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Optics and optical instruments — Lasers and laser-related equipment — Lifetime of lasers

*Optique et instruments d'optique — Lasers et équipements associés
aux lasers — Durée de vie des lasers*



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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.

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The main task of technical committees is to prepare International Standards. 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 document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

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Introduction

There are many different types of lasers with very different attributes and very different areas of application; not all types of lasers can be treated by the same means and measures to characterize and specify their longterm behaviour and lifetime.

This International Standard covers many types of laser, but not all methods and procedures can be applied to all types.

There are lasers, primarily laser diodes in the lower power range, which are produced in large quantities and which allow the performance of lifetime tests on large quantities to gain results on a statistically significant level. In this case and if more than approximately 50 lasers are used for testing, lifetime predictions using informative annex B of IEC 61751:1998, may be applied alternatively to this International Standard.

High-power lasers are manufactured in low quantities and lifetime tests cannot be carried out on statistically significant sample sizes.

There are types of laser of which the main components cannot be repaired, e.g. sealed-tube gas lasers or semiconductor lasers. There are others that can easily be repaired, e.g. CO₂ lasers. The former class may be characterized by "lifetime", the latter more appropriately characterized by "meantime to failure".