
Glass in building — Curved glass —

Part 1:

Terminology and definitions

Verre dans la construction — Verre bombé — Partie 1: Terminologie et définitions

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Foreword

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ISO 11485-1 was prepared by Technical Committee ISO/TC 160, *Glass in building*, Subcommittee SC 1, *Product considerations*.

ISO 11485 consists of the following parts, under the general title *Glass in building — Curved glass*:

- *Part 1: Terminology and definitions*
- *Part 2: Quality requirements*
- *Part 3: Requirements for tempered and laminated curved safety glass¹⁾*

1) Under preparation.

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Glass in building — Curved glass —

Part 1: Terminology and definitions

1 Scope

This part of ISO 11458 specifies terminology and definitions for curved glass used in general building construction, furniture, display and various other non-automotive applications.

2 Terms and definitions

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

2.1

curved glass

bent glass (US)

sheet of annealed glass curved by a heating process

2.2

curved annealed glass

glass that is curved and then cooled slowly so that it recovers its initial mechanical characteristics

2.3

curved patterned glass

flat patterned glass that has been formed into a curved shape

2.4

curved wired glass

flat wired glass that is formed into a curved shape

2.5

curved insulating glass

two panes of curved glass that have been fabricated into an insulating glass unit

2.6

curved tempered glass

flat glass that is formed into a curved shape by heating above a specified temperature and then subjected to a rapid and controlled cooling process in order to give it greatly increased resistance to thermal and mechanical stress

NOTE In this International Standard, the term “tempered” also means “thermally toughened”.

2.7

curved heat-soaked tempered glass

tempered curved glass that has been post-processed using a specified heat-soak cycle with the intent of isolating possible nickel sulfide inclusions

2.8

curved tempered enamelled glass

curved tempered glass which has a ceramic frit fired into the surface during the tempering process

NOTE 1 After tempering, the ceramic frit becomes an integral part of the glass.

NOTE 2 The application of the ceramic frit may be by a continuous or discontinuous application, e.g. screen printing.

2.9

curved heat-strengthened glass

flat glass that has been formed into a shape and heat-strengthened

NOTE The specifications of curved heat-strengthened glass are under consideration.

2.10

curved chemically strengthened glass

flat glass that has been formed into a shape and chemically strengthened

2.11

curved laminated glass

assembly consisting of curved glass sheets joined together with cast-in-place resins or films

2.12

curved laminated tempered glass

assembly consisting of curved tempered sheets joined together with cast-in-place resins or films

2.13

curved safety glass

curved glass that in the case of accidental breakage, reduces the risk of cutting or piercing injuries and/or offers residual resistance by retaining the glass fragments

NOTE 1 The curved glass can be tempered or laminated for example.

NOTE 2 Curved safety glass is classified according to ISO 11485-2.

2.14

concave

“hollow” face of curved glass

2.15

convex

“bulge” face of curved glass

2.16

angle

α

angular measurement of a segment of a curve in degrees

NOTE See Figure 1.

2.17

inner radius

R_i

radius of concave face

NOTE See Figures 1 and 2.

2.18

outer radius

R_e

radius of convex face

NOTE See Figures 1 and 2.

2.19**arc***A*

length of the curved portion

NOTE 1 See Figure 1.

NOTE 2 An arc is described as either interior arc (A_i) or exterior arc (A_e).**2.20****chord of the arc** C_a

line segment that connects end points of an arc

NOTE 1 See Figure 1.

NOTE 2 A chord is described as either an interior chord (C_{ai}) or an exterior chord (C_{ae}). The interior chord (C_{ai}) corresponds to the interior arc (A_i) and the exterior chord (C_{ae}) corresponds to the exterior arc (A_e).**2.21****rise****depth***F*

segment between the middle of the arc of the circle and the middle of the chord that subtends the arc

NOTE See Figure 1.

