

The Furniture Retail Quality Group Best Practice Guide

Glass in Furniture – Requirements



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FOREWORD

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Publication history

This document replaces FIRA/FRQG 2012, which is withdrawn.

This amendment includes addition marking requirements for toughened glass.

This Best Practice Guide has been produced and endorsed by the Furniture Retail Quality Group (FRQG) whose members consist of the major furniture retailers in the UK.

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1. INTRODUCTION

The Guide has been produced due to the withdrawal of the British Standards covering the requirements for glass in furniture.

The introduction of the following European Standards:

EN 14749: 2005 Domestic and kitchen storage units and worktops. Safety requirements and test methods

EN 12521: 2009 Furniture. Strength, durability and safety. Requirements for domestic tables

Forced the withdrawal of the British Standards:

BS 7376: 2009 Inclusion of glass in the construction of tables and trolleys for domestic use. Specification

BS 7449: 1991 Specification for inclusion of glass in the construction of furniture, other than tables or trolleys, including cabinets, shelving systems and wall hung or free standing mirrors

The Furniture Retail Quality Group believes that the withdrawal of the British Standards has significantly lowered the safety requirements for glass furniture in the United Kingdom and therefore has developed this Guide as a means to maintain safety levels.

2. SCOPE

This Guide specifies safety, stability, strength and durability requirements for all types of furniture featuring glass for domestic use.

The Guide is applicable to all types of furniture including tables, trolleys, wall hung and free standing mirrors, shelving systems, wall hanging and other cabinets with a surface area greater than 0.06 m².

Furniture featuring functions not covered within this Guide (e.g. electrical features, lighting etc.), should be assessed in accordance with the most appropriate Regulations or Standards.

The document contains three Annexes:

Annex A (Normative) Test methods and requirements for mirrors

Annex B (Normative) Test methods for tables

Annex C (Informative) Sample response to toughened glass failures

3. NORMATIVE REFERENCES

The following referenced documents are indispensable for the application 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.

BS 4875-7	<i>Strength and stability of furniture. Domestic and contract storage furniture. Performance requirements</i>
BS EN 1730	<i>Domestic furniture – Tables – Test methods for the determination of strength, durability and stability</i>
BS EN 581-1	<i>Outdoor furniture. Seating and tables for camping, domestic and contract use. General safety requirements</i>
BS EN 581-3	<i>Outdoor furniture. Seating and tables for camping, domestic and contract use. Mechanical safety requirements and test methods for tables</i>
BS EN 12150-1	<i>Glass in building. Thermally toughened soda lime silicate safety glass. Definition and description</i>
BS EN 12521	<i>Furniture. Strength, durability and safety. Requirements for domestic tables</i>
BS EN 14072	<i>Glass in furniture. Test methods.</i>
BS EN 14749	<i>Domestic and kitchen storage units and worktops. Safety requirements and test methods.</i>

4. TERMS AND DEFINITIONS

For the purposes of this Guide the following definitions apply:

4.1 Types of glass

4.1.1 Toughened glass

Glass, the surface of which has been rapidly cooled from near the softening point so that a residual compressive stress remains in the surface after complete cooling.

Note 1: *This process increases the thermal and mechanical strength of the glass and tends to make it shatter into smaller and less angular fragments than annealed glass when it is subjected to a breaking stress.*

Note 2: *Toughened glass is also known as tempered glass.*

4.1.2 Annealed glass

Glass that has been heated to the annealing temperature to remove internal stresses and cooled under controlled conditions.

Note 1: *When broken, annealed glass tends to break into dagger-like shards.*

Note 2: *Annealed glass is sometimes referred to as ordinary glass.*

4.1.3 Laminated glass

Two or more layers of glass permanently bonded together by one or more interlayers of plastics and considered as one piece of glass.

Note: *The fracture characteristics of laminated glass are similar to those of the type of glass present in the laminate. Impact energy can be absorbed by the interlayers of plastics intended to hold together pieces of glass when broken.*

4.1.4 Film-backed glass

Glass to which a film of flexible plastics has been applied.

Note: *The working surface of film-backed glass is the glass surface.*

4.1.5 Decorated glass

Glass, the surface of which has been worked by acid etching or embossing, sandblasting, brilliant cutting or engraving, to give a decorative effect (see BS 3447) or has been fired with enamels or screen printing.

