
Mineral and sapphire watch-glasses —
Part 4:
Anti-reflective treatment

Verres de montres minéraux et en saphir —
Partie 4: Traitements antireflet



This document is a preview generated by EKO



COPYRIGHT PROTECTED DOCUMENT

© ISO 2020

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Test methods and evaluation of results	2
4.1 General	2
4.2 Optical characterization	2
4.2.1 Luminous transmittance	3
4.2.2 Luminous reflectance and colour	3
4.2.3 Evaluation of results	4
4.3 Adhesive force	4
4.3.1 Test method	4
4.3.2 Evaluation of results	4
4.4 Humidity test	4
4.4.1 Test method	4
4.4.2 Evaluation of results	4
4.5 Thermal shock test	4
4.5.1 Test method	4
4.5.2 Evaluation of results	5
4.6 Salt spray test	5
4.6.1 Test method	5
4.6.2 Evaluation of results	5
4.7 Synthetic sweat test	5
4.7.1 Test method	5
4.7.2 Evaluation of results	5
4.8 Abrasion resistance	5
4.8.1 Sample preparation	5
4.8.2 Test method	5
4.8.3 Evaluation of results	5
4.9 Scratch resistance	5
4.9.1 Test method	5
4.9.2 Evaluation of results	6
4.10 Sunlight resistance	6
4.10.1 Test method	6
4.10.2 Evaluation of results	7
4.11 Cleaning test	7
4.11.1 Test method	7
4.11.2 Evaluation of results	7
Annex A (informative) Optical characterization of watch-glasses	8
Annex B (informative) Examples of test conditions parameters to sunlight	11
Bibliography	12

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 114, *Horology*, Subcommittee SC 13, *Watch-glasses*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Anti-reflective treatments are widely used in watch-glasses. Anti-reflective treatments are used to improve legibility of the watch dial by reducing light reflected from the watch-glasses.

When customers are wearing watches, the watches go through temperature variation, corrosion, scratch, sunlight and many other environmental conditions. The properties of the anti-reflective treatments may directly affect the appearance of the watch-glasses and the legibility of the dial, therefore this International Standard aims to clarify the test methods and the evaluations for the anti-reflective treatments.

Mineral and sapphire watch-glasses —

Part 4: Anti-reflective treatment

1 Scope

This document specifies the terms and definitions, the test methods and the evaluation of results of watch-glasses with anti-reflective treatments.

The document is applicable to sapphire watch-glasses with anti-reflective treatments, and it can also be used as a reference for mineral watch-glasses with anti-reflective treatments.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3160-2:2015, *Watch-cases and accessories — Gold alloy coverings — Part 2: Determination of fineness, thickness, corrosion resistance and adhesion*

ISO 4892-1, *Plastics — Methods of exposure to laboratory light sources — Part 1: General guidance*

ISO 4892-2, *Plastics — Methods of exposure to laboratory light sources — Part 2: Xenon-arc lamps*

ISO 9227, *Corrosion tests in artificial atmospheres — Salt spray tests*

ISO/CIE 11664-1:2019, *Colorimetry — Part 1: CIE standard colorimetric observers*

ISO 11664-2, *Colorimetry — Part 2: CIE standard illuminants*

ISO 14368-3:2003, *Mineral and sapphire watch-glasses — Part 3: Qualitative criteria and test methods*

ISO 23160:2011, *Watch cases and accessories — Tests of the resistance to wear, scratching and impacts*

CIE 15:2018, *Colorimetry*

CIE 85:1989, *Solar Spectral Irradiance*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>