



## Shipbuilding — Toughened safety glass panes for ships' side scuttles and ships' rectangular windows — Punch method of non-destructive strength testing

*Construction navale — 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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ISO 614:1976

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Price based on 3 pages

FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up 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.

Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 614 was drawn up by Technical Committee ISO/TC 8, *Shipbuilding*. This second edition was circulated to the Member Bodies in August 1975.

It has been approved by the Member Bodies of the following countries :

Australia	France	Poland
Austria	Germany	Romania
Belgium	Ireland	Sweden
Brazil	Italy	Turkey
Bulgaria	Japan	United Kingdom
Canada	Mexico	U.S.S.R.
Czechoslovakia	Netherlands	Yugoslavia
Finland	Norway	

No Member Body expressed disapproval of the document.

This second edition cancels and replaces the first edition (i.e. ISO 614-1973).



## INTERNATIONAL STANDARD ISO 614-1976 (E)/ERRATUM

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#### ERRATUM

*Page 3*

In figure 2, replace the marking d) by the following :



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1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method for the non-destructive strength testing of toughened safety glass panes for ships’ side scuttles, complying with ISO 1095, and ships’ rectangular windows, complying with ISO 3254.

2 REFERENCES

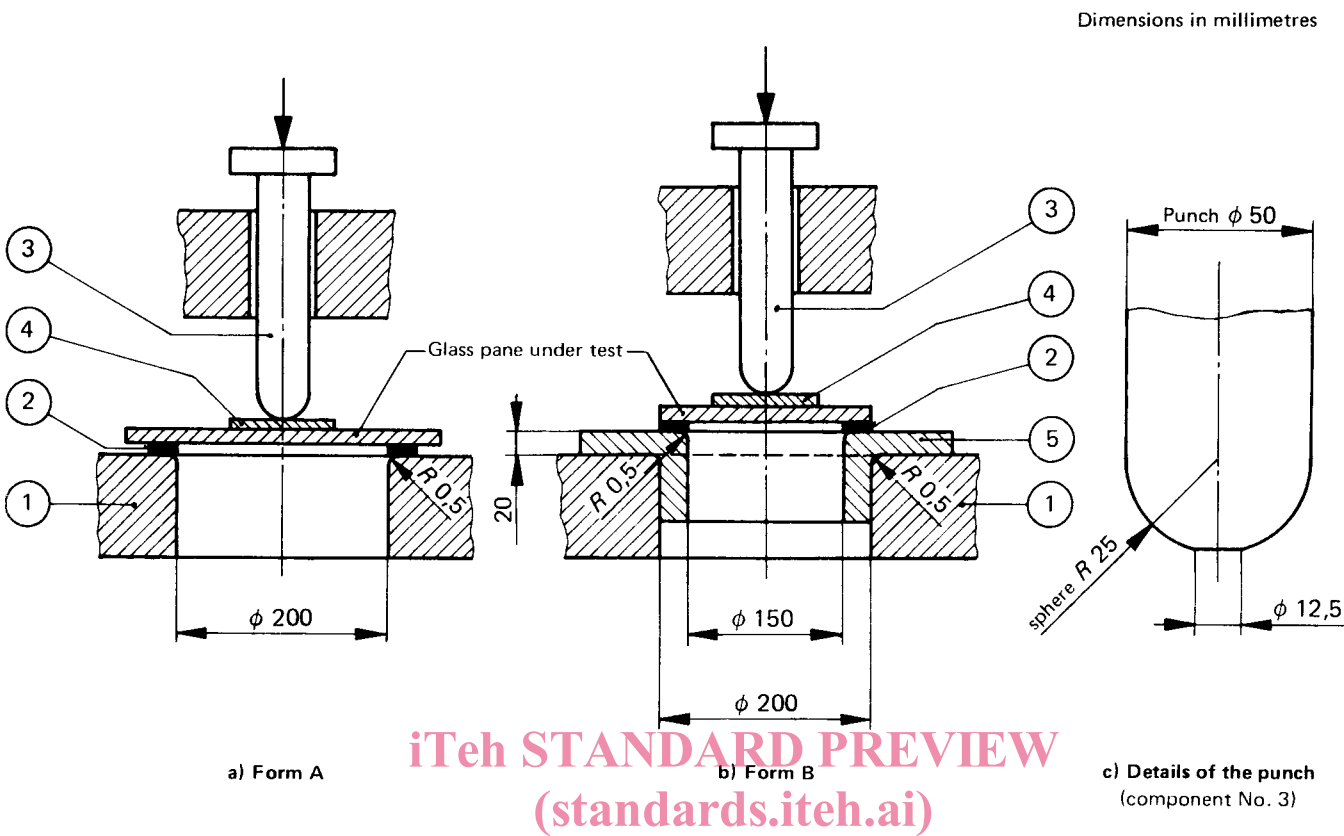
ISO 48, *Vulcanized rubbers — Determination of hardness (Hardness between 30 and 85 IRHD)*.  
ISO 1095, *Shipbuilding — Toughened safety glass panes for ships’ side scuttles*.

