
Glass in building — Coated glass —

Part 2:
Colour of façade

Verre dans la construction — Verre à couche — Partie 2: Couleur des façades

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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.

ISO 11479-2 was prepared by Technical Committee ISO/TC 160, *Glass in building*, Subcommittee SC 1, *Product considerations*.

ISO 11479 consists of the following parts, under the general title *Glass in building — Coated glass*:

- *Part 1: Physical defects*
- *Part 2: Colour of façade*

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Introduction

It is known that façades incorporating coated glass can present different shades of the same colour, an effect that can be amplified when observed under an angle. Possible causes of differences in colour include slight variations in the colour of the substrate onto which the coating is applied and slight variations in thickness of the coating itself. Furthermore, for highly selective coatings, a slight variation in thickness can create a difference in colour, visible due to the high sensitivity of the human eye.

The purpose of this International Standard is to avoid any subjective approaches that might have been used in the past. This is achieved through the use of spectroscopic techniques and defined evaluation practices.

All measured values concern the finished glass product as installed in the façade and not the single components.

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Glass in building — Coated glass —

Part 2: Colour of façade

1 Scope

This part of ISO 11479 specifies a method for objective evaluation of the colour of coated glass when used in façades and viewed from the outside, as well as for measuring colour differences within the same glass pane and between two adjacent panes in the same façade. This part of ISO 11479 does not specify requirements for determining colour differences of transmitted colour as viewed from the inside or outside of a façade, nor for internal reflected colour. The comparison should only be undertaken for panes of the same glass type, composition and interior conditions and situated in the same plane of a façade.

Specific requirements are given for coated glass, dependent upon its light transmittance and reflectance.

This part of ISO 11479 is not applicable to curved or bent glass, which is specifically excluded for technical reasons.

NOTE Information on the perception, quantification and measurement of colour is given in Annex A.

2 Symbols

NOTE The following symbols form part of the colour measurement system used in this part of ISO 11479, which is based on ISO 11664-4:2008 (CIE S 014-4/E:2007).

2.1

L^*

lightness assuming a value between 0 and 100

NOTE $L^* = 0$ is black, $L^* = 100$ is white.

2.2

a^*

colour definition between green and magenta

NOTE Negative a^* is green, positive a^* is red.

2.3

b^*

colour definition between blue and yellow

NOTE Negative b^* is blue, positive b^* is yellow.

2.4

ΔE_{ab}^*

Euclidean distance between the points representing two colours in the CIE $L^*a^*b^*$ colour space

3 *In situ* colour measurement

The following paragraphs explain the procedures used on site for measuring the colour of the glass product.

Information on the perception, quantification and measurement of colour is given in Annex A.

3.1 Colour differences within the same glass pane

For colour differences within the same glass pane, the parameters L^* , a^* and b^* shall be measured with a portable colorimeter or spectrophotometer. The measurements shall be undertaken at a minimum of three points in each zone representing the colour difference.

NOTE 1 An example is illustrated in Figure 1.

Measurements shall not be undertaken at any point within 10 cm of an edge due to the potential for colour near the edge to differ slightly from the colour in the centre. However, for glass coated as fixed dimensions, measurements shall not be undertaken nearer than 15 cm from an edge.

NOTE 2 Measurements can be affected by the proximity of the frame and the edge of the insulating glass unit.

The ΔL^* , Δa^* , Δb^* and ΔE_{ab}^* values shall be calculated based on the difference between the average values for each zone, in accordance with Equations (1), (2), (3) and (4), respectively.

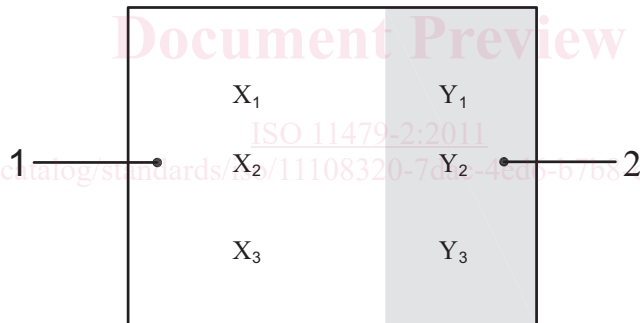
$$\Delta L^* = L^*_{(zone\ 2)} - L^*_{(zone\ 1)} \tag{1}$$

$$\Delta a^* = a^*_{(zone\ 2)} - a^*_{(zone\ 1)} \tag{2}$$

$$\Delta b^* = b^*_{(zone\ 2)} - b^*_{(zone\ 1)} \tag{3}$$

$$\Delta E_{ab}^* = \sqrt{(\Delta L^*)^2 + (\Delta a^*)^2 + (\Delta b^*)^2} \tag{4}$$

The values of ΔL^* , Δa^* and Δb^* shall meet the requirements given in 3.3.



Key

- 1 zone 1
- 2 zone 2

Figure 1 — Example of measurements undertaken at a minimum of three points in each zone representing the colour difference

3.2 Colour differences between two adjacent panes in the same façade

The comparison should only be undertaken for panes of the same glass type, composition and interior conditions and situated in the same plane of a façade.

NOTE 1 Interior refers to the ambient lighting inside the building.

NOTE 2 The reference pane can be compared with any of the eight adjacent panes, horizontal, vertical and diagonal.