

Basis Computation as C.S.F. with T/O. Lloyd's Register of Shipping. SURVEYS FOR FREEBOARD. (COMPUTATION FOR STEAMER, SAILING SHIP, TANKER.)

 Index. No. **36624**
 (For London Office only).

Ship's Name EMPIRE GRENFELL	Official Number	Nationality and Port of Registry British	Gross Tonnage	Date of Build 1941	Port of Survey
Moulded Dimensions: Length 421'-1 1/2" Breadth 56'-2 1/2" Depth 29'-0"					Date of Survey 12.9.41
Moulded displacement at moulded draught = 85 per cent. of moulded depth 12184. tons					Surveyor's Signature
Coefficient of fineness for use with Tables .731.					Particulars of Classification +100A1 with freeboard.

Depth for Freeboard (D).	Depth correction.	Round of Beam correction.
Moulded depth ... 29.00	(a) Where D is greater than Table depth (D - Table depth) R = (29.03 - 28.08) x 3 = +2.85"	Moulded Breadth (B) 56.21'
Stringer plate4103	(b) Where D is less than Table depth (if allowed) (Table depth - D) R = .95	Standard Round of Beam = $\frac{B \times 12}{50} = 13.49"$
Sheathing on exposed deck $T \left(\frac{L-S}{L} \right) =$ ✓	If restricted by superstructures ✓	Ship's Round of Beam = 14.00"
Depth for Freeboard (D) = 29.03		Difference Excess .51"
		Restricted to ✓
		Correction = $\frac{\text{Diff}^2}{4} \times \left(1 - \frac{S_1}{L} \right) = \frac{.51^2}{4} \times .0067 = \text{Nil}$

DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S ₁)	Height	Height Correction	Effective Length (E)
Poop enclosed ...	32.83	32.83	9.07'	✓	32.83
" overhang50	.25			.25
R.Q.D. enclosed ...					
" overhang ...					
Bridge enclosed ...	380.42	380.42	9.07'	✓	380.42
" overhang aft ...	2.62	1.96			1.96
" overhang forward ...					
Fore enclosed ...					
" overhang ...					
Trunk aft ...					
" forward ...		Diff x 1/2		✓	
Tonnage opening aft ...	4.75	2.83			2.83
" " forward ...					
Total ...	421.12	418.29			418.29

Standard Height of Superstructure **7.5'**
 " " R.Q.D. **✓**
 Deduction for complete superstructure **42.00"**
 Percentage covered $\frac{S}{L} = 100.00$
 " " $\frac{S_1}{L} = 99.33$
 " " $\frac{E}{L} = 99.33$
 Percentage from Table, Line A. **99.18**
 (corrected for absence of forecastle (if required)) **✓**
 Percentage from Table, Line B. **✓**
 (corrected for absence of forecastle (if required)) **✓**
 Interpolation for bridge less than 2L (if required) **✓**
 Deduction = **42.00 x .9918 = -41.66"**

SHEER CORRECTION.

Station	Standard Ordinate	S	M	Product	Actual Ordinate	Effective Ordinate	S	M	Product
A.P. ...	52.11	1	52.11	60.06	78.90	1	78.90		
1/4 L from A.P. ...	23.19	4	92.76	26.56	35.11	4	140.44		
1/2 L " ...	5.73	2	11.46	6.56	8.68	2	17.36		
Amidships ...	-	4	-	-	-	4	-		
3/4 L from F.P. ...	11.46	2	22.92	13.50	15.33	2	30.66		
1/4 L " ...	46.38	4	185.52	53.875	61.99	4	247.96		
F.P. ...	104.22	1	104.22	120.50	139.34	1	139.34		
Total ...			468.99	+18.84			654.66		

Mean actual sheer aft = **7.5'**
 Mean standard sheer aft = **7.5'**
 Mean actual sheer forward = **7.5'**
 Mean standard sheer forward = **7.5'**
 Length of enclosed superstructure forward of amidships = **7.5'**
 " " aft of " = **7.5'**
 Correction = $\frac{\text{Difference between sums of products}}{18} \left(\frac{.75 - S}{2L} \right) = \frac{185.67}{18} \times .25 = -2.58"$
 If limited on account of midship superstructure. **✓**
 If limited to maximum allowance of 1 1/2 ins. per 100 ft. **✓**

Deduction for Tropical Freeboard. Addition for Winter and Winter North Atlantic Freeboard. Depth to Freeboard Deck = 29.03 Summer freeboard = 3.31 Moulded draught (d) = 25.72 Deduction for Tropical freeboard and addition for Winter freeboard = $\frac{d}{4}$ inches = 6.43 Addition for Winter North Atlantic Freeboard (if required) = 0	Deduction for Fresh Water. Displacement in salt water at summer load water line $\Delta =$ Tons per inch immersion at summer load water line $T =$ Deduction = $\frac{\Delta}{40T}$ inches = 0	TABULAR FREEBOARD corrected for Fresh Deck (if required) Correction for coefficient .731 + .68 = 1.411 / 1.36 <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th></th> <th>+</th> <th>-</th> </tr> <tr> <td>Depth Correction ...</td> <td>2.85</td> <td>-</td> </tr> <tr> <td>Deduction for superstructures ...</td> <td>-</td> <td>41.66</td> </tr> <tr> <td>Sheer correction ...</td> <td>-</td> <td>2.58</td> </tr> <tr> <td>Round of Beam correction ...</td> <td>-</td> <td>-</td> </tr> <tr> <td>Correction for Thickness of Deck amidships ...</td> <td>-</td> <td>-</td> </tr> <tr> <td>Other corrections, scantlings, etc. ...</td> <td>-</td> <td>-</td> </tr> <tr> <td></td> <td>2.85</td> <td>44.24</td> </tr> <tr> <td>Summer Freeboard =</td> <td>31.61</td> <td>-41.39</td> </tr> </table>		+	-	Depth Correction ...	2.85	-	Deduction for superstructures ...	-	41.66	Sheer correction ...	-	2.58	Round of Beam correction ...	-	-	Correction for Thickness of Deck amidships ...	-	-	Other corrections, scantlings, etc. ...	-	-		2.85	44.24	Summer Freeboard =	31.61	-41.39
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SUMMER FREEBOARD amidships from Centre of Disc to top of Deck Line, Wood, Steel, Deck:

C/S/To. Draught = 25.72 thickness 1.5 Scantling draught 27.22	Tropical Fresh Water Line above Centre of Disc ... Fresh Water Line " " ... Tropical Line " " ... Winter Line below " " ... Winter North Atlantic Line " " ...	Tropical Fresh Water Freeboard ... Fresh Water " " ... Tropical " " ... Winter " " ... Winter North Atlantic " " ...
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