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Ships and marine technology — Thermally toughened safety-glass panes for windows and side scuttles

Navires et technologie maritime — Verres de sécurité trempés thermiquement pour fenêtres et hublots

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 21005 was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 8, *Structures*.

This first edition of ISO 21005 cancels and replaces ISO 1095:1989 and ISO 3254:1989.

Ships and marine technology — Thermally toughened safety-glass panes for windows and side scuttles

1 Scope

This International Standard specifies materials and finish, dimensions for interchangeability, tolerances, parallelism and flatness, testing, marking and designation of thermally toughened safety glass panes for windows complying with ISO 3903 and side scuttles complying with ISO 1751.

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 614, *Shipbuilding and marine structures — Toughened safety glass panes for rectangular windows and side scuttles — Punch method of non-destructive strength testing*

ISO 1751, *Shipbuilding and marine structures — Ships' side scuttles*

ISO 3903, *Shipbuilding and marine structures — Ships' ordinary rectangular windows*

ISO 6345, *Shipbuilding and marine structures — Windows and side scuttles — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 6345 and the following apply.

3.1
batch of glass panes
quantity of glass panes of the same nominal size and nominal thickness, produced in the same process under consistent controlled conditions

4 Material

Thermally toughened safety glass shall be manufactured of plate glass, either float or polished.

5 Finish

If the strength of the glass pane is lowered by the finishing, for example deadened by sandblasting, a thicker glass pane shall be chosen.

6 Dimensions and tolerances

6.1 Dimensions, thicknesses and nominal sizes

6.1.1 Ordinary rectangular windows

The thicknesses of glass panes for windows complying with the requirements of ISO 3903 are shown in Figure 1 and given in Table 1.

The nominal sizes given in Table 1 are the clear light dimensions of the windows.

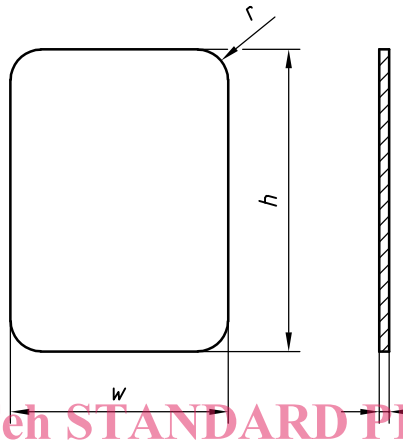


Figure 1 — Dimensions of glass pane

Table 1 — Dimensions of glass panes for ordinary rectangular windows

Dimensions in millimetres

Nominal size	Width w		Height h		Radius r	Thickness[a] t			
						8	10	12	15
$w_1 \times h_1$	min.	max.	min.	max.		± 0,3	± 0,3	± 0,3	± 0,5
400 × 560	414	418	574	578	58	F	—	E	—
450 × 630	464	468	644	648	108	F	—	E	—
500 × 710	514	518	724	728	108	—	F	—	E
560 × 800	574	578	814	818	108	—	F	—	E

[a] Type E for Heavy-type window, Type F for Light-type window in accordance with ISO 3903.

6.1.2 Side scuttles

The diameters, d, and the thicknesses, t, of thermally toughened safety-glass panes for side scuttles complying with the requirements of ISO 1751 are shown in Figure 2 and given in Table 2.

The nominal sizes given in Table 2 are the clear light diameters of the side scuttles.

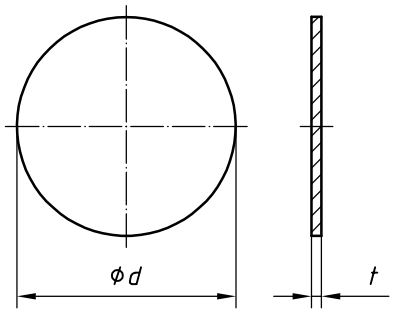


Figure 2 — Dimensions of glass panes for side scuttles

Table 2 — Dimensions of glass panes for side scuttles

Dimensions in millimetres

Nominal size	Diameter d		Thickness[a] t					
			6	8	10	12	15	19
d_1	min.	max.	± 0,2	± 0,3	± 0,3	± 0,3	± 0,5	± 1
200	213	215	C	B	—	A	A	—
250	263	265	C	C	B	—	—	—
300	316	319	B	A	—	—	—	—
350	366	369	C	C	B	A	B	A
400	416	419	—	C	B	—	—	—
450	466	469	—	—	—	—	—	—

[a] Type A for Heavy-type side scuttle, Type B for Medium-type side scuttle and Type C for Light-type side scuttle in accordance with ISO 1751.

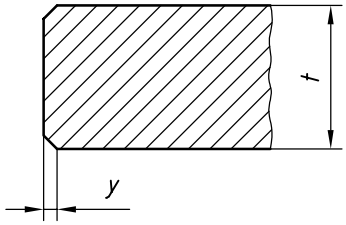
6.1.3 Other dimensions

Dimensions other than those listed in 6.1.1 and 6.1.2 may be agreed on between the parties concerned.

The thickness shall be calculated in accordance with Annex A (normative).

6.2 Edges

All edge work shall be smooth ground and carried out before toughening the glass. The maximum dimension for y shall be less than or equal to 2 mm. See Figure 3.



Key

t thickness

y $\leqslant$ 2 mm

Figure 3 — Glass edges

7 Parallelism

The deviation from parallelism between the two surfaces of a clear glass pane shall not exceed the value given in Figure 4.

Dimensions in millimetres

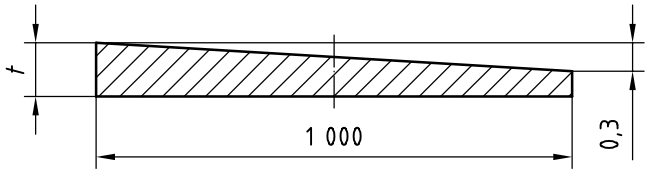


Figure 4 — Parallelism

8 Flatness

The tolerance on flatness in glass panes (see Figure 5) shall not exceed 3 mm/1 000 mm.

Dimensions in millimetres

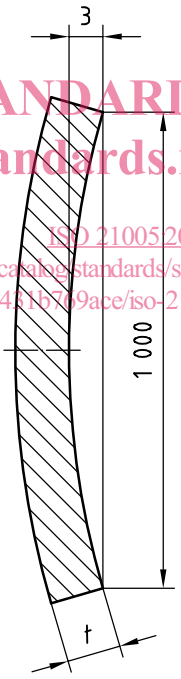


Figure 5 — Flatness

9 Testing

The glass panes shall be tested in accordance with ISO 614.

9.1 Sampling of glass panes

Each batch of glass panes shall be tested separately.

Where a batch consists of four glass panes or less, each of the glass panes shall be tested.

Where a batch consists of more than four glass panes, the test shall be carried out on a random sample of four glass panes, or on 2 % of the batch, whichever figure is the greater.

9.2 Acceptance conditions

The following acceptance conditions are specified.

a) The tested glass panes shall remain unbroken and shall show no signs of damage.

b) If each sample glass pane tested remains unbroken, the whole batch shall be accepted.

c) If one sample glass pane breaks during the test, a complete re-test shall be carried out on a further sample taken from the same batch.

d) If

— more than one glass pane breaks in the first test, or

— a further glass pane breaks in the re-test,

the batch shall be rejected.

9.3 Marking

Each glass pane shall be marked as indicated in ISO 614.