INTERNATIONAL STANDARD

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AMENDMENT 1
2002-08

Amendment 1

Safety of laser products –

Part 4: Laser guards

Amendement 1

Sécurité des appareils à laser –

Partie 4: Barrières laser

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PRICE CODE D

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FOREWORD

This amendment has been prepared by IEC technical committee 76: Optical radiation safety and laser equipment.

The text of this amendment is based on the following documents:

FDIS	Report on voting
76/242/FDIS	76/252/RVD

Full information on the voting for the approval of this amendment can be found in the report on voting indicated in the above table.

The committee has decided that the contents of the base publication and its amendments will remain unchanged until 2003. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

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CONTENTS

Add the title of the new Annex D as follows:

Annex D (normative) Proprietary laser guard testing

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3.4.2 Sample testing

Replace subclauses 3.4.2.1 and 3.4.2.2 by the following new text:

Sample guard testing shall be performed by irradiating the front surface of the guard material using the procedure and methodology as specified in Annex D.

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Add, after Annex C, the new Annex D as follows:

Annex D
(normative)

Proprietary laser guard testing

D.1 General

It should be noted that it is inappropriate to use higher power lasers to simulate low power laser parameters by adjustment of the distance from the focal point, because beam quality and other characteristics of the laser beam are likely to be different or unexpected.

The evidence of the tests described herein is relevant only for, and is limited to, the laser parameters used. Thus the results of these tests should serve only as a guide for laser guard comparison purposes.

The protective exposure limit (PEL $W \cdot m^{-2}$) shall be applicable only for the beam dimensions at the guard used in the tests. These dimensions at the guard shall be stated by the laser guard manufacturer because the limiting irradiance value, which indicates protection, decreases as the laser beam dimensions increase.

D.2 Test conditions

The tested exposure limit ($W \cdot m^{-2}$ for CW lasers or $J \cdot m^{-2}$ for pulsed lasers) shall be determined by tests performed when irradiating one surface of a sample of representative thickness and composition and of dimensions not less than 3 times the maximum beam dimension ($1/e^2$) encountered at the exposure location (thereby guaranteeing that the radiant heat flow is taken into account.) Structural connecting elements shall only be included in the tests if they are necessary to ensure the construction and integrity of the guard. In the case of non-circular beams, the geometry of the beam used in the test shall be specified. Non-circular beams are those where the difference between the major and the minor dimension is greater than 10 %.

NOTE The geometry of the test beam is required to be specified because it affects the distribution of heat in the sample.

If a sample holder is necessary for the tests then its maximum overlap on the sample edge shall not exceed 3 mm from the edge of the sample. The holding arrangement in contact with the sample shall be thermally insulating (e.g. ceramic, etc.) compatible with use at the temperatures generated.

The sample shall be normal (±3° to avoid retro-reflections) to the laser beam with the beam axis centred on the sample at a distance 'F1' as shown in Figure D.1. The distance F1 past the focal point shall be not greater than 3 times the focal length (F) of the focusing lens.

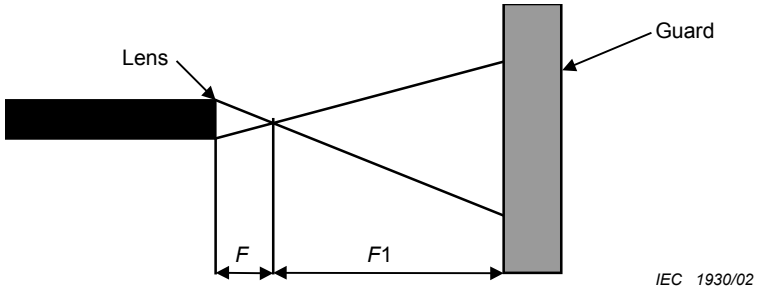

Figure D.1 – Simplified diagram of the test arrangement