4.1.6 Rolled glass

Glass manufactured by the rolling process.

4.1.7 Cast glass

Glass manufactured by a process in which molten glass is poured in to a mould where it solidifies.

4.1.8 Patterned glass

Glass where the pattern is built into the glass during the manufacturing process, either by a roller of impressed process or cast using moulds to create the pattern.

4.2 Unbacked glass

Glass which either has no backing immediately behind its entire area or has a backing that does not retain its integrity or is cracked or broken when tested in accordance with the method described in Annex A.

4.3 Enclosed shelf

Shelf that is completely enclosed within a cabinet when the cabinet doors are closed.

5 GENERAL SAFETY REQUIREMENTS

5.1 Edgework and bevelling

The exposed edges of glass shall be edge worked or bevelled.

Glass shall be designed so as to remove the possibility of edge damage (e.g. holes and cut-outs for parasols should be edged with plastic or similar).

The edges of laminated or film backed glass shall be protected from moisture.

5.2 Contact with other materials

Hard materials, for example glass, metal or stone, likely to cause damage to the surface or edge of glass, should not be in direct contact with the glass.

Note: For features such as holes for parasols the edges of the glass should be protected by plastic rings or similar to prevent impact damage.

The clearance between a glass component and any surrounding material shall be sufficient to ensure that excessive compressive/tensile stresses shall not be generated by changes in temperature or moisture content.

Note: Where there is doubt about compliance the requirement should be confirmed with the appropriate product technologist. Where metal and glass are bonded together this is not classed as contact.

5.3 Film-backed glass

When film-backed glass is used the glass surface shall be the working surface.

5.4 Safety Glass

For the purposes of this document glass is considered to be safety glass if it is either toughened or laminated glass, that meets the following criteria;

5.4.1 Toughened Glass

When toughened glass is used the glass shall be tested in accordance with BS EN 12150-1, 8.3 and 8.4 (fragmentation test) and shall have a minimum particle count of 40 particles in any 50 mm x 50 mm square, with the exception that only one test will be performed and the test will be carried out on a full size sample.

5.4.2 Laminated Glass

When laminated glass is used the glass shall be tested in accordance with BS EN 12150-1, 8.3 and 8.4 (fragmentation test), with the exception that only one test will be performed and the test will be carried out on a full size sample. No pieces of the glass greater than 1cm² shall detach from the piece of glass.

6 TEST PARAMETERS AND REQUIREMENTS - MIRRORS

6.1 General requirements

Mirrors shall meet the applicable requirements of Clauses 5 and 10.

The fixing of mirrors should follow the recommendations contained within Annex A.2.

6.2 Safety requirements

6.2.1 General

Mirrored glass shall either be bonded to a backing material or have a safety film backing. Unbacked mirrored glass shall not be used.

6.2.2 Mirror integrity

When tested in accordance with Annex A.1 there shall be no pieces of the mirrored glass greater than 1cm² detach from the backing.

6.2.3 Mirror attachment

This requirement is only applicable to mirrors attached to the structure of a building.

When tested in accordance with Annex A.2 the mirror shall remain attached to the mounting surface.

6.3 Stability requirements

This requirement is only applicable to free standing mirrors.

Mirrors with a weight in excess of 10kg shall be tested in accordance with the appropriate tests contained within Clause 5.4 of BS EN 14749.

When tested in accordance with Clause 5.4 of BS EN 14749 the mirror shall not overturn.

6.4 Mirrored glass thickness – safety film backed mirrored glass

6.4.1 Safety film backed mirrored glass with a minor dimension less than 900 mm

Safety film backed mirrored glass with a minor dimension of less than 900 mm shall have a nominal thickness of at least 3mm when fully framed. When partially, or unframed, the glass shall have a nominal thickness of at least 4 mm.

6.4.2 Safety film backed mirrored glass with a minor dimension of 900 mm or greater

Safety film backed mirrored glass with a minor dimension of 900 mm or greater shall have a nominal thickness of at least 4mm when fully framed. When partially, or unframed, the glass shall have a nominal thickness of at least 6 mm.

7. REQUIREMENTS – TABLES FOR OUTDOOR USE

7.1 General requirements

Tables shall meet the applicable requirements of Clauses 5 and 10.

