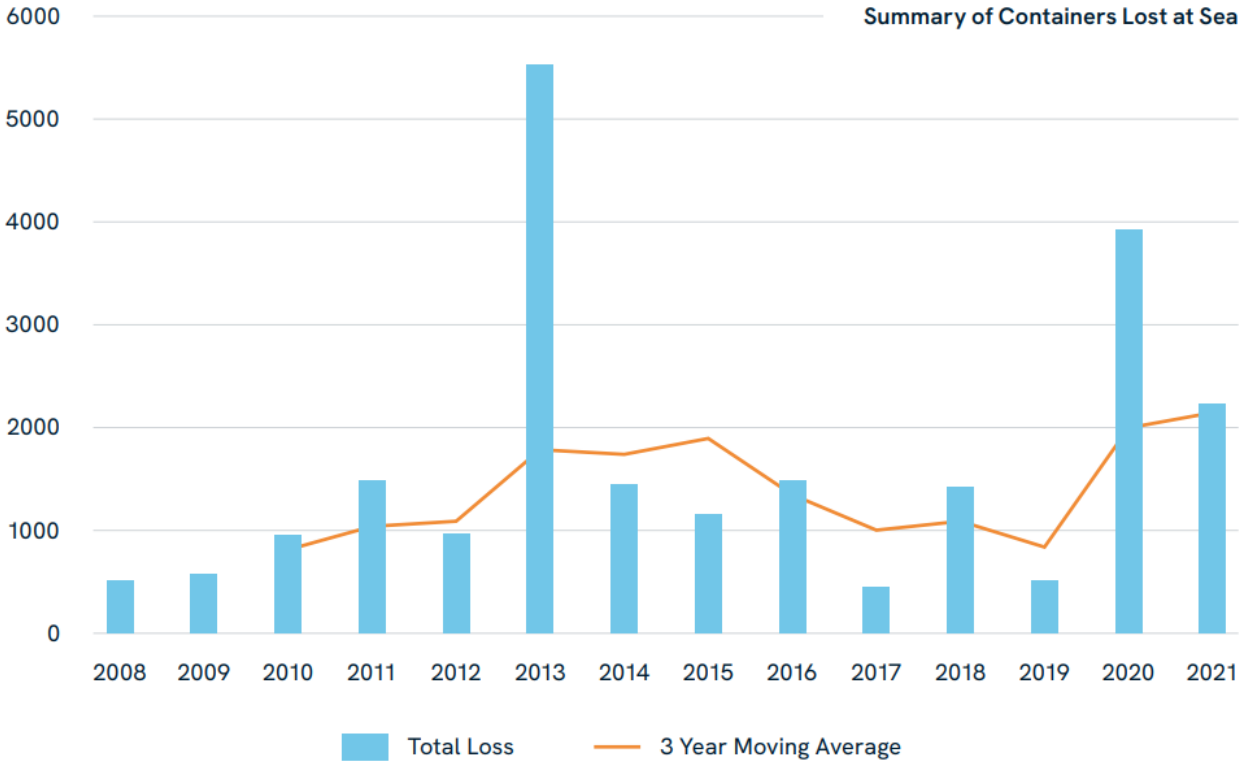
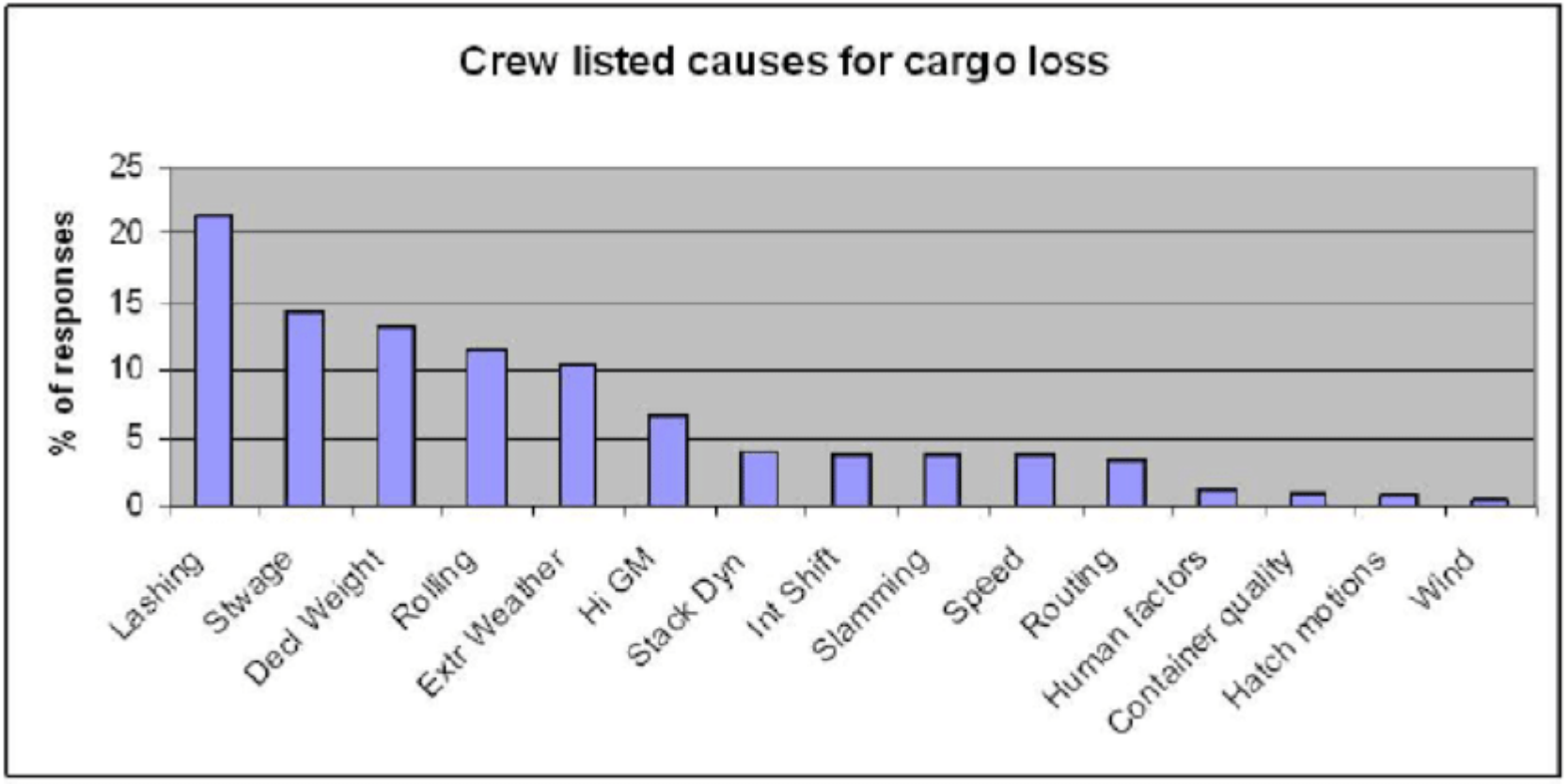
Preventie en praktijk