2.22**girth***G*

distance around the concave or convex surface measured perpendicular to the height including any flats

NOTE See Figure 1.

2.23**chord of the girth** C_g

line segment that connects end points of a girth

NOTE See Figure 1.

2.24**depth** P_r maximal distance between the upper part of the girth (G) and the corresponding chord (C_d)

NOTE See Figure 1.

2.25**flat***B*

flat segments forming a part of curved glass

NOTE See Figure 1.

2.26**length***L*

dimension of the straight edge of the curved glass

NOTE See Figure 1.

2.27
thickness

T

nominal thickness of the final product

NOTE 1 In a curved insulating glass, the thickness is the sum of the thicknesses of the inner glass (T_i), the gas space (T_a) and the outer glass (T_e).

NOTE 2 See Figures 1 and 2.

2.28
plan

document containing the geometry of the product to be made

2.29
drawing

graphic details defining the geometry of the product to be made

2.30
lay out

representation of scale 1:1 of the curvature profile

2.31
template

three-dimensional reproduction at scale 1:1 to determine the dimensions and shape of the product to be made

2.32
cutting template

form (pattern) that facilitates accuracy in the glass forming process by providing the proper curved glass information for size, shape and contour

2.33
model

product in glass or other material at scale 1:1 that is an identical reproduction

2.34
curvature profile

geometrical shape of the curved part of the curved glass

2.35
shape accuracy

P_C

accuracy of the contoured form including curvature, arc(s), and even flats

2.36
cross-curve deviation

sag

deviation from a straight line or reference curve perpendicular to the curvature measured on the concave side

2.37
edge straightness deviation

warp

R_B

deviation from straightness of the straight edges of the glass

2.38
twist deviation

V

one or more of the corners of the glass are not in the same plane

2.39**optical distortion**

slight deformation of the images seen in reflection or in transmission, inherent to the process of bending glass

2.40**displacement**

d

misalignment at any one edge of the constituent glass panes making up the curved laminated and/or insulating glass

NOTE 1 d_1 : displacement of one of the edges of the glass during the manufacture of laminated curved glass.

NOTE 2 d_2 : displacement of the edges of the glass during the manufacture of insulating glass.

2.41**cold crack**

crack caused by a difference of temperature of the surface in the cooling process

NOTE 1 For example, around tong marks or ring marks.

NOTE 2 Cold cracks appear in a whisker-like or hair-like shape in the case of curved tempered glass and in a shell shape appearing around crossing points of wires in the case of annealed curved wired glass.

2.42**pock marks**

process surface blemishes that consist of small, shallow areas, circular in shape, on the surface of the glass

2.43**ring marks**

process surface blemishes that consist of shallow marks typically running along the perimeter of the glass surface