7.2 Safety requirements

Tables shall meet the requirements of BS EN 581-1.

Note: The use of PVC suction cups to hold glass tops to its understructure is not recommended as these have been known to degrade in use when exposed to sunlight and lose their adhesive properties in a short period of time introducing a risk of the glass surface becoming dislodged.

7.3 Strength, durability and stability requirements

Tables shall meet the requirements of BS EN 581-3 to the domestic test level.

7.4 Glass thickness

All glass table tops shall be manufactured from toughened glass that meets the requirements of Clause 5.4, and have a minimum thickness of 5 mm thick.

8 REQUIREMENTS – TABLES FOR INDOOR USE

8.1 General requirements

Tables shall meet the applicable requirements of Clauses 5 and 10.

Note: The use of PVC suction cups to hold glass tops to its understructure are not recommended as these have been known to degrade in use when exposed to sunlight and lose their adhesive properties in a short period of time introducing a risk of the glass surface becoming dislodged.

8.2 Safety requirements

Tables shall meet the requirements of clause 5 of BS EN 12521.

8.3 Strength, durability and stability requirements

When tested in accordance with the tests detailed in Table 1 there shall be no:

- a) breakage of any glass component;
- b) fracture of any member, joint or component;
- c) loosening, shown to be permanent by hand pressure applied to suitable members, of joints intended to be rigid;
- d) failure that affects the stability of the product;
- e) any deformation or cracks that will adversely affect the appearance or strength of any part of the sample.

Table 1: Structural test requirements

Test	Test description	Loading	Load/cycles
BS EN 1730: 2012, 7.1 and 7.2	Stability under vertical load	Test force, N: V_1 V^2	300 600
Annex B.1	Stability – horizontal impact for unframed glass not attached to the understructure	Drop height, mm: Total mass of impacter kg	35 45
BS EN 1730: 2012, 6.2 ¹	Horizontal static load	Test force, N:	450
BS EN 1730: 2012, 6.3	Vertical static load	Test force, N: a) toughened and laminated glass components b) all other glass components ²	1000 1500
BS EN 1730: 2012, 6.4.1 and 6.4.2 ¹	Horizontal durability	Number of cycles: Test force, 150 N	15000
BS EN 1730: 2012, 6.5	Vertical durability for cantilever or pedestal tables	Number of cycles: Test force, 300 N	15000
BS EN 14072: 2003, 6	Vertical impact	Drop height, mm: a) toughened and laminated glass components b) all other glass components ²	180 300
Annex B.2	Drop test for single tables weighing up to and including 20 kg	Nominal drop height, mm: Determined by Figure B.2 of Annex B.2 (using nominal drop height). Number of cycles:	50 10
Annex B.3	Drop test for stacking tables	Determined by Figure B.2 of Annex B.2 (using nominal drop height). Number of cycles:	10
<p>1) When tested to BS 1730: 2012, 6.2 and 6.4, the horizontal force shall not exceed that which causes the top to move more than 100 mm in relation to the supporting structure.</p> <p>2) All other glass components include glass types of annealed glass, film-backed glass, decorated glass and cast glass.</p> <p>3) When tested to BS EN 14072: 2005, 6, tops shall be impacted at the following positions:</p> <ul style="list-style-type: none"> • As close as possible to one point of support, but not less than 100 mm from any edge; • 100 mm from the edge of the top as far away from the supports as possible; • 100 mm from the edges at one corner; • At the geometric centre of the top. <p>Note: The test requirements were taken from the withdrawn standard BS 7376: 2009 – test level 3</p>			

8.4 Glass thickness

8.4.1 Glass supported over its entire area

Glass that is supported over its entire area (e.g. glass laying on another surface) shall conform to the thickness requirements shown in Table 2.

Table 2: Nominal thickness for glass that is supported over its entire area

Area of glass (m ²)	Nominal thickness	
	Safety glass (mm)	Annealed glass (mm)
≤ 0.5	≥ 4.0	≥ 4.0
>0.5 to ≤ 1.0	≥ 4.0	≥ 5.0
>1.0 to ≤ 1.5	≥ 4.0	≥ 6.0
>1.5	≥ 4.0	≥ 6.0

8.4.2 Glass not supported over its entire area

Glass that is not supported over its entire area shall conform to the thickness requirements shown in Table 3.