ISO 3254, *Shipbuilding — Toughened safety glass panes for ships’ rectangular windows*.

3 APPARATUS

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

- a) **Form A** : for glass panes of side scuttles of nominal size 250 mm and above, and for glass panes of rectangular windows of all sizes;
- b) **Form B** : for glass panes of side scuttles of nominal size 200 mm.



**FIGURE 1**  
**ISO 614:1976**  
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TABLE 1 – Components of test apparatus

Component			Material	Specification	
No.		denomination			
form A	form B				
1		base plate	steel	Thickness : sufficient to prevent deformation under pressure Surface : flat	
2		flat ring	rubber, hardness 40 to 60 IRHD <sup>1)</sup>	Internal diameter :  form A : 200 mm form B : 150 mm, to be flush with the adaptor (component No. 5)	thickness : 2 mm  width : 15 mm minimum
3		punch	steel	Lower part flattened so that a diameter of 12,5 mm is obtained	
4		pad	felt or fibre-board	Thickness :  	

1) IRHD = International Rubber Hardness Degrees; see ISO 48.

4 PROCEDURE

4.1 Place the glass pane on top of the flat ring, with the obscured surface upwards in the case of obscured glass, so that no edge is less than 25 mm from the edge of the hole in the ring.

Position the punch (component No. 3) centrally over the flat ring.

Interpose a pad (component No. 4) between the pane and the punch.

Apply a load to the punch, increasing steadily, at a rate of 1 000 N per second, until the appropriate proof load given in table 1 is reached.

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

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

TABLE 2 – Proof loads

Glass thickness			Proof load for diameter of hole of test apparatus	
nominal	tolerance		form A	form B
	plate glass	sheet glass	200 mm	150 mm
mm	mm	mm	N	N
6	± 0,2	± 0,3	3 400	3 500
8	± 0,3	± 0,5	6 500	6 700
10		± 0,6	10 200	11 000
12		± 0,7	15 500	—
15	± 0,5	± 1	24 000	—
19	± 1	± 1	33 400	—

5 MARKING

5.1 Toughened safety glass panes, tested in accordance with this International Standard, shall be marked as follows and as stipulated in 5.2 :

- a) clear glass : single inverted equilateral triangle;
- b) obscured and other non-transparent glass : double inverted equilateral triangle, applied after the obscuring process and before toughening.

5.2 The nominal thickness of the glass shall be shown within the triangle(s). In the case of sheet glass, the numeral shall be inscribed within a circle.

5.3 The minimum dimensions of the markings shall be as shown in figure 2.

Dimensions in millimetres

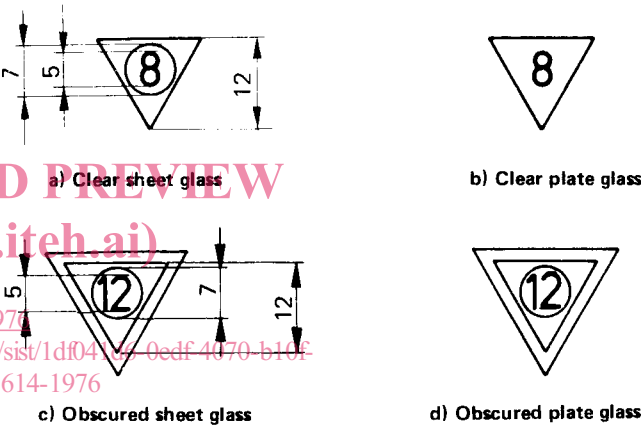


FIGURE 2 – Examples and minimum dimensions of markings

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