“If everything’s under control, you’re going too slow.” – Mario Andretti

Analysis of the Fourteen-Year Trends




Crew listed causes for cargo loss
% of responses
25
20
15
10
5
0
Lashing
Stwage
Decl Weight
Rolling
Extr Weather
Hi GM
Stack Dyn
Int Shift
Slamming
Speed
Routing
Human factors
Container quality
Hatch motions
Wind

Opgegeven gewicht

SOLAS

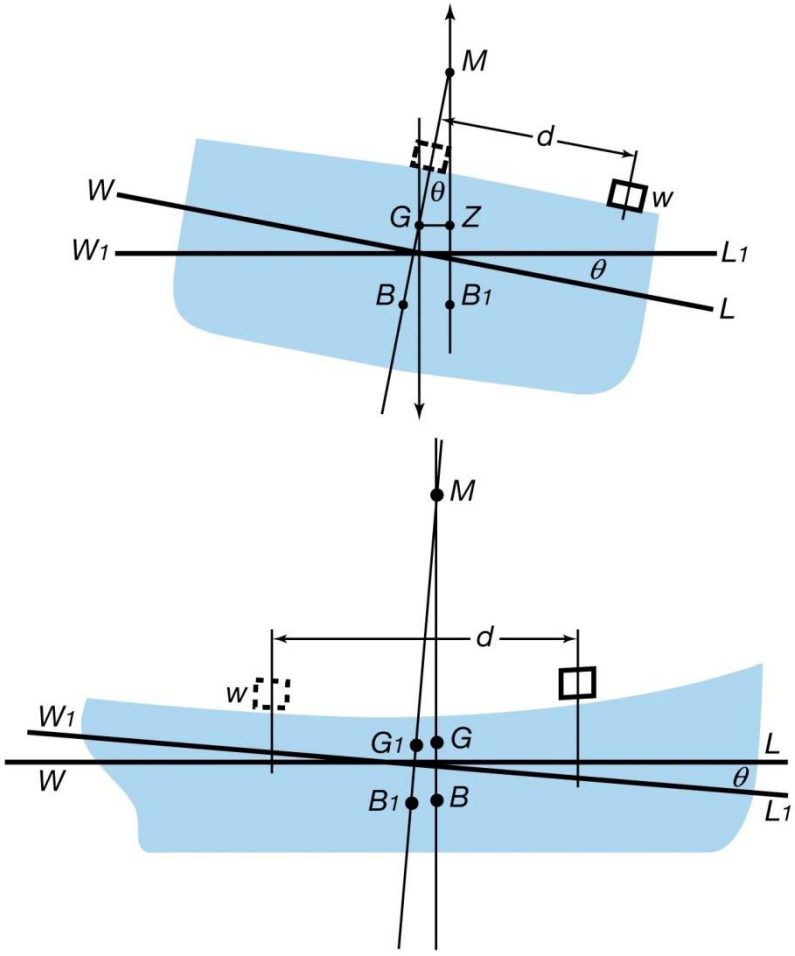
Opgegeven gewicht

Opgegeven gewicht

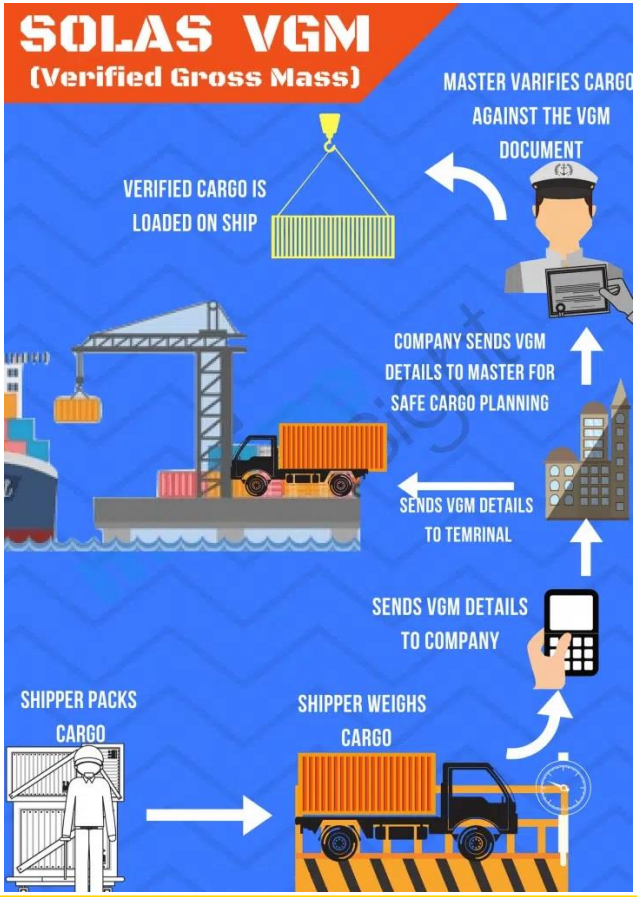
SOLAS

Hoofdstuk I	Algemene voorzieningen
Hoofdstuk II-1	Scheepsconstructie – sterkte, indeling, stabiliteit, werktuiten en installaties
Hoofdstuk II-2	Scheepsconstructie – brandbescherming, - detectie en -bestrijding
Hoofdstuk III	Reddingsmiddelen, -voorzieningen en veiligheidsmiddelen
Hoofdstuk IV	Radiocommunicatie
Hoofdstuk V	Veilige navigatie
Hoofdstuk VI	Vervoer van lading
Hoofdstuk VII	Vervoer van gevaarlijke stoffen
Hoofdstuk VIII	Reactorschepen
Hoofdstuk IX	Management voor veilige exploitatie van schepen
Hoofdstuk X	Hogesnelheidsschepen
Hoofdstuk XI-1	Speciale maatregelen ter bevordering van veiligheid op zee
Hoofdstuk XI-2	Speciale maatregelen ter bevordering van maritieme beveiliging
Hoofdstuk XII	Aanvullende veiligheidsmaatregelen voor bulkcarriers
Hoofdstuk XIII	Verificatie van naleving
Hoofdstuk XIV	Veiligheidsmaatregelen voor schepen die varen in polaire wateren

