

## SECTION 3

## DAMAGE STABILITY

### 1 General

#### 1.1 Application

**1.1.1** The damage stability requirements of this Section are to be applied to yachts having a classification notation **unrestricted navigation** and a length  $L_{LL}$  greater than 24 m.

Yachts having the navigation notation **unrestricted navigation limited to 60 nautical miles** as defined in Pt A, Ch 1, Sec 2 may be exempted from damage stability requirements.

### 2 Assumptions

#### 2.1 Description of the damage

##### 2.1.1 Standard of damage

The damage should occur anywhere along the yacht's length except in way of a watertight bulkhead.

##### 2.1.2 Extent of damage

A circular damage of 1,0 m along the side shell has to be considered from the baseline up to the level of the waterline.

#### 2.2 Method of calculation

##### 2.2.1 Lost buoyancy method

The damage stability calculations have to be performed using the lost buoyancy method (constant displacement).

#### 2.3 Permeabilities

##### 2.3.1 General

For the purpose of the damage stability calculations, the following permeabilities have to be considered:

- 0,95: accommodation or voids
- 0,85: machinery
- 0,60: stores
- 0 or 0,95: for liquids, whichever results in the more severe requirements.

#### 2.4 Inclining moment

**2.4.1** The moment due to the wind pressure should be considered as follows:

- a wind pressure of 120 N/m<sup>2</sup> is to be applied

- the area applicable is to be the projected lateral area of the yacht above the waterline corresponding to the intact condition

For sailing yachts, the sails should be considered lowered

- the moment arm is to be the vertical distance from a point at one half of the mean draught corresponding to the intact condition to the centre of gravity of the lateral area.

#### 2.5 Damage stability criteria

**2.5.1** The following damage stability criteria have to be complied with:

- a) in the case of symmetrical flooding due to compartment arrangement, a positive residual metacentric height is to be at least 50 mm as calculated by the constant displacement method
- b) in the case of unsymmetrical flooding, the angle of heel is not to exceed 7°. For multihull yacht, an angle of heel up to 10° may be accepted
- c) the deck line should not be submerged at the equilibrium
- d) the minimum range of the positive residual righting lever curve is to be at least 15° beyond the angle of equilibrium
- e) the area under the righting lever curve is to be at least 0,015 m.rd measured from the angle of equilibrium to the lesser of the angle at which progressive flooding occurs, and 22° measured from upright
- f) a residual righting lever is to be obtained within the range of positive stability taking into account the heeling moment due the wing pressure, as calculated by the formula:

$$GZ = \frac{H_w}{D} + 0,04$$

where:

$H_w$  : Wind heeling moment as calculated in [2.4.1], in t.m

$D$  : Displacement, in t

$GZ$  : Righting lever, in m.

However, in no case is this righting lever to be less than 0,1 m.