§ 171.017 One and two compartment standards of flooding.

(a) One compartment standard of flooding. A vessel is designed to a one compartment standard of flooding if the margin line is not submerged when the total buoyancy between each set of two adjacent main transverse watertight bulkheads is lost.

(b) Two compartment standard of flooding. A vessel is designed to a two compartment standard of flooding if the margin line is not submerged when the total buoyancy between each set of three adjacent main transverse watertight bulkheads is lost.

Subpart B—Intact Stability

§ 171.045 Weight of passengers and crew.

(a) This section applies to each vessel, regardless of when constructed.

(b) Compliance with the intact stability requirements applicable to each vessel, using a total weight of passengers and crew carried, is based upon an Assumed Average Weight per Person, which is determined in accordance with §170.090 of this chapter. [USCG–2007–0030, 75 FR 78085, Dec. 14, 2010]

§ 171.050 Passenger heel requirements for a mechanically propelled or a non-self propelled vessel.

(a) Each mechanically propelled or non-self propelled vessel other than a pontoon vessel must be shown by design calculations, in each condition of loading and operation, to have a metacentric height (GM) in feet (meters) of not less than the value given by the following equation:

\[ GM = \left( \frac{W}{\Delta} \right) \left( \frac{2}{3} \right) \left( \frac{b}{\tan(T)} \right) \]

Where—

\( \Delta \) = displacement of the vessel in long (metric) tons.

\( W \) = total weight in long (metric) tons of persons other than required crew, including personal effects of those persons expected to be carried on the vessel.

\( T \) = 14 degrees or the angle of heel at which the deck edge is first submerged, whichever is less; and

\( b \) = distance in feet (meters) from the centerline of the vessel to the geometric center of the passenger deck on one side of the centerline.
§ 171.055 Intact stability requirements for a monohull sailing vessel or a monohull auxiliary sailing vessel.

(a) Except as specified in paragraph (b) of this section, each monohull sailing vessel and auxiliary sailing vessel must be shown by design calculations to meet the stability requirements in this section.

(b) Additional or different stability requirements may be needed for a vessel of unusual form, proportion, or rig. The additional requirements, if needed, will be prescribed by the Commandant.

(c) Each vessel must have positive righting arms in each condition of loading and operation from—

1. 0 to at least 70 degrees of heel for service on protected or partially protected waters; and
2. 0 to at least 90 degrees of heel for service on exposed waters.

(d) Each vessel must be designed to satisfy the following equations:

1. For a vessel in service on protected or partially protected waters—

\[
\frac{1000(W)HZA}{(A)(H)} \geq X
\]

\[
\frac{1000(W)HZB}{(A)(H)} \geq Y
\]

\[
\frac{1000(W)HZC}{(A)(H)} \geq Z
\]

where—

X=1.0 long tons/sq. ft. (10.9 metric tons/sq. meter).

Y=1.1 long tons/sq. ft. (12.0 metric tons/sq. meter).

Z=1.25 long tons/sq. ft. (13.7 metric tons/sq. meter).

(2) For a vessel on exposed waters—