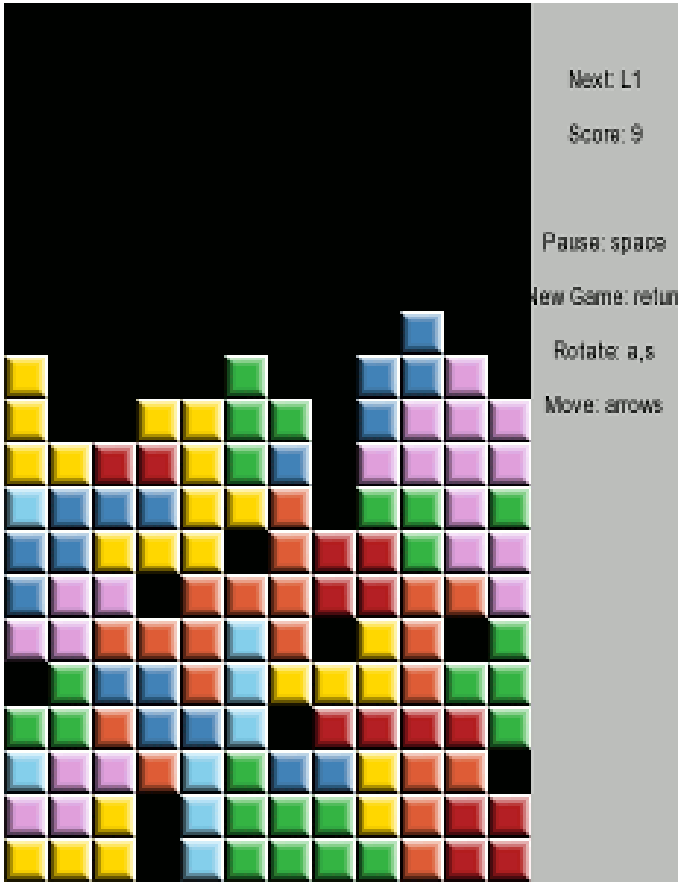
GM



Verified Gross Mass



Stuwage



Geschiedenis containers

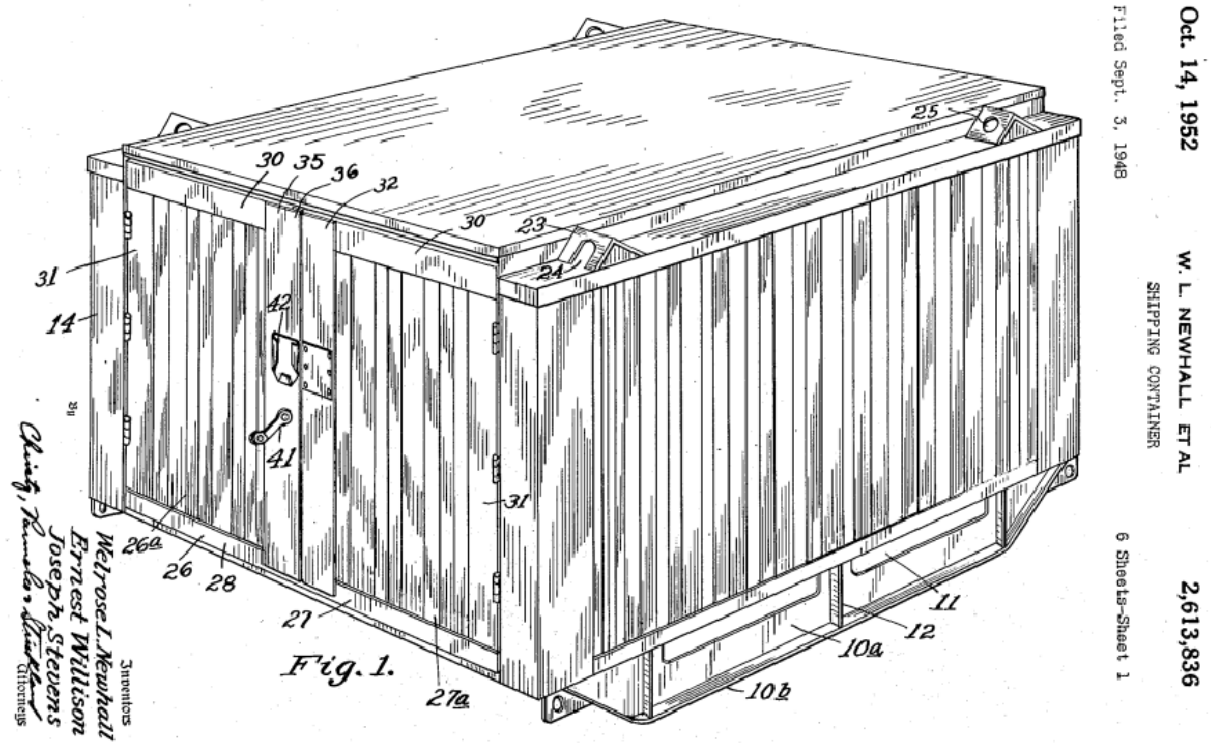
‘Perhaps the remedy lies in discovering ways of packaging, moving and stowing cargo in such a manner that breakbulk is avoided’

