also be compared with those of other systems.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 5-1:1984, *Photography — Density measurements — Part 1: Terms, symbols and notations.*

ISO 5-2:1985, *Photography — Density measurements — Part 2: Geometric conditions for transmission density.*

ISO 5-3:1984, *Photography — Density measurements — Part 3: Spectral conditions.*

ISO 4037:1979, *X and gamma reference radiations for calibrating dosimeters and dose ratemeters and for*

determining their response as a function of photon energy.

3 Definitions

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

3.1 air kerma, K : The energy, which is transferred by ionizing radiation (for instance X-rays) to air molecules, divided by the mass of air in that volume where the energy is released.

3.2 speed: A quantitative measure of the response of the photographic material to radiant energy for the specified conditions of exposure, processing, and image density measurement.

3.3 average gradient: The slope of the straight line joining two specified points on a sensitometric curve.

3.4 gray, Gy¹⁾: The absorbed dose of X and/or γ radiation in 1 kg of air which produces charged particles and imparts 1 J of initial kinetic energy to those charged particles.

4 Sampling and storage

In determining the ISO speed and ISO average gradient of a product, it is important that the samples evaluated yield the average results obtained by users. This will require evaluating several different batches periodically under conditions specified in this International Standard. Prior to evaluation, the samples shall be stored according to the manufacturers' recommendations for a length of time to simulate the average age at which the product is normally used. Several independent evaluations shall be made to ensure the proper calibration of

1) 1 Gy = 1 J/kg of air is equivalent to 114,5 R or is equivalent to 0,029 5 C/kg