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Road vehicles — Safety glazing materials — Test methods for electro-switchable glazing

Véhicules routiers — Vitrages de sécurité — Méthodes d'essai pour vitrages électro-commutables

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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.

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 document 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).

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This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 35, *Lighting and visibility*.

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.

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Introduction

This document outlines the test method to evaluate properties of electro-switchable glazing during the switching period and under stable states of luminous transmittance.

There are various principles of electro-switchable glazing that can be used to produce safety glazing for road vehicles. See Annex A for a description of these principles. The luminous transmittance states that the electro-switchable glazing can be switched to and the time it takes to switch between these states are major concerns for consumers and the market. The lifetime of these different electro-switchable glazing is influenced by humidity, temperature and radiation. The various principles differ in terms of performance, but they can be improved applying appropriate voltage or current or applying more complex circuits.

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Road vehicles — Safety glazing materials — Test methods for electro-switchable glazing

1 Scope

This document provides the test methods for regular luminous transmittance, switching time, haze, insulation resistance, humidity resistance, low temperature resistance, colour uniformity, switching cycles and radiation durability for electro-switchable glazing used on road vehicles.

This document applies to switchable glazing in response to applied voltage or current.

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 3538:1997, *Road vehicles — Safety glazing materials — Test methods for optical properties*

ISO 4892-2:2013, *Plastics — Methods of exposure to laboratory light sources — Part 2: Xenon-arc lamps*

ISO 6469-3:2021, *Electrically propelled road vehicles — Safety specifications — Part 3: Electrical safety*

ISO/CIE 11664-6, *Colorimetry — Part 6: CIEDE2000 colour-difference formula*

ISO 13837:2021, *Road vehicles — Safety glazing materials — Method for the determination of solar transmittance*

ISO 14782:2021, *Plastics — Determination of haze for transparent materials*

3 Terms and definitions

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

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

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
electro-switchable glazing
glazing comprised of one or more panes of material whose transmittance properties can be altered in response to an applied voltage or current

3.2
highest transmittance state
stable state as glazing switched to highest *regular luminous transmittance* (3.4) under specific conditions

Note 1 to entry: This is also referred to as the clear state or bleached state.

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