Conex box US Army 1948

Speedbox Missouri Pacific Raily 1951

Alaska Steamship Co. 1953

Transportainer Dravo Corp. 1954

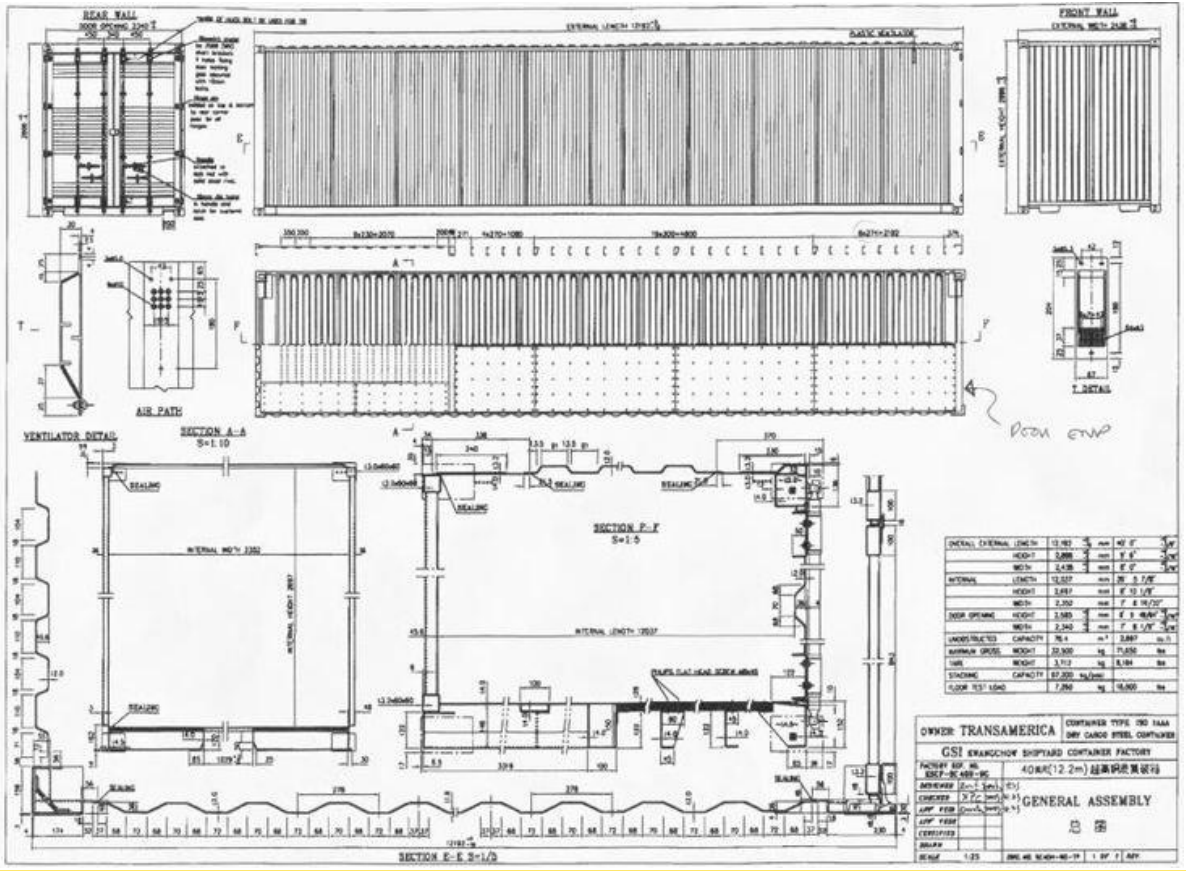


Seatrain Lines

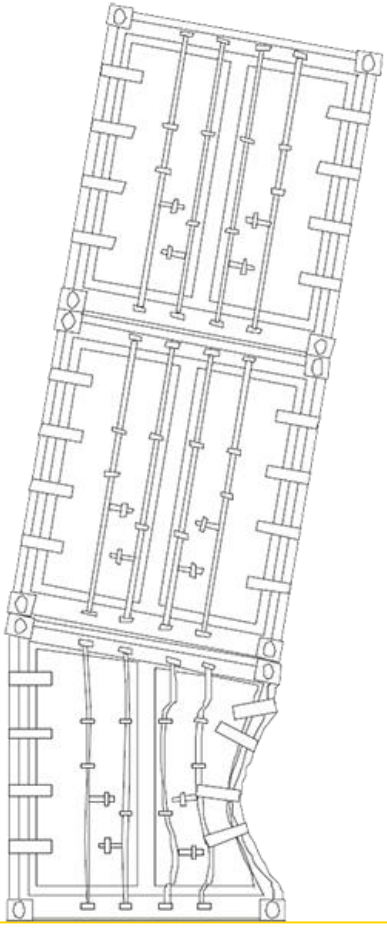
Malco(l)m Purcel McLean

ISO containers

ISO 1496/1



Stacking



Stacking

Table 3 — Forces to be applied in stacking test

Container designation	Test force per container (all four corners simultaneously)		Test force per pair of end fittings		Superimposed mass represented by test force	
	kN	lbf	kN	lbf	kg	lb
1A, 1AA and 1AX	3 392	762 550	1 696	381 275	192 000	423 290
1B, 1BB and 1BX	3 392	762 550	1 696	381 275	192 000	423 290
1C, 1CC and 1CX	3 392	762 550	1 696	381 275	192 000	423 290
1D and 1DX	896	201 600	448	100 800	50 800	112 000

NOTE — The test force of 3 392 kN per container is derived from the superimposed mass of nine-high stacking, i.e. eight containers stacked on top of one container, all being rated to 24 000 kg, and an acceleration force of 1,8 g. [The corner posts of such containers are known to have been tested to 86 400 kg (190 480 lb).]

Table 3 — Forces to be applied in stacking test

Container designation	Test force per container (all four corners simultaneously)		Test force per pair of end fittings		Superimposed mass represented by test force	
	kN	lbf	kN	lbf	kg	lb
1 EEE 1 EE	3 767	846 854	1 883	423 317	213 360 (see NOTE)	470 380
1A, 1AA, 1AAA and 1AX	3 767	846 854	1 883	423 317	213 360	470 380
1B, 1BB, 1BBB and 1BX	3 767	846 854	1 883	423 317	213 360	470 380
1C, 1CC and 1CX	3 767	846 854	1 883	423 317	213 360	470 380
1D and 1DX	896	201 600	448	100 800	50 800	112 000

Racking

5.4 End structure

For all containers other than 1D and 1DX, the sideways deflection of the top of the container with respect to the bottom of the container, at the time it is under full transverse rigidity test conditions, shall not cause the sum of the changes in length of the two diagonals to exceed 60 mm[1].

5.5 Side structure

For all containers other than 1D and 1DX, the longitudinal deflection of the top of the container with respect to the bottom of the container, at the time it is under full longitudinal rigidity test conditions, shall not exceed 25 mm[1].

5.4 End structure

For all containers other than 1D and 1DX, the sideways deflection of the top of the container with respect to the bottom of the container, at the time it is under full transverse rigidity test conditions, shall not cause the sum of the changes in length of the two diagonals to exceed 60 mm.

5.5 Side structure

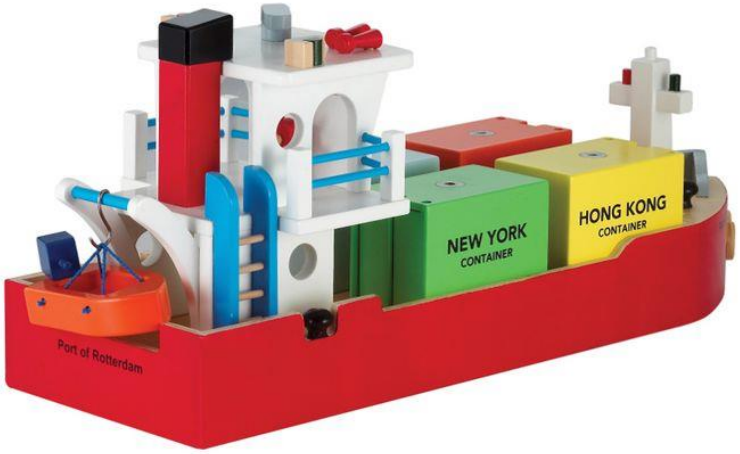
For all containers other than 1D and 1DX, the longitudinal deflection of the top of the container with respect to the bottom of the container, at the time it is under full longitudinal rigidity test conditions, shall not exceed 25 mm.

