INTERNATIONAL STANDARD

ISO 9022-13

Second edition
1998-07-15

Optics and optical instruments — Environmental test methods —

Part 13: Combined shock, bump or free fall and dry heat or cold

Optique et instruments d'optique — Méthodes d'essais d'environnement —

Partie 13: Essai combiné choc, secousse ou chute libre et chaleur sèche ou froid

Reference number
ISO 9022-13:1998(E)

Documents
Document Sharing Hub

Full document details: ISO 9022-13-1998

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 9022-13 was prepared by Technical Committee ISO/TC 172, *Optics and optical instruments*, Subcommittee SC 1, *Fundamental standards.*

This second edition cancels and replaces the first edition (ISO 9022-13:1994), which has been technically revised.

ISO 9022 consists of the following parts, under the general title *Optics and optical instruments — Environmental test methods*:

— *Part 1: Definitions, extent of testing*

— *Part 2: Cold, heat, humidity*

— *Part 3: Mechanical stress*

— *Part 4: Salt mist*

— *Part 5: Combined cold, low air pressure*

— *Part 6: Dust*

— *Part 7: Drip, rain*

— *Part 8: High pressure, low pressure, immersion*

© ISO 1998

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

International Organization for Standardization
Case postale 56 • CH-1211 Genève 20 • Switzerland
Internet iso@iso.ch

Printed in Switzerland

Documents
Document Sharing Hub

Full document details: ISO 9022-13-1998

— *Part 9: Solar radiation*

— *Part 10: Combined sinusoidal vibration and dry heat or cold*

— *Part 11: Mould growth*

— *Part 12: Contamination*

— *Part 13: Combined shock, bump or free fall and dry heat or cold*

— *Part 14: Dew, hoarfrost, ice*

— *Part 15: Combined digitally controlled broad-band random vibration and dry heat or cold*

— *Part 16: Combined bounce or steady-state acceleration and dry heat or cold*

— *Part 17: Combined contamination, solar radiation*

— *Part 18: Combined damp heat and low internal pressure*

— *Part 19: Temperature cycles combined with sinusoidal or random vibration*

— *Part 20: Humid atmosphere containing sulfur dioxide or hydrogen sulfide*

— *Part 21: Combined low pressure and ambient temperature or dry heat*

AVA Documents
Document Sharing Hub

Full document details: ISO 9022-13-1998

Introduction

Optical instruments are affected during their use by a number of different environmental parameters which they are required to resist without significant reduction in performance.

The type and severity of these parameters depend on the conditions of use of the instrument (for example, in the laboratory or workshop) and on its geographical location. The environmental effects on optical instrument performance in the tropics and subtropics are totally different from those found when they are used in arctic regions. Individual parameters cause a variety of different and overlapping effects on instrument performance.

The manufacturer attempts to ensure, and the user naturally expects, that instruments will resist the likely rigours of their environment throughout their life. This expectation can be assessed by exposure of the instrument to a range of simulated environmental parameters under controlled laboratory conditions. The severity of these conditions is often increased to obtain meaningful results in a relatively short period of time.

In order to allow assessment and comparison of the response of optical instruments to appropriate environmental conditions, ISO 9022 contains details of a number of laboratory tests which reliably simulate a variety of different environments. The tests are based largely on IEC standards, modified where necessary to take into account features special to optical instruments.

It should be noted that, as a result of continuous progress in all fields, optical instruments are no longer only precision-engineered optical products, but, depending on their range of application, also contain additional assemblies from other fields. For this reason, the principal function of the instrument must be assessed to determine which International Standard should be used for testing. If the optical function is of primary importance, then ISO 9022 is applicable, but if other functions take precedence then the appropriate International Standard in the field concerned should be applied. Cases may arise where application of both ISO 9022 and other appropriate International Standards will be necessary.

Documents
Document Sharing Hub
Full document details: ISO 9022-13-1998