BS ISO 614:2012

BSI Standards Publication

Ships and marine technology — Toughened safety glass panes for rectangular windows and side scuttles — Punch method of non-destructive strength testing

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National foreword

This British Standard is the UK implementation of ISO 614:2012.

The UK participation in its preparation was entrusted to Technical Committee SME/32/-/8, Ships & Marine Technology - Structure and ship design.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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2012-06-15

Ships and marine technology — Toughened safety glass panes for rectangular windows and side scuttles — Punch method of non-destructive strength testing

Navires et technologie — Verres de sécurité trempés pour hublots et fenêtres rectangulaires de navires — Méthode du poinçon pour les essais non destructifs de résistance

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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.

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ISO 614 was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 8, *Ship design*.

This fourth edition cancels and replaces the third edition (ISO 614:1989), which has been technically revised.

INTERNATIONAL STANDARD ISO 614:2012(E)

Ships and marine technology — Toughened safety glass panes for rectangular windows and side scuttles — Punch method of non-destructive strength testing

1 Scope

This International Standard specifies a method for the non-destructive breaking reliability testing of toughened safety glass panes for windows and side scuttles complying with ISO 21005.

2 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.

ISO 48, *Rubber, vulcanized or thermoplastic — Determination of hardness (hardness between 10 IRHD and 100 IRHD)*

ISO 21005, *Ships and marine technology — Thermally toughened safety-glass panes for windows and side scuttles*

3 Test apparatus

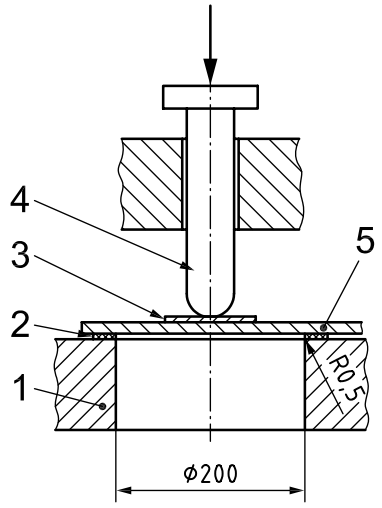
The apparatus shall be of the appropriate form shown in Figure 1, as follows:

a) Form A: for all glass panes with a size $\geq$ 250 mm;

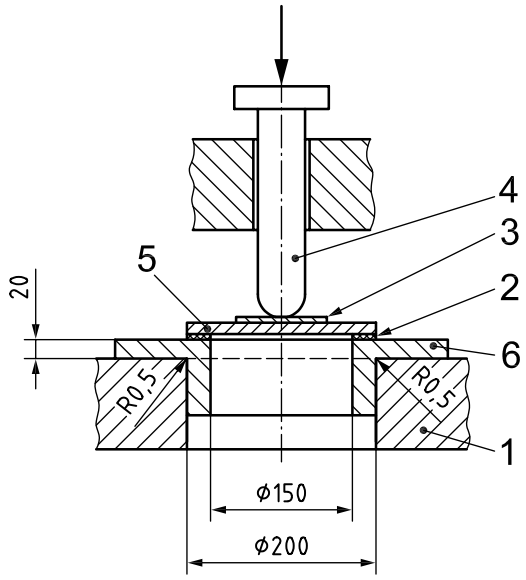
b) Form B: for all glass panes with a size $>$ 200 mm and $<$ 250 mm.

The test apparatus shall also meet the requirements of Table 1.

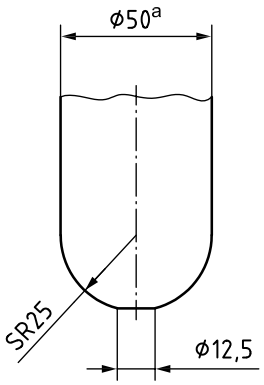
Dimensions in millimetres



a) Form A



b) Form B



c) Details of punch

Key

1 base plate
2 flat ring
3 pad
4 punch
5 glass pane under test
6 adapter

Figure 1 — Form of test apparatus

Table 1 — Components of test apparatus

Component	Material	Specification	
Base plate	Steel	Thickness: sufficient to prevent deformation under pressure Surface: flat	
Flat ring	Rubber, hardness 40 IRHD to 60 IRHD[a]	Internal diameter: Form A: 200 mm Form B: 150 mm, to be flush with the adapter	Thickness: 2 mm Width: 15 mm min.
Punch	Steel	Lower part flattened so that the diameter of 12,5 mm is obtained	
Pad	Felt or fibre-board	Thickness: approximately 5 mm for felt or approximately 2 mm for fibre-board External diameter: approximately 50 mm	
Adapter	Steel	External diameter: to be flush with the hole in the base plate Internal diameter: 150 mm for glass panes of side scuttles of nominal size 200 mm	

[a] IRHD = International Rubber Hardness Degrees. See ISO 48.

4 Procedure

4.1 Positioning of components

Place the glass pane on top of the flat ring, so that the edge of the glass pane is not less than 25 mm from the edge of the hole in the ring.

Position the punch centrally over the flat ring.

Interpose a pad between the glass pane and the punch.

4.2 Proof load

Apply a load to the punch, increasing steadily, at a rate of 1 000 N/s, until the appropriate proof load given in Table 2 is reached.

Table 2 — Proof loads

Thickness of glass pane		Proof load with test apparatus	
nominal	**tolerances**	**Form A**	**Form B**
mm	mm	N	N
6	±0,2	3 400	3 500
8	±0,3	6 500	6 700
10		10 200	11 000
12		15 500	—
15	±0,5	24 000	—
19	±1[a]	33 400	—
25	±1	53 000	—

[a] See ISO 21005:— (to be published).

Maintain the specified load for 5 s and then gradually remove the load.

4.3 Test result

The glass pane shall remain unbroken and shall show no signs of damage.

5 Marking

5.1 Thermally toughened safety glass panes, tested in accordance with this International Standard, shall be marked as follows:

a) Clear glass panes: Single inverted equilateral triangle with the nominal thickness of the glass shown within the triangle.

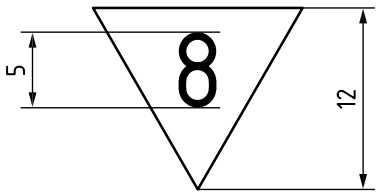
b) Surface-treated glass panes: Double inverted equilateral triangle with the nominal thickness of the glass shown within the triangle.

The marking should be visible after assembly.

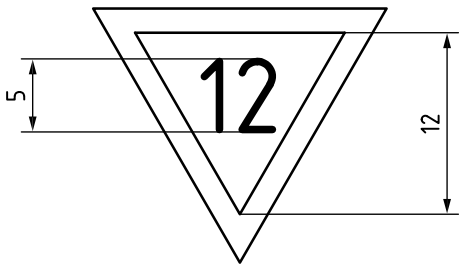
NOTE Marking is applied after the obscuring process but before toughening.

5.2 Marking shall have the minimum dimensions shown in Figure 2.

Dimensions in millimetres



a) Clear glass



b) Surface treated glass

Figure 2 — Examples of markings

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