Table 3: Nominal thickness for glass that is not supported over its entire area

Area of glass (m ²)	Nominal thickness	
	Safety glass (mm)	Annealed glass (mm)
≤ 0.25	≥ 4.0	≥ 10.0
>0.25 to ≤ 0.5	≥ 5.0	≥ 10.0
>0.5 to ≤ 0.75	≥ 6.0	≥ 12.0
>0.75 to ≤ 1.5	≥ 8.0	≥ 15.0
>1.5	≥ 10.0	≥ 19.0

9 REQUIREMENTS - STORAGE

9.1 General requirements

Storage units shall meet the applicable requirements of Clauses 5 and 10.

9.2 Safety requirements

Storage units shall meet the requirements of BS EN 14749.

9.3 Strength, durability and safety requirements

9.3.1 General

Storage units shall meet the requirements of BS 4875-7 at the appropriate test level.

Note: Test level 2 is considered suitable for light domestic use

Test level 3 is considered suitable for general domestic use

Test level 4 is considered suitable for heavy domestic/general contract use.

9.3.2 Glass shelves

9.3.2.1 Maximum safe load

The maximum safe load for the shelf shall be declared by the manufacturer.

Where the maximum safe load declared by the manufacturer is less than the test load calculated for strength of shelf supports test, the test load used shall be the declared maximum safe load multiplied by 1.25.

9.3.2.2 Support of shelves

When the glass is moved to extreme positions in any direction horizontally it shall overlap all supports simultaneously by at least 4 mm. Furniture with doors shall comply with this requirement with its doors open.

9.3.2.2 Shelves that are not enclosed shelves

Shelves that are not enclosed shelves shall be manufactured from toughened glass.

9.4 Glass thickness

9.4.1 Horizontal glass supported over its entire area

Glass which has an area no greater than 1.5 m² shall comply with the relevant nominal thickness given in Table 4. Glass which has an area greater than 1.5 m² shall be either toughened glass with a nominal thickness of at least 4 mm, or laminated glass with a nominal thickness of at least 4.4 mm.

Table 4: Nominal thickness of horizontal glass supported over its entire area

Area of glass (m ²)	Nominal thickness requirement (mm)			
	Annealed glass	Toughened glass	Laminated glass	Film backed glass
≤ 0.5	≥ 4.0	≥ 4.0	≥ 4.4	≥ 4.0
> 0.5 to ≤ 1.0	≥ 5.0	≥ 4.0	≥ 4.4	≥ 4.0
> 1.0 to ≤ 1.5	≥ 6.0	≥ 4.0	≥ 4.4	≥ 4.0
> 1.5	Do not use	≥ 4.0	≥ 4.4	Do not use

9.4.2 Unbacked glass with a minor dimension less than 900 mm

Unbacked glass with a minor dimension of less than 900 mm shall have a nominal thickness of at least 3mm when fully framed. When partially, or unframed, the glass shall have a nominal thickness of at least 4 mm.

9.4.3 Unbacked glass with a minor dimension of 900 mm or greater

Unbacked glass with a minor dimension of 900 mm or greater shall have a nominal thickness of at least 4mm when fully framed. When partially, or unframed, the glass shall have a nominal thickness of at least 6 mm.

10 INFORMATION REQUIREMENTS

10.1 General requirements

All products containing glass shall be supplied with the following information headed 'KEEP THESE INSTRUCTIONS FOR FUTURE REFERENCE'. It shall contain:

- a) The furniture manufacturer's or supplier's (i.e. agent, importer or retailer) name and address
- b) A means of identifying the product, for example the model number and batch number or date of manufacture
- c) Details of the type of glass used (i.e. nominal thickness, whether annealed, laminated, film backed or toughened)
- d) The following statement:
"If the glass is chipped or broken, stop using the product."
- e) Clean glass with a damp cloth. Use only water/glass-cleaner. Wipe dry with clean a cloth.
- f) The following warnings:

"WARNING"

- Handle with care
- Do not place very hot or very cold items directly on glass surfaces.
- Do not sit or stand on glass surfaces.
- Do not strike the glass with hard or pointed items, or use the glass as a chopping surface.
- Do not use abrasives cleaning agents, as these may scratch the glass.
- Always supervise young children around glass products.

