SECTION 3   WINDOWS AND SIDESCUTTLES

1 Sidescuttles and windows

1.1 General

1.1.1 Application

The requirements of this Section apply to sidescuttles and windows providing light and air, located in positions which are exposed to the action of sea and/or bad weather.

Arrangements of sidescutles and windows have to be made in accordance with Ch 2, Sec 2, [3.3].

1.1.2 Sidescuttle definition

As a general rule, sidescuttles are openings with an area not exceeding 0,16 m².

1.1.3 Window definition

Windows are openings with an area exceeding 0,16 m², having a radius at each corner relative to the window size in accordance with recognised national or international standards.

1.1.4 Number of openings in the shell plating

The number of openings in the shell plating are to be reduced to the minimum compatible with the design and proper working of the ship.

1.1.5 Material and scantlings

Sidescuttles and windows together with their glasses, deadlights and storm covers, if fitted, are to be of approved design and substantial construction in accordance with, or equivalent to, recognised national or international standards.

1.1.6 Means of closing and opening

The arrangement and efficiency of the means for closing any opening in the shell plating are to be consistent with its intended purpose and the position in which it is fitted is to be generally to the satisfaction of the Society.

1.2 Windows and sidescuttles arrangement

1.2.1 General

The strength of openings is to be equivalent to the strength of the surrounding structure.

1.2.2 Non-opening sidescuttle type are to be provided:

- where they become immersed by any intermediate stage of flooding or the final equilibrium waterplane in any required damage case for ships subject to damage stability regulations
- in the first tier of superstructures and deckhouses considered as being buoyant in the stability calculations.

1.2.3 Ships with several decks

In ships having several decks above the freeboard deck[(m)], the arrangement of sidescuttles and rectangular windows is considered by the Society on a case by case basis.

Particular consideration is to be given to the ship side up to the upper deck and the front bulkhead of the superstructure.

1.2.4 Automatic ventilating scuttles

Where automatic ventilating sidescuttles are fitted, refer to Ch 2, Sec 2, [3.2]

1.3 Materials

1.3.1 Glasses

In general, toughened glasses with frames of special type are to be used in compliance with, or equivalent to, recognised national or international standards.

1.3.2 Other materials

The use of any other material for openings is considered by the Society on a case by case basis.

1.4 Scantlings

1.4.1
The design loads to take into account for the windows and sidescuttles are the local loads of the adjacent structure supporting the windows and the sidescuttles as defined in Ch 7, Sec 1, [2.2], Ch 7, Sec 1, [2.3] and Ch 7, Sec 1, [4].

1.4.2 Thickness of monolithic glazings

The following formulae are only valid for monolithic panes. Where laminated material is used, the thickness is considered by the Society on a case by case basis.

The thickness of glazings, where supported, is to be not less than that obtained, in mm, from the following formula:

$$t = 27,4 \cdot coeff \cdot \mu \cdot s \cdot \sqrt{\frac{p}{R_m / S_f}}$$

The thickness of glazings, where clamped, is to be not less than that obtained, in mm, from the following formula:

$$t = 22,4 \cdot coeff \cdot \mu \cdot s \cdot \sqrt{\frac{p}{R_m / S_f}}$$

where:

coeff : Coefficient equal to:
- In case of uniformly distributed hydrodynamic loads, as given in Ch 7, Sec 1:
  coeff = 1
- In case of impact pressure on side shells (loads distributed on a part only of the elmentary plate panel), as given in Ch 7, Sec 1, [2.3]:

- coeff = 1, if

$$\frac{\ell}{0,6} \leq 1 + s$$

- coeff = $(1+s)^{-1/2}$, if

$$\frac{\ell}{0,6} > 1 + s$$

s : Equal to:

- Smaller side, in m, for rectangular panes

- Diameter, in m, for circular panes

- Minor axis, in m, for oval panes

μ : Aspect ratio coefficient of the elementary plate panel, equal to:

$$\sqrt{1,1 - \left(0,5 \cdot \frac{s^2}{\ell^2}\right)}$$

without being taken more than 1, where:

ℓ : Equal to:

- Longer side, in m, for rectangular panes

- Major side, in m, for oval panes

R_m : Guaranteed minimum flexural strength, in MPa, of material used. For guidance only, the guaran-teed minimum flexural strength R_m for mono-lithic andd laminated glasses are:

- Thermally toughened = 180 MPa

- Chemically toughened = 250 MPa

S_f : Safety factors

- Monolithic toughened glass = 5

- Poly (MethylMethAcrilate) = 4,5

- Poly (carbonate) = 4,5

Where curved panes are used, a coefficient of curvature may be taken into account by the Society on a case by case basis.

1.4.3 Thickness of glasses forming screen bulkheads or internal boundaries of deckhouses

The thickness of glasses forming screen bulkheads on the side of enclosed promenade spaces and that for rectangular windows in the internal boundaries of deckhouses which are protected by such screen bulkheads are considered by the Society on a case by case basis.

The Society may require both limitations on the size of rectangular windows and the use of glasses of increased thickness in way of front bulkheads which are particularly exposed to heavy sea.

1.4.4 Deadlight scantling

Strength of deadlights is to be equal to the strength of the surrounding structure.