2.44**tong marks**

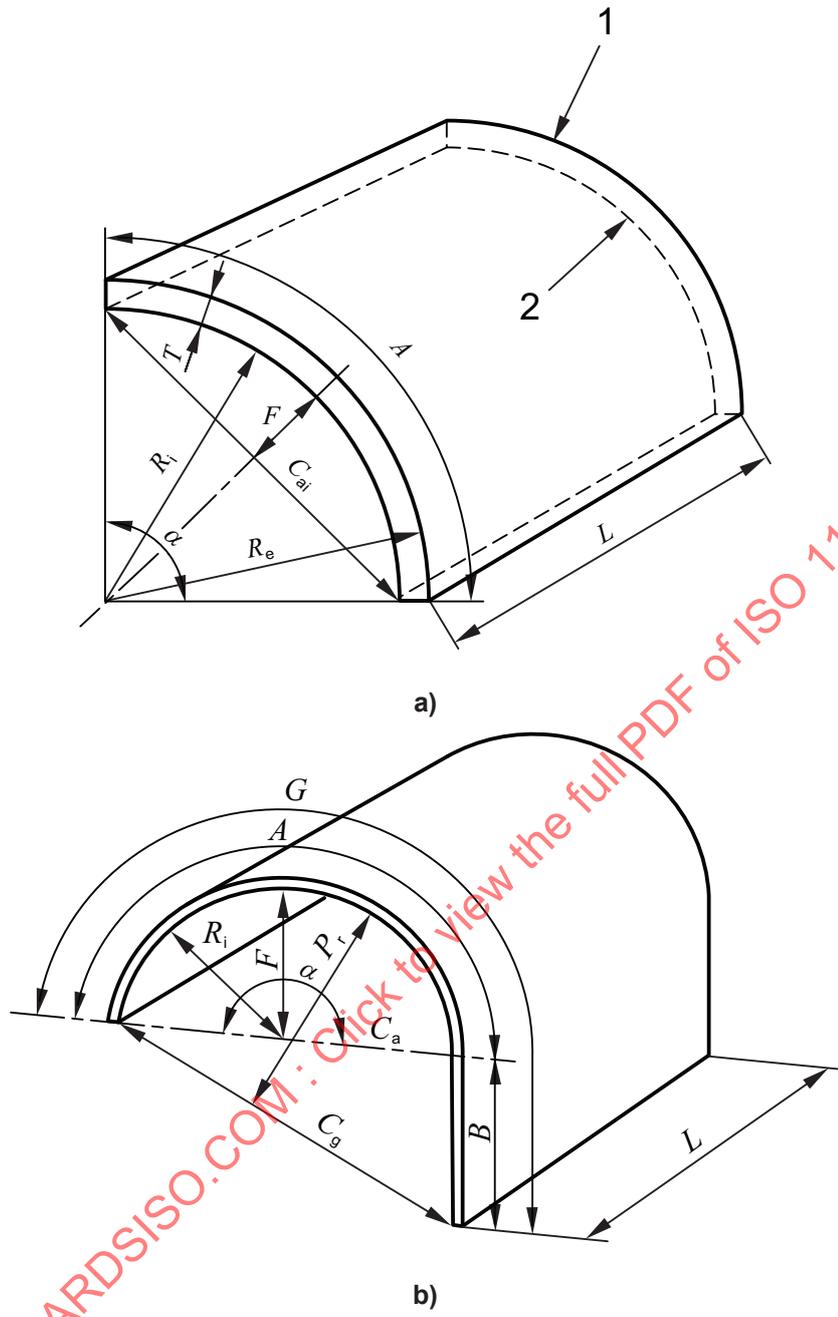
slight indentations along the top edge of vertically curved glass, resulting from the method of holding or supporting the glass with tongs in vertical form

2.45**tools**

elements particular to an order which allow the fabrication of curved glass

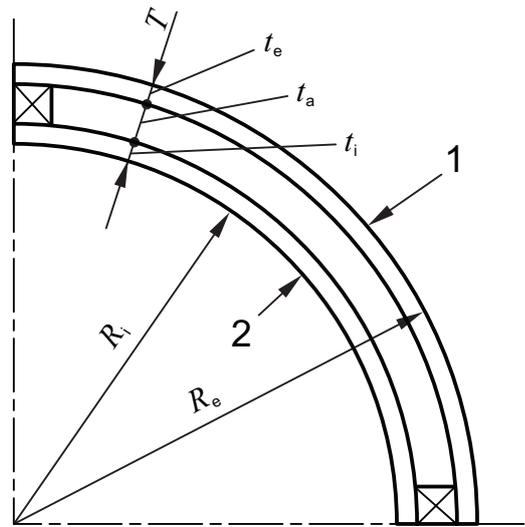
2.46**gauge**

measurement tool for manufacturing and checking the curvature profile of the finished product



- Key**
- 1 bulge outer face (convex)
 - 2 hollow inner face (concave)

Figure 1 — Examples of terms and dimensions

**Key**

- 1 convex part
- 2 concave part

Figure 2 — Thicknesses and radius of an insulating glass

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