10.2 Additional requirements for toughened glass

For products containing toughened or tempered glass that meets the requirements of clause 5.4 the following information shall be provided:

"In exceptional circumstances a scratched surface or damaged edge may cause the glass to break unexpectedly. The glass in this product is designed to break into small fragments rather than large/sharp pieces. Avoid impacts on the side or edges of the glass, as this is where the glass is most vulnerable "

10.3 Additional requirements for shelves

Where the item of furniture includes shelving the information supplied shall also include:

- The safe load for each shelf in kilograms.

10.4 Additional requirements for outdoor tables to be used with parasols

For products designed to be used with parasols the following additional warnings shall be used:

- Always use a parasol with a suitable weighted parasol base.
- Do not remove the parasol cut-out protector as this prevents direct contact between the glass and the parasol.

Note: *The above warnings can be adapted to suit any product that has protective features designed to prevent impact on glass.*

11 TEST REPORT

11.1 Test report cover sheet

The cover sheet of the test report shall contain at least the following information:

- a) the number and date of this Standard, i.e. FIRA/FRQG G001: 2017
- b) unique reference of the item
- c) the test result (either the words Pass or Comply for a successful result and Fail or Non-Comply for an unsuccessful result)

11.2 Test report contents

The test report shall contain at least the following information:

- d) the number and date of this Standard, i.e. FIRA/FRQG G001: 2017
- e) unique reference of the item
- f) details of the article tested, e.g. specification and photographs
- g) details of any defects observed before the tests
- h) details of any defects and damage observed after the tests
- i) the test result
- j) name and address of test facility
- k) date of testing

ANNEX A (NORMATIVE) – TEST METHODS AND RECOMMENDATIONS FOR MIRRORS

A.1 INTEGRITY OF BACKING TEST

A.1.1 Preparation – Mirrors bonded to a rigid backing

Place the mirror and backing panel, with the mirror surface facing upwards, on a flat surface without any mechanical constraint.

A.1.2 Preparation – Mirrors with a safety film backing

Place the mirror, with the mirror surface facing upwards, on a flat surface without any mechanical constraint. Hold the specimen at the edges with tape, or a similar means, so that the glass remains interlocked after breakage, but the extension of the sample is not hindered.

A.1.3 Procedure

Impact the mirror surface with a pointed steel tool at a position 13 mm in from the longest edge of the test specimen, at the mid-point of that edge, until breakage occurs.

Note: *Examples of steel tools are a hammer of about 75 g mass and a centre punch, or similar appliance with a hardened tip.*

Turn the sample over and allow any fragments to fall away from the backing.

A.2 MIRROR ATTACHMENT

Weigh the mirror and record the mass of the mirror.

Mount the mirror on a suitable surface, as specified by the manufacturer.

Add a test load equivalent to the mass of the mirror. The test load shall act through the geometric centre of the mirror.

The mirror and test load shall be left in place for 24 hours. Remove the test load and mirror and inspect.

A.3 RECOMMENDATIONS FOR FIXING MIRRORS

A.3.1 Pressure sensitive materials

A.3.1.1 Introduction

It is important for furniture manufacturers to consult adhesive manufacturers regarding the compatibility of an adhesive system with the surfaces of the mirror, safety film backing and component to be bonded.

Wherever possible the furniture or adhesive manufacturer should evaluate the performance of the proposed mirror and adhesive combination to ensure failure in the field does not occur.

Note: *FIRA Standard FS 31 Requirements for mirror and glass mounting tapes, is one suitable method for assessing mirror bond performance.*

Furniture factories are not always ideal environments in which to apply pressure sensitive adhesive tapes. Bond strength can be severely reduced if the surface of the component to be bonded becomes contaminated. Therefore, not only is the selecting of the bonding system important, but also to set up and maintain appropriate environmental and application procedures.

A.3.1.2 Recommendations

- Pressure sensitive materials should never be used to suspend mirrors in a horizontal position, or at such an angle that the adhesive bond is subjected to significant tensile stress. In these situations mirrors should be mechanically fixed.
- When a mirror is to be fixed to a textured surface, a thicker foam carrier should be used so that the bond area can be maximised.
- Unless the adhesive manufacturer's instructions differ, the area of pressure sensitive adhesive material per unit mass of mirror should not be less than 4000 mm²/kg. The adhesive material should be evenly distributed over the surface of the mirror with a minimum of four application points.
- The surface to which the mirror is to be bonded should be as smooth as possible to maximise the bond area and strength.
- Pressure sensitive adhesive materials should not be used on partially cured lacquers or partially cured paints, friable surfaces, porous surfaces, e.g. unfinished wood or wood based materials, nor on surfaces contaminated with grease, wax or dust.

