

# S7 Minimum Longitudinal Strength Standards<sup>†</sup>

(1973)

(Rev.1

1976)

(Rev.2

1978)

(Rev.3

1989)

(Rev.4

May

2010)

## S7.0 Application

This UR does not apply to CSR Bulk Carriers and Oil Tankers.

S7.1 The minimum midship section modulus at deck and keel for ships  $90 \text{ m} \leq L \leq 500 \text{ m}$  and made of hull structural steel is

$$W_{\min} = cL^2B(C_b + 0.7)k \quad (\text{cm}^3)$$

where  $L$  = Rule length (m)

$B$  = Rule breadth (m)

$C_b$  = Rule block coefficient;  $C_b$  is not to be taken less than 0.60

$c$  =  $c_n$  for new ships

$c$  =  $c_s$  for ships in service =  $0.9 c_n$

$$\begin{aligned} c_n &= 10.75 - \left( \frac{300 - L}{100} \right)^{3/2} && \text{for } 90 \text{ m} \leq L \leq 300 \text{ m} \\ &= 10.75 \left( \frac{L - 350}{150} \right)^{3/2} && \text{for } 300 \text{ m} < L < 350 \text{ m} \\ &= 10.75 - \left( \frac{L - 350}{150} \right)^{3/2} && \text{for } 350 \text{ m} \leq L \leq 500 \text{ m} \end{aligned}$$

$k$  = material factor

$k$  = 1.0 for ordinary hull structural steel,

$k$  < 1.0 for higher tensile steel according to S4.

S7.2 Scantlings of all continuous longitudinal members of hull girder based on the section modulus requirement in S7.1 are to be maintained within  $0.4 L$  amidships.

However, in special cases, based on consideration of type of ship, hull form and loading conditions, the scantlings may be gradually reduced towards the end of the  $0.4 L$  part, bearing in mind the desire not to inhibit the vessel's loading flexibility.

S7.3 In ships where part of the longitudinal strength material in the deck or bottom area are forming boundaries of tanks for oil cargoes or ballast water and such tanks are provided with an effective corrosion protection system, certain reductions in the scantlings of these boundaries are allowed. These reductions, however, should in no case reduce the minimum hull girder section modulus for a new ship by more than 5%.

### NOTE

The above standard refers in unrestricted service with minimum midship section modulus only.

However, it may not be applicable to ships of unusual type or design, e.g. for ships of unusual main proportions and/or weight distributions.

'New Ships' are ships in the stage directly after completion.

† This Requirement is subject to periodical updating.

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