Racking

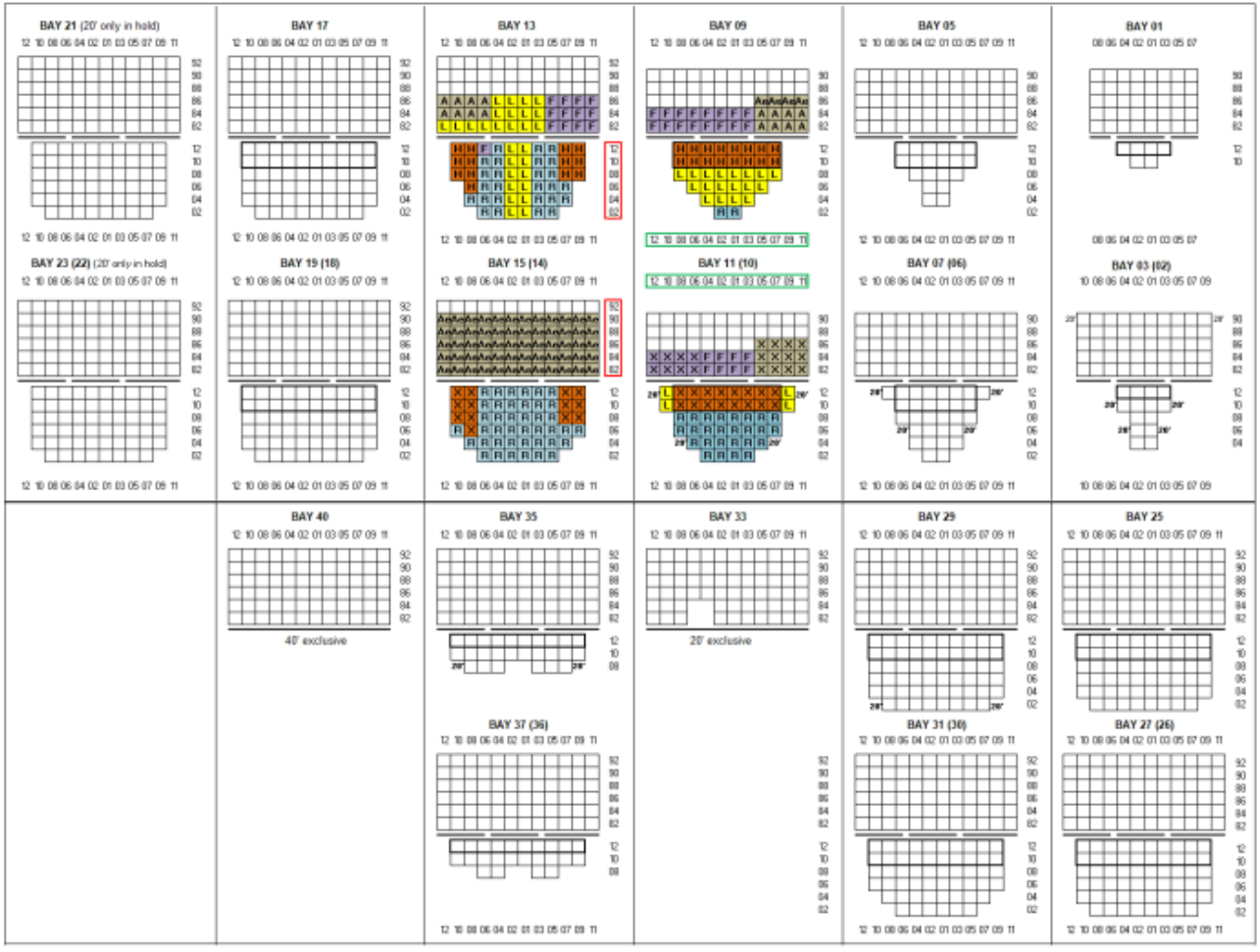

Bay
Bay
Bay
Row
Row
Row
Row
Row
Row
Row
Row
Row
Tier
Row
Bay
Tier
Tier

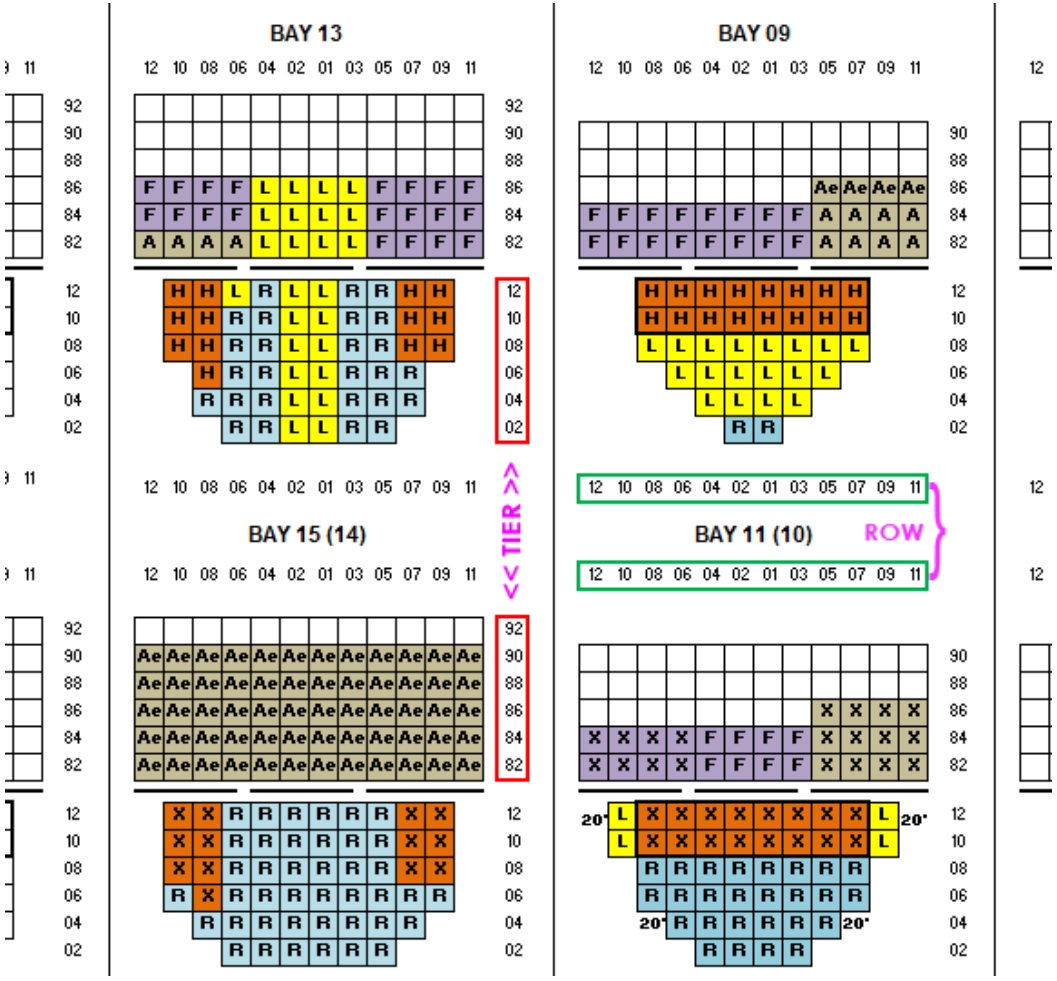
Rotatie

- POL
- Felixstowe
- Antwerpen
- Le Havre
- Hamburg
- Rotterdam

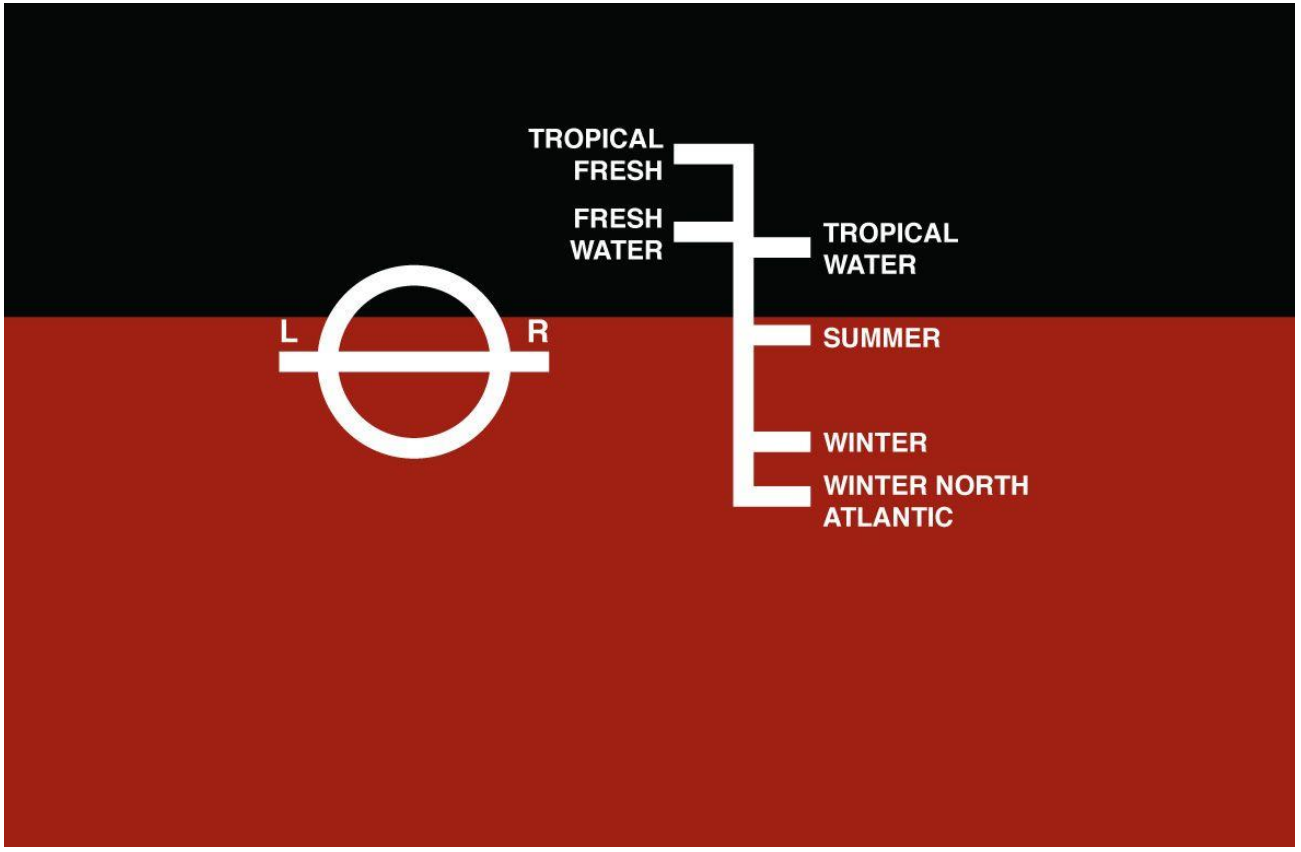


M.V. POL : DATE :



