TEST REPORT

Report No	UNICO20260629G45625
Applicant:	Dongguan Safety Glass Products Co.,Ltd
Address:	Block B319,No.13 Fengxing Road,Lingtou Community, Qiaotou Town,Dongguan,China
Manufacturer:	Dongguan Safety Glass Products Co.,Ltd
Address:	Block B319,No.13 Fengxing Road,Lingtou Community, Qiaotou Town,Dongguan,China
Product:	Tempered Laminated Glass
Model:	5mm, 6mm, 8mm, 10mm, 12mm, 15mm, 19mm, 11.52mm, 13.52mm, 17.52mm,21.52mm, 25.52mm,31.52mm,39.52mm
Test standard:	EN 12150-2:2004
Conclusion:	The products meet the above standards.
Brand	
Edit Date:	2026-06-30
Issue date:	2026-06-30
Testing Laboratory	Name：RENOWS CERTIFICATION TESTING CO., LTD Address: CHASE BUSINESS CENTRE 39-41 CHASE SIDE LONDON UNITED KINGDOM N14 5BP E-Mail: info@renows.net

Signature of Authorized Person: Jacqueiline Marti

RENOWS CERTIFICATION TESTING CO., LTD RENOWS

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ASSESSMENT REPORT

TCF

Reference No. ..... : No: UNICO20260629G45625

Tested by(+ signature).....: Project Engineer/Downey Xue

Reviewed by(+ signature).....: Manager/Vincent Yan

Date of issue ..... : 2026-06-30

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Applicant

Name .....: Dongguan Safety Glass Products Co.,Ltd

Address ..... : Block B319,No.13 Fengxing Road,Lingtou Community,

Qiaotou Town,Dongguan,China

Test specification

Standard .....: EN 12150-2:2004

Test procedure ..... : CE

Non-standard test method ..... : N.A.

Test item description：

Manufacturer..... :Dongguan Safety Glass Products Co.,Ltd

Factory..... : Dongguan Safety Glass Products Co.,Ltd

Trademark .....: Refer to the nameplate.

Model/Type reference .....: Refer to the page 1

Rating(s) ..... : Refer to the nameplate.

General product information:

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Clause	Requirement - Test	Result - Remark	Verdict
	EN 12150-2:2004		
4	**Glass products** **Thermally toughened soda lime silicate safety glass is made from a monolithic glass generally** **corresponding to one of the following standards:** **— soda lime silicate glass according to EN 572-1;** **— float glass according to EN 572-2;** **— drawn sheet glass according to EN 572-4;** **— patterned glass according to EN 572-5;** **— supplied and final cut sizes according to EN 572-8;** **— coated glass according to EN 1096-1.** **Glass of nominal thicknesses other than those covered in the above standards is possible.**		P
5	**Fracture characteristics** **The fracture characteristics of thermally toughened soda lime silicate safety glass are directly related to the amount of surface compression. These properties are not size dependent.** **When the thermally toughened soda lime silicate safety glass is manufactured with the correct degree of surface compression then in the event of breakage thermally toughened soda lime silicate safety glass fractures into numerous small pieces, the edges of which are generally blunt.** **NOTE 1 The degree of surface compression required is dependent upon glass type and thickness.** **NOTE 2 The fracture characteristics of glass are unaffected by temperatures between – 50 °C and + 100 °C.** **The fragmentation described in Clause 8 is undertaken on unrestrained test specimens.** **The fragmentation in service may not always correspond to that determined during the fragmentation test due to the imposition of other stresses, i.e. from fixing or from reprocessing (e.g. laminating).**		P
6	Dimensions and tolerances		
	6.1 Nominal thickness and thickness tolerances The nominal thicknesses and thickness tolerances are those given in the relevant product standard (see Clause 4), some of which are reproduced in Table 1. The thickness of a pane shall be determined as for the basic product. The measurement shall be taken at the centres of the 4 sides, and away from the area of any tong marks (see Figure 2), which may be present.		P
	6.2 Width and length (sizes)		P
	6.2.1 General When thermally toughened soda lime silicate safety glass dimensions are quoted for rectangular panes, the first dimension shall be the width, B, and the second dimension the length, H, as shown in Figure 1. It shall be made clear which dimension is the width, B, and which is the length, H, when related to its installed position.		P
	6.2.2 Maximum and minimum sizes		P

