
INTERNATIONAL STANDARD



1230

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Photography — Determination of flash guide numbers

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up 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.

Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 1230 (originally Draft International Standard ISO/DIS 1074.3) was drawn up by Technical Committee ISO/TC 42, *Photography*, and circulated to the Member Bodies in April 1972.

It has been approved by the Member Bodies of the following countries :

Belgium	Japan	Switzerland
Czechoslovakia	Netherlands	Thailand
Egypt, Arab Rep. of	Romania	Turkey
France	South Africa, Rep. of	United Kingdom
Germany	Spain	U.S.A.
Italy	Sweden	

No Member Body expressed disapproval of the document.

Photography – Determination of flash guide numbers

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method of determining the photometric and optical performance of flash equipment for general photographic use in which the light of a photoflash lamp or of an electronic flash tube is concentrated by means of a reflector. Rules are given for using this information to determine flash guide numbers.

2 REFERENCES

ISO 6, *Photography – Photographic negative materials (monochrome, continuous-tone) – Determination of speed*.*

ISO 1229, *Photography – Expendable photoflash lamps – Determination of the light output*.

3 DEFINITIONS

3.1 half-angle of coverage: The angle from the axis to the point where the light intensity falls to 1/2 of the maximum in the beam. This value may differ in various directions (for example, rectangular beams). In cases where equipment is designed to illuminate a square or rectangular format, the angle of coverage is taken as the angle from the diagonal.

3.2 reflector factor: The amplification of the luminous intensity taking the beam intensity in a solid angle $2 \times 5^\circ$ around the axis of the reflector compared to that from a bare lamp in a direction perpendicular to the axis of the lamp.

3.3 metre guide number: The product of camera lens f -number and light source to subject distance in metres.

3.4 foot guide number: The product of camera lens f -number and light source to subject distance in feet.

3.5 basic guide number: That metre guide number or foot guide number which is based on film with an ISO Speed (arithmetic) of 100**, "X" synchronization, an exposure of 1/30 s and, in the case of expendable photoflash lamps, a reflector factor of 5 (see section 5).

4 METHOD FOR MEASURING REFLECTOR FACTOR

4.1 Measurements of luminous intensity (beam candle power) shall be carried out in a room with non-reflecting walls at a distance of at least 3 m (10 ft) or twelve times the reflector diameter, whichever value is the greater. For this purpose, normal photoflash lamps or electronic flash tubes intended for the equipment shall be used because dummy light sources will not give reproducible results.

4.2 Sufficient quantities of photoflash lamps or electronic flash tubes (where appropriate) shall be measured so as to ensure good average values; starting at the reflector axis, these measurements shall be carried out in all directions of interest so that the reflector factor, as defined in 3.2, may be calculated.

5 REFLECTOR FACTORS FOR FLASH EQUIPMENT

If the reflector factor of any equipment otherwise complying with this International Standard differs materially from the value 5, a correction factor shall be published by the manufacturer of the equipment. This shall be marked on the equipment or included as part of the standard instructions supplied with it, enabling the basic guide number of the photoflash lamp or electronic flash tube to be transformed to a guide number for the combination of lamp and flash equipment. If a manufacturer of such equipment publishes such guide numbers, they shall be chosen from the fundamental series given in 6.3.

* At present at the stage of draft. (Revision of ISO/R 6.)

** See ISO 6.

6 FORMULAE FOR CALCULATING GUIDE NUMBERS

6.1 Metre guide numbers (GN) shall be obtained from the following formulae :

- for photoflash lamps : $GN = 0,3 \sqrt{C \cdot Q \cdot M \cdot S_x}$
- for flash equipment : $GN = 0,3 \sqrt{4\pi C \cdot I_t \cdot S_x}$

where

C is a constant = 0,004 5;

Q is the light output of the photoflash lamp in lumen seconds*;

M is the reflector factor;

I_t is the effective luminous intensity (effective beam candle power) of the flash equipment in candelas multiplied by the effective exposure in seconds;

S_x is the ISO film speed (arithmetic).

6.2 Foot guide numbers shall be obtained from the metre guide numbers by multiplying by the factor 10/3.

6.3 Guide numbers, whether basic or otherwise, shall be chosen from the following series (which is based on multiples of $\sqrt[3]{2}$ and which results in steps of approximately one-third f -stop) or from values of the series multiplied by integral powers of 10 :

10	11	12	14	16	18	20	22	25	28	32	36	40
45	50	56	64	72	80	90	100	110	125	140		

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* See ISO 1229.