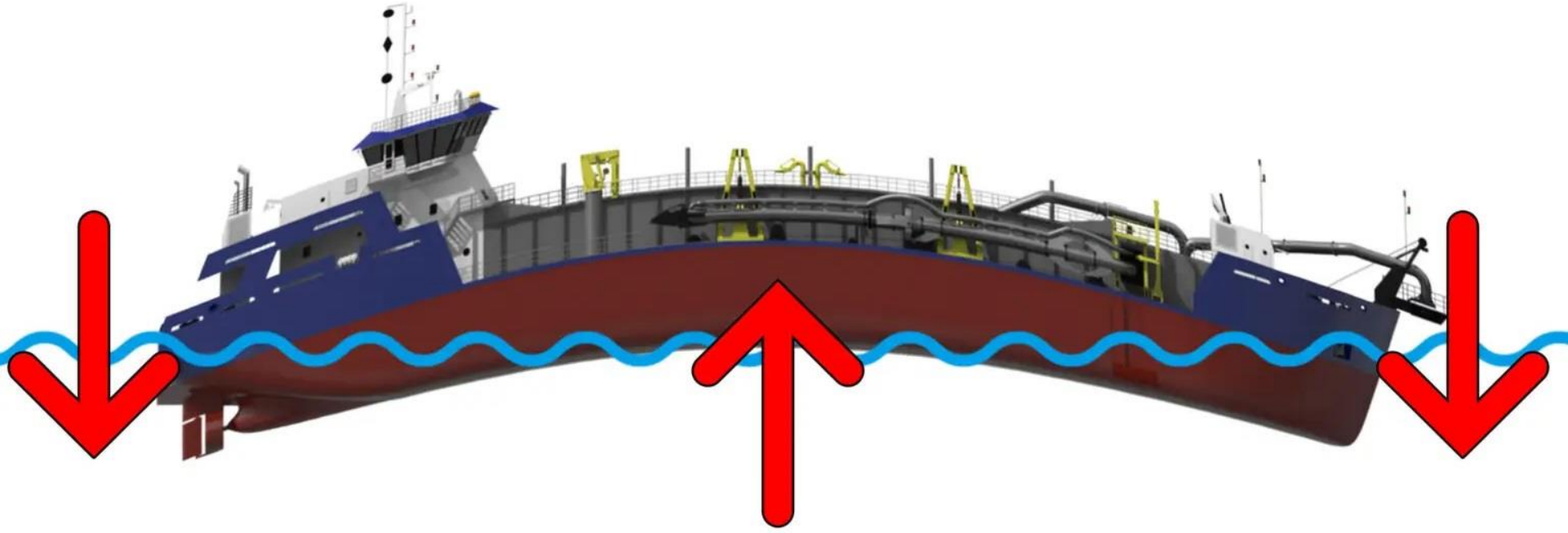


Laad/ Plimsoll lijn

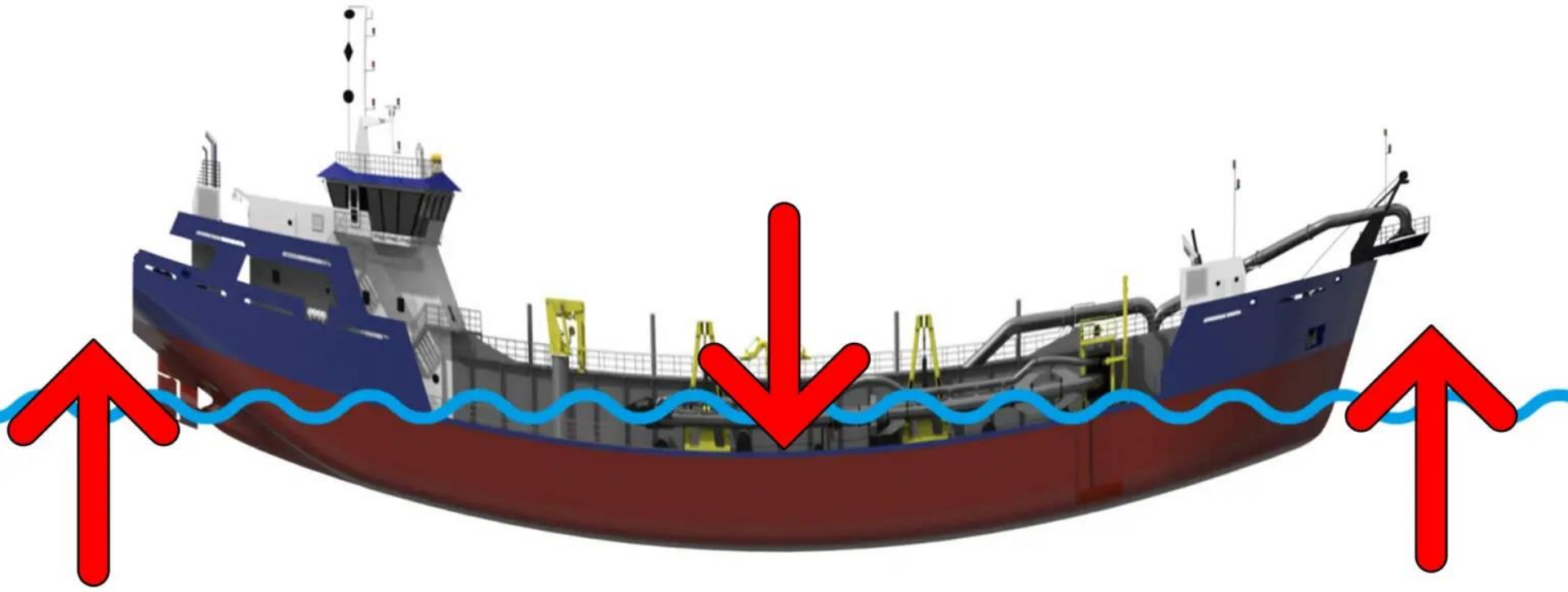


Hogging/ sagging

Hogging

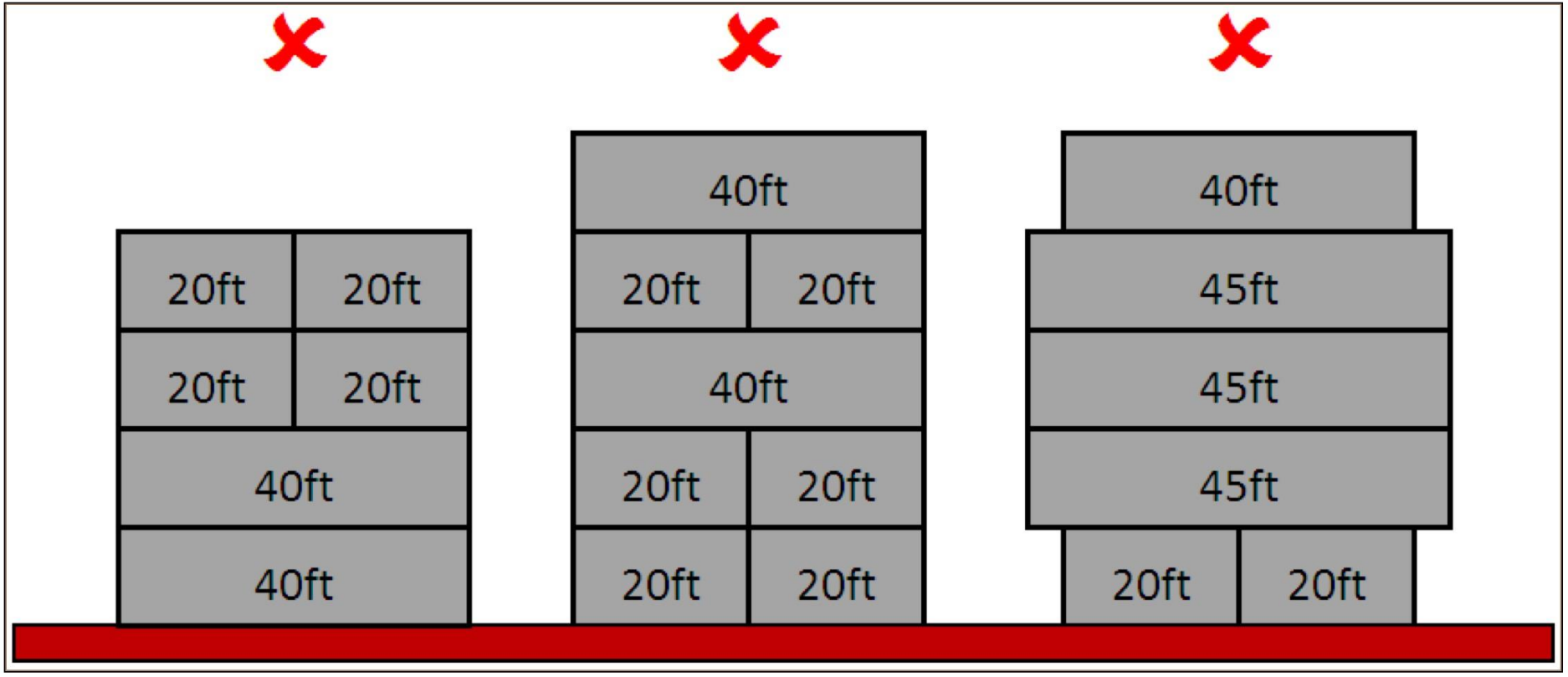


Sagging

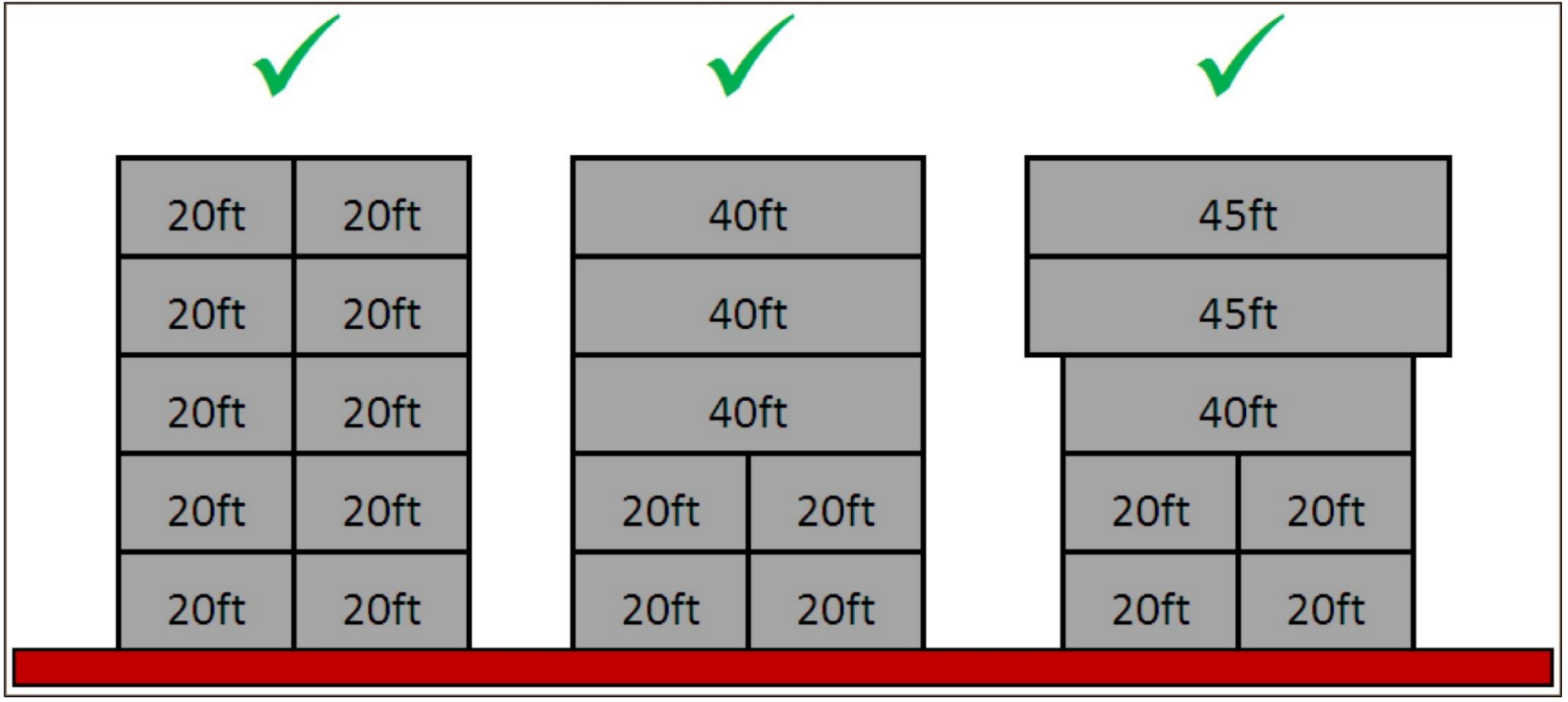


Stapel-/ blokgewicht

Containerafmeting (Russian stow)



Containerafmeting (Russian stow)



Type lading/ container

Segregation Table – IMDG Code 40-20

Steps

1. Refer general segregation provisions of Chapter 7.2, If LQ/EQ, 7.2.6.3 or 7.2.6.4 - apply same
2. Check & apply Column 16b and DGD requirements, if any (5.4.1.5.11),
3. Use Segregation Table

Class	1.1, 1.2, 1.5	1.3, 1.6	1.4	2.1	2.2	2.3	3	4.1	4.2	4.3	5.1	5.2	6.1	6.2	7	8	9
1.1, 1.2, 1.5	*	*	*	4	2	2	4	4	4	4	4	4	2	4	2	4	X
1.3, 1.6	*	*	*	4	2	2	4	3	3	4	4	4	2	4	2	2	X
1.4	*	*	*	2	1	1	2	2	2	2	2	2	X	4	2	2	X
2.1	4	4	2	X	X	X	2	1	2	2	2	2	X	4	2	1	X
2.2	2	2	1	X	X	X	1	X	1	X	X	1	X	2	1	X	X
2.3	2	2	1	X	X	X	2	X	2	X	X	2	X	2	1	X	X
3	4	4	2	2	1	2	X	X	2	2	2	2	X	3	2	X	X
4.1	4	3	2	1	X	X	X	X	1	X	1	2	X	3	2	1	X
4.2	4	3	2	2	1	2	2	1	X	1	2	2	1	3	2	1	X
4.3	4	4	2	2	X	X	2	X	1	X	2	2	X	2	2	1	X
5.1	4	4	2	2	X	X	2	1	2	2	X	2	1	3	1	2	X
5.2	4	4	2	2	1	2	2	2	2	2	2	X	1	3	2	2	X
6.1	2	2	X	X	X	X	X	X	1	X	1	1	X	1	X	X	X
6.2	4	4	4	4	2	2	3	3	3	2	3	3	1	X	3	3	X
7	2	2	2	2	1	1	2	2	2	2	1	2	X	3	X	2	X
8	4	2	2	1	X	X	X	1	1	1	2	2	X	3	2	X	X
9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

You must be trained to use this table

- 1 = "Away from" , see 7.3.4
- 2 = "Separated from"
- 3 = "Separated by a complete compartment or hold from"
- 4 = "Separated longitudinally by an intervening complete compartment or hold from"
- * = See 7.2.7.1.4