A.3.2 Screw and clip fixings

A.3.2.1 Recommendations

- Mirrors should not be forced into clips or screwed down too tightly.
- Screws should not be in contact with the glass; sleeves and washers should be used.
- Holes in the glass should be large enough to accommodate both sleeves and screws.

ANNEX B (NORMATIVE) – TEST METHODS FOR TABLES

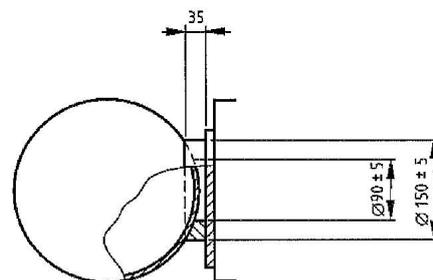
B.1 HORIZONTAL IMPACT TEST

B.1.1 Test equipment

B.1.1.1 Impactor

The impactor (see figure B.1) shall consist of a basketball made of synthetic material and having a circumference of 750 mm to 780 mm inflated to a pressure of 72.5 ± 2.5 kPa and attached by a network of elastic cords to a ball mounting ring. The ball mounting ring shall consist of a ring having an outside diameter of 150 ± 5 mm and an inside diameter of 90 ± 5 mm. The rear face of this ring shall be attached to the main body of the impactor and its front face shall be shaped to fit the ball.

The main body of the impactor shall consist of a mass supported by cords or flexible wire 850 ± 50 mm long so that the longitudinal axis of the impactor remains horizontal when the support cords are displaced from the vertical. The main body of the impactor shall be of such a mass that the total mass of all moving parts, excluding the support cords, shall be 45 kg.



a) Detail of ball mounting ring

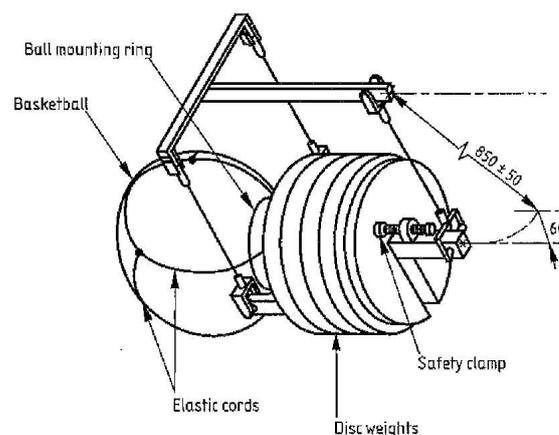


Figure B.1 Impactor

B.1.1.2 Floor

As specified in BS EN 1730: 2000, **5.4**

B.1.1.3 Stops

As specified in BS EN 1730: 2000, **5.5**

B.1.2 Procedure

Place the item of furniture on the floor (**B1.1.2**) with the stops (**B1.1.3**) positioned against the bottom of the legs furthest from the position of impact. Drop the impacter (**B1.1.1**) from the specified height so that it strikes the edge of the item of furniture at the position most likely to cause overturning (e.g. the top edge). The maximum height of the point of impact from the floor shall be 1.6 m.

B.2 DROP TEST FOR TABLES

B.2.1 Procedure

Carry out the test as described in BS EN 1730: 2000, **6.8**, using the drop height calculated in accordance with Figure B.2 from the nominal drop height specified in Table 1.

