
**Photography — Determination of ISO
safelight conditions**

Photographie — Détermination des conditions d'éclairage de sécurité ISO

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Reference number
ISO 8374:2001(E)

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Printed in Switzerland

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 8374 was prepared by Technical Committee ISO/TC 42, *Photography*.

This second edition cancels and replace the first edition (ISO 8374:1986), which has been technically revised.

Annex A forms a normative part of this International Standard.

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Introduction

The term “safelight” in photography is used to describe a light source that offers the user sufficient time to perform an operation without producing a detectable change in the photographic characteristics of a sensitized material. Because most sensitized materials are handled under safelight conditions by the manufacturers or users, or both, it was considered desirable to specify a standard method to determine working conditions which are safe for sensitized materials.

It is usually assumed, often incorrectly, that lighting conditions are safe if the density in a simple “fog test” is not changed by these conditions. This is untrue for many materials, particularly for black-and-white and colour papers, where an image area may be more sensitive than an unexposed area. Therefore, an unsafe lighting condition may go undetected if one looks for changes in unexposed areas only. Furthermore, the sensitivity of a sensitized product to a safelight may differ according to whether the safelight exposure is received before or after the practical exposure, and the magnitude or even the direction of this difference may in some cases vary from batch to batch of a given film or paper type.

An additional consideration is the cumulative effect of successive exposures. Depending on the types of exposures and the emulsion formulation of the particular sensitized product, these exposures may be subadditive, additive or superadditive.

Generally, the spectral quality for a safelight is selected as a compromise between the visual response of a partially dark-adapted operator and the spectral response (of the product) to this light. This International Standard is not concerned with this selection.

The object of this International Standard is to define when the exposure (the product of intensity and time) from a safelight has a detectable effect on the image-forming characteristics of a sensitized material. Since virtually all exposures are cumulative, exposure of a material to safelights should be kept to a minimum at all stages of handling (i.e., manufacturing, inspection, camera loading, splicing, processing, printing, etc.).

This International Standard provides a means to isolate and evaluate any given single exposure to safelight irradiation among the several exposures likely to be incurred in the manufacturing and use cycle.

Photography — Determination of ISO safelight conditions

1 Scope

This International Standard specifies the methods for determining the maximum exposure time that a given sensitized material can receive from a given safelight without affecting the quality of the final image. It also specifies the records which shall be maintained for the components of a safelight and its operating environment.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 5-2:2001, *Photography — Density measurements — Part 2: Geometric conditions for transmission density*.

ISO 5-3:1995, *Photography — Density measurements — Part 3: Spectral conditions*.

ISO 5-4:1995, *Photography — Density measurements — Part 4: Geometric conditions for reflection density*.

3 Terms and definitions

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

3.1

additivity

condition wherein the effect of successive exposures received by a sensitized product produces a net photographic effect that is precisely that which would be predicted by a mathematical summation of the individual exposures

3.2

dot value

apparent percentage of an area covered by half-tone dots which is calculated from the relative transmission densities of the area of dots, the solid area, and the area between dots

3.3

geometric mean

the n th root of the product of n quantities, referring here to the square root of the product of two adjacent safelight exposure values

3.4

half-tone image

image composed of dots at a given screen frequency (number of dots per centimetre) that are varied in size (value) and shape to provide visual tonal gradations