- X Refer Column 16b of Dangerous Goods List
- Same Class with conflicting subsidiary hazard, see 7.2.6.1
- No segregation applicable if goods are falling within the same table in 7.2.6.3.1, 7.2.6.3.2 or 7.2.6.3.3 and to substances within the table 7.2.6.3.4, except that due regard shall continue to be taken of the dangerous reactions specified in the provisions of 7.2.6.1.1 to 7.2.6.1.4
- Acids and Alkalis in class 8, see 7.2.6.4
- Foodstuff, see 7.3.4.2
- Same substance in different classes due to varying water content or for class 7 if the difference is due to quantity only, see 7.2.6.3.1
- Segregation may be applicable as per DGO, see 5.4.1.5.11
- For radioactive, see chapter 7.1
- Refer chapter 7.4 to 7.7 for containerships, ro-ro ships, general cargo ships & barge-carrying ships

Limited/Excepted Quantities

- No Segregation applicable between LQ/EQ packages and other dangerous goods
- Same Outer packaging for LQ, see 3.4.4.1
- Same Outer packaging for EQ, see 3.5.8.2

IMDG Code Compliance Centre
www.shashikallada.com

Type lading/ container

Type lading/ container

Zekering

- CSS code
- CSM

CSS Code

General principles

All cargoes should be stowed and secured in such a way that the ship and persons on board are not put at risk.

The safe stowage and securing of cargoes depend on proper planning, execution and supervision.

Personnel commissioned to tasks of cargo stowage and securing should be properly qualified and experienced.

Personnel planning and supervising the stowage and securing of cargo should have a sound practical knowledge of the application and content of the Cargo Securing Manual, if provided.