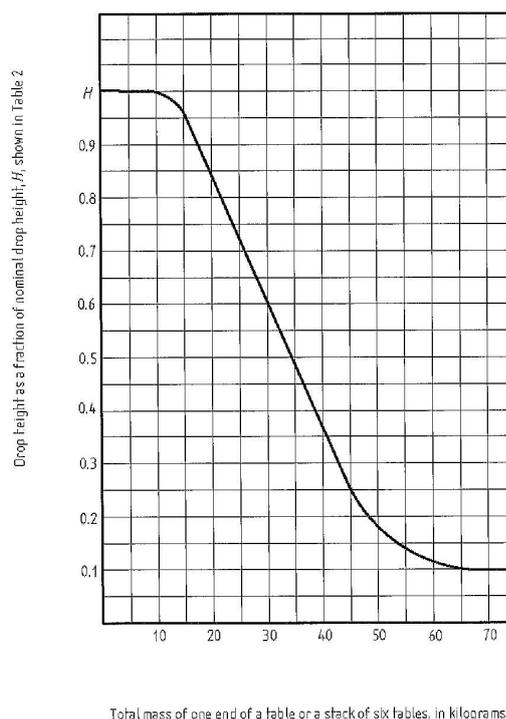


Figure B.2 Drop height relative to mass

B.3 DROP TEST FOR STACKING TABLES

B.3.1 Procedure

Stacking tables shall be dropped in a stack of six tables as specified in **B.2**.

ANNEX C (INFORMATIVE) – SAMPLE RESPONSE TO TOUGHENED GLASS FAILURES

C.1 SAMPLE RESPONSE TO TOUGHENED GLASS FAILURES

C.1.1 General

Toughened glass may fail unexpectedly for a variety of reasons, whether from manufacturing faults or from chips and scratches to the surface/edges of the glass. The failure mode can cause small chips of glass to be spread over a wide area and is accompanied by a load noise.

Such failures often cause concern for the consumer, who may feel the product is dangerous or unsafe, even though this is the desired failure mode to minimise injury to the consumer. As such a sample response has been prepared to allow for consistency in response across the retail industry.

C.1.2 Sample response

Is my glass furniture safe?

You may have seen reports on social media or in the press about glass furniture that have shattered, sometimes unexpectedly. As a responsible retailer we want to address some of the concerns that you may have around the safety of these products.

We'd like to reassure you that instances of glass products shattering are very rare. These products are designed with safety in mind and are made from toughened glass.

What causes the glass to shatter?

Toughened glass is designed to shatter into lots of tiny pieces when damaged. This is a safety feature to reduce the risk of injury, as it doesn't form large and jagged shards like normal (annealed) glass. Toughened glass is also stronger and more resistant to heat than normal glass, which is why it is commonly used in products like shower screens, glass cookware and furniture.

In rare instances, if toughened glass is damaged, for example chips and scratches, it can lead to the glass breaking seemingly of its own accord. Damage to the glass (not always visible) can get worse over time until it reaches a critical point when it may shatter. This is not a fault with the product or design, this is how the glass is intended to behave if damaged, as with all toughened glass.

All of our products go through rigorous safety tests and independent inspections, but to help reduce the chances of damaging glass we have included some guidelines below.

How to prevent damaging your product

Toughened glass can withstand high impact but is not indestructible. Damage is most likely to occur if the glass is struck by a hard object, dropped on its edge onto a hard surface or, for garden furniture, blown over in strong winds.

To reduce the risk of damage it is recommended that:

- During assembly do not lay the glass directly onto hard or rough surfaces. We recommend laying the glass on a blanket or cardboard during assembly. You could even use the box.
- When lifting or moving the product, ask for someone to lend a hand, trying to move a product on your own can lead to accidents.
- Do not use furniture if any parts are missing or broken. Contact your retailer immediately.
- Do not place very hot or very cold items, such as saucepans or barbecues, directly on the glass surface. Extreme temperature differences over small areas can damage glass.
- Do not sit or stand upon the glass surface.
- Do not strike the glass with hard or pointed items, or use the glass as a chopping surface.
- Do not drag rough or heavy objects over the top of the glass.
- We recommend using place mats, coasters and table cloths to help protect against scratches and accidentally dropped items.
- Clean the glass regularly to make sure there are no grit on the top.
- Do not clean glass with washing powders or any other substances containing abrasives, since these substances can scratch glass.
- For tables that can be used outdoors, if your table has a parasol, make sure the edge of the parasol cut-out has a protector in place. In addition always use a weighted parasol base, and remove the parasol in windy conditions. Parasols can put pressure on the table top or even blow the table over in windy weather.
- For tables that can be used outdoors it is advised that the table is kept covered when not in use to protect the glass from the weather and accidental damage.

If you have any concerns regarding your product please contact your retailer immediately