

# ISO 12215-5:2008-04 (E)

## Small craft - Hull construction and scantlings - Part 5: Design pressures for monohulls, design stresses, scantlings determination

---

<b>Contents</b>		<b>Page</b>
Foreword .....		v
Introduction .....		vi
<b>1</b>	<b>Scope .....</b>	<b>1</b>
<b>2</b>	<b>Normative references .....</b>	<b>1</b>
<b>3</b>	<b>Terms and definitions .....</b>	<b>2</b>
<b>4</b>	<b>Symbols .....</b>	<b>4</b>
<b>5</b>	<b>General .....</b>	<b>6</b>
<b>6</b>	<b>Dimensions, data and areas .....</b>	<b>7</b>
<b>6.1</b>	<b>Dimensions and data .....</b>	<b>7</b>
<b>6.2</b>	<b>Areas .....</b>	<b>7</b>
<b>7</b>	<b>Pressure adjusting factors .....</b>	<b>9</b>
<b>7.1</b>	<b>General .....</b>	<b>9</b>
<b>7.2</b>	<b>Design category factor <math>k_{DC}</math> .....</b>	<b>9</b>
<b>7.3</b>	<b>Dynamic load factor <math>n_{CG}</math> .....</b>	<b>9</b>
<b>7.4</b>	<b>Longitudinal pressure distribution factor <math>k_L</math> .....</b>	<b>10</b>
<b>7.5</b>	<b>Area pressure reduction factor <math>k_{AR}</math> .....</b>	<b>11</b>
<b>7.6</b>	<b>Hull side pressure reduction factor <math>k_Z</math> .....</b>	<b>12</b>
<b>7.7</b>	<b>Superstructure and deckhouse pressure reduction factor <math>k_{SUP}</math> .....</b>	<b>13</b>
<b>7.8</b>	<b>Light and stable sailing craft pressure correcting factor for slamming <math>k_{SLS}</math> .....</b>	<b>13</b>
<b>8</b>	<b>Design pressures .....</b>	<b>14</b>
<b>8.1</b>	<b>Motor craft design pressure .....</b>	<b>14</b>
<b>8.2</b>	<b>Sailing craft design pressure .....</b>	<b>16</b>
<b>8.3</b>	<b>Watertight bulkheads and integral tank boundaries design pressure .....</b>	<b>16</b>
<b>8.4</b>	<b>Design pressures for structural components where <math>k_{AR}</math> would be <math>u_{0,25}</math> .....</b>	<b>18</b>
<b>9</b>	<b>Dimensions of panels and stiffeners .....</b>	<b>19</b>
<b>9.1</b>	<b>Dimensions of plating panels .....</b>	<b>19</b>
<b>9.2</b>	<b>Dimensions of stiffeners .....</b>	<b>23</b>
<b>10</b>	<b>Plating -- Scantling equations .....</b>	<b>25</b>
<b>10.1</b>	<b>Thickness adjustment factors for plating .....</b>	<b>25</b>
<b>10.2</b>	<b>FRP single-skin plating .....</b>	<b>28</b>
<b>10.3</b>	<b>Metal plating -- Aluminium alloy and steel .....</b>	<b>29</b>
<b>10.4</b>	<b>Laminated wood or plywood single-skin plating .....</b>	<b>30</b>
<b>10.5</b>	<b>FRP sandwich plating .....</b>	<b>31</b>
<b>10.6</b>	<b>Single-skin plating minimum thickness .....</b>	<b>35</b>
<b>11</b>	<b>Stiffening members requirements .....</b>	<b>36</b>
<b>11.1</b>	<b>General .....</b>	<b>36</b>
<b>11.2</b>	<b>Properties adjustment factors for stiffeners .....</b>	<b>37</b>
<b>11.3</b>	<b>Design stresses for stiffeners .....</b>	<b>37</b>
<b>11.4</b>	<b>Requirements for stiffeners made with similar materials .....</b>	<b>38</b>
<b>11.5</b>	<b>Requirements for stiffeners made with dissimilar materials .....</b>	<b>39</b>

11.6	Effective plating .....	40
11.7	Overall dimensions of stiffeners .....	41
11.8	Structural bulkheads .....	43
11.9	Structural support for sailing craft ballast keel .....	44
12	Owner's manual .....	44
12.1	General .....	44
12.2	Normal mode of operation .....	44
12.3	Possibility of outer skin damage .....	44
Annex A (normative) Simplified method for scantling determination .....		45
Annex B (normative) Drop test for boats of < 6 m .....		49
Annex C (normative) FRP laminates properties and calculations .....		52
Annex D (normative) Sandwich mechanical core properties and sandwich calculation .....		63
Annex E (normative) Wood laminate properties and wood calculations .....		69
Annex F (normative) Mechanical properties of metals .....		78
Annex G (normative) Geometric properties of stiffeners .....		80
Annex H (normative) Laminate stack analysis .....		97
Bibliography .....		108