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	For maximum and minimum sizes, the manufacturer should be consulted.		
	6.2.3 Tolerances and squareness The nominal dimensions for width and length being given, the finished pane shall not be larger than the nominal dimensions increased by the tolerance t, or smaller than the nominal dimensions reduced by the tolerance t. Limits are given in Table 2. The squareness of rectangular glass panes is expressed by the difference between their diagonals. The difference between the two diagonal lengths of the pane of glass shall not be larger than the deviation limit, v, as specified in Table 3		P
	6.2.4 Edge deformation produced by the vertical process The tongs used to suspend the glass during toughening result in surface depressions, known as tong marks (see Figure 2). The centres of the tong marks are situated up to a maximum of 20 mm in from the edge. A deformation of the edge less than 2 mm can be produced in the region of the tong mark and there may also be an area of optical distortion. These deformations are included in the tolerances in Table 2.		P
	6.3 Flatness		P
	6.3.1 General By the very nature of the toughening process, it is not possible to obtain a product as flat as annealed glass. This difference in flatness depends on the type of glass, e.g. coated etc., glass dimensions, i.e. the nominal thickness, the dimensions and the ratio between the dimensions, and the toughening process employed. There are six kinds of distortion: — overall bow (see Figure 3); — roller wave distortion (for horizontally toughened glass only) (see Figure 4); — air cushion wave distortion (for air cushion toughened glass only); — edge lift (for horizontally toughened glass only) (see Figure 5); — perimeter deformation (for toughened glass manufactured by air cushion process) (see Figure 10); NOTE 1 Overall bow, roller wave, edge lift and perimeter deformation can, in general, be accommodated by the framing system. — local distortion (for vertically toughened glass only) (see Figure 6).		P
	5.2.1.2.5 Plane parallelism of bed faces (! P" units) When clay masonry units are intended to be used with thin layer mortar, the manufacturer shall declare the maximum deviation from plane parallelism of the bed		P

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	faces. When regular-shaped clay masonry units are sampled from a consignment in accordance with Annex A and tested in accordance with EN 772-16, the deviation from plane parallelism of the bed faces shall not exceed the declared value.		
	6.3.2 Measurement of overall bow The pane of glass shall be placed in a vertical position and supported on its longer side by two load bearing blocks at the quarter points (see Figure 7). For glass thinner than 4 mm nominal thickness the support will have an angle between 3° and 7° from the vertical. The deformation shall be measured along the edges of the glass and along the diagonals, as the maximum distance between a straight metal ruler, or a stretched wire, and the concave surface of the glass (see Figure 3). The value for the bow is then expressed as the deformation, in millimetres, divided by the measured length of the edge of the glass, or diagonal, in meter, as appropriate. The measurement shall be carried out at room temperature. Limit the measurement of the overall bow to a maximum pane size or specify dS. The maximum allowable values are given in Table 4 and Table 6. NOTE Results from this test method for glasses thinner than 4 mm may be inaccurate.		P
	6.3.3 Measurement of wave and roller wave		P
	6.3.3.1 General The wave or roller wave is measured by means of a straight edge, or equivalent, being placed at right angles to the wave or roller wave and bridging from peak to peak of the waves (see Figure 8). NOTE This section deals with measurement using a straight edge and feeler gauges. An alternative method is described in Annex B.		P
	6.3.3.2 Apparatus A straight edge: — length of between 300 mm and 400 mm. NOTE The minimal length of the straight edge needs to bridge two peaks of the roller waves. Feeler gauges: — various thicknesses in units of 0,05 mm.		P
	6.3.3.3 Method Place the straight edge so that it bridges across adjacent peaks. Insert the feeler gauge between the glass surface and the straight edge. Increase the thickness of the feeler		P

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	gauges until they just fill the gap between glass surface and the straight edge. Record the thickness of feeler gauge(s) to an accuracy of 0,05 mm. Repeat the measurement at several places over the glass surface. The measured wave or roller wave distortion is the maximum value measured. The maximum allowable values are given in Table 4 and Table 6.		
	6.3.3.4 Limitations The following limitations apply: — The wave and roller wave can only be measured on panes with a dimension greater than 600 mm measured at right angles to the wave and roller waves. — The wave and roller wave cannot be measured in an exclusion area that is 150 mm from the edges of the pane as this is the area of different deformation modes. The apparatus should not be used in the area of these 150 mm. — Panes with an overall bow can be laid on a flat support. This will allow gravity to flatten out the overall bow and hence give a truer result for the roller wave.		P
	6.3.4 Measurement of edge lift (for horizontally toughened glass only) The glass shall be placed on a flat support with the edge lift overhanging the edge of the support by between 50 mm and 100 mm. The straight edge is placed on the peaks of the roller waves and the gap between the ruler and the glass measured using a feeler gauge (see Figure 9). NOTE The minimal length of the straight edge needs to bridge two peaks of the roller waves and the length of the edge lift. The maximum allowable values for edge lift are given in Table 5.		P
	6.3.5 Measurement of perimeter deformation of glass produced by air cushion toughening process Place the glass on a flat surface with the concave side facing upwards – see Figure 10. A 100 mm straight edge is laid on the pane at right angles to the edge. The gap between the ruler and the glass is measured using a feeler gauge (see Figure 10). The perimeter deformation is the maximum distance between the surface of the pane and the straight edge. The maximum allowable values for perimeter deformation are given in Table 7		P
	6.3.6 Measurement of local distortion (for vertically toughened glass only)		P

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	Local distortion can occur over relatively short distances on the edge of the vertically toughened glass that contains the tong marks (see Figure 2). Local distortion shall be measured over a limited length of 300 mm by using a straight ruler parallel to the edge at a distance of 25 mm from the edge of the glass (see Figure 11). Local distortion is expressed as millimetres/300 mm length.		
	6.3.7 Limitation on overall bow, roller waves and edge lift for horizontally toughened glass The maximum allowable values for the overall bow, when measured according to 6.3.2, for roller waves, when measured according to 6.3.3 and edge lift, when measured according to 6.3.4 are given in Tables 4 and 5. These values only apply to thermally toughened glass without holes and/or notches and/or cut-outs.		P
	6.3.8 Limitation on overall bow, wave and perimeter deformation for toughened glass manufactured by air cushion process The maximum allowable values for the overall bow, when measured according to 6.3.2, for waves, when measured according to 6.3.3 and perimeter deformation, when measured according to 6.3.5 are given in Tables 6 and 7. These values only apply to thermally toughened glass without holes and/or notches and/or cut-outs.		P
	6.3.9 Limitation on overall bow and local distortion for vertically toughened glass The maximum allowable values for the overall bow, when measured according to 6.3.2 and the local distortion, when measured according to 6.3.6 are given in Table 8. These values only apply to toughened glass without holes and/or notches and/or cut-outs.		P
	6.3.10 Other distortions The incorporation of holes and/or notches in a plate gives the possibility of distortions being produced during the toughening process as a result of the absence of glass and/or an increase in unsupported edges.		P
7	Edge and/or surface work, holes, notches and cut-outs		P
	7.1 Warning Thermally toughened soda lime silicate safety glass shall not be cut, sawed, drilled, edge worked after toughening because the risk of breakage is increased or the glass can be destroyed immediately. Surface finished glasses (e.g. sandblasted, acid etched) after toughening are not covered by this European Standard		P
	7.2 Edge working of glass for toughening The simplest type of edge working is the arrissed edge		P

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	(see Figure 12). Common types of edge working are shown in Figure 13 to Figure 15. For specialist edge work, such as ‘water jet cutting’, the manufacturer should be consulted. Corners need not to be treated unless required by the customer. NOTE The rollers used to convey glass produced by the inclined air cushion process may cause slight marks on the edge of the pane. This applies to polished edges in particular.		
	7.3 Profiled edges Various other edge profiles can be manufactured with different types of edgework. This kind of product is not covered by Table 5 due to the influence of the profile.		P
	7.4 Round holes		P
	7.4.1 General This European Standard considers only round holes in glass that is not less than 4 mm nominal thickness. The manufacturer should be consulted about edge working of holes. This edge work applies only to the perimeter of the holes.		P
	7.4.2 Diameter of holes The diameter of holes, ⌀, shall not, in general, be less than the nominal thickness of the glass. For smaller holes, the manufacturer should be consulted.		P
	7.4.3 Limitations on position of holes In general, the limitations on hole positions relative to the edges of the glass pane, the corners of the glass pane and to each other depends on: — the nominal glass thickness (d); — the dimensions of the pane (B, H); — the hole diameter (⌀); — the shape of the pane; — the number of holes. The recommendations given below are those which are normally available. a) The distance, a, of the edge of a hole to the glass edge should be not less than 2d.		P
	7.4.4 Tolerances on hole diameters The tolerances on hole diameters are given in Table 9.		P
	7.4.5 Tolerances on position of holes The tolerances on positions of holes are the same as the tolerances on the width, B, and the length, H (see Table 2). The positions of holes are measured in two directions at right angles (x- and y- axes) from a datum point to the centre of the holes. The datum point is generally chosen as a real or virtual corner of the pane (see Figure 19 for examples). The position of a hole (X, Y) is (x ± t, y ± t), where x and y are the required dimensions and t is the		P

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	tolerance from Table 2. NOTE It is advised to consult the manufacturer if tighter tolerances on hole positions are required.		
	7.5 Holes/others There are available countersunk holes, see Figure 20. The manufacturer shall be consulted for the tolerances on hole position, hole shape/dimensions and edge work.		P
	7.6 Notches and cut-outs Many configurations of notches and cut-outs can be supplied, examples see Figure 21. Corners of notches and cut-outs should be rounded out.		P
	7.7 Shaped panes Many non-rectangular shapes can be manufactured and manufacturer should be consulted.		P

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