In all cases, improper stowage and securing of cargo will be potentially hazardous to the securing of other cargoes and to the ship itself.

Decisions taken for measures of stowage and securing cargo should be based on the most severe weather conditions which may be expected by experience for the intended voyage.

Ship-handling decisions taken by the master, especially in bad weather conditions, should take into account the type and stowage position of the cargo and the securing arrangements.

Parent topic: CSS Code - Code of Safe Practice for Cargo Stowage and Securing footnote – Resolution A.714(17)

Chapter 2 - Principles of Safe Stowage and Securing of Cargoes

2.1 Suitability of cargo for transport

2.2 Cargo distribution

2.3 Cargo securing arrangements

2.4 Residual strength after wear and tear

2.5 Friction forces

2.6 Shipboard supervision

2.7 Entering enclosed spaces

2.8 General elements to be considered by the master

2.9 Cargo stowage and securing declaration

Parent topic: CSS Code - Code of Safe Practice for Cargo Stowage and Securing footnote – Resolution A.714(17)

2.2 Cargo distribution

2.2.1 It is of utmost importance that the master takes great care in planning and supervising the stowage and securing of cargoes in order to prevent cargo sliding, tipping, racking, collapsing, etc.

2.2.2 The cargo should be distributed so as to ensure that the stability of the ship throughout the entire voyage remains within acceptable limits so that the hazards of excessive accelerations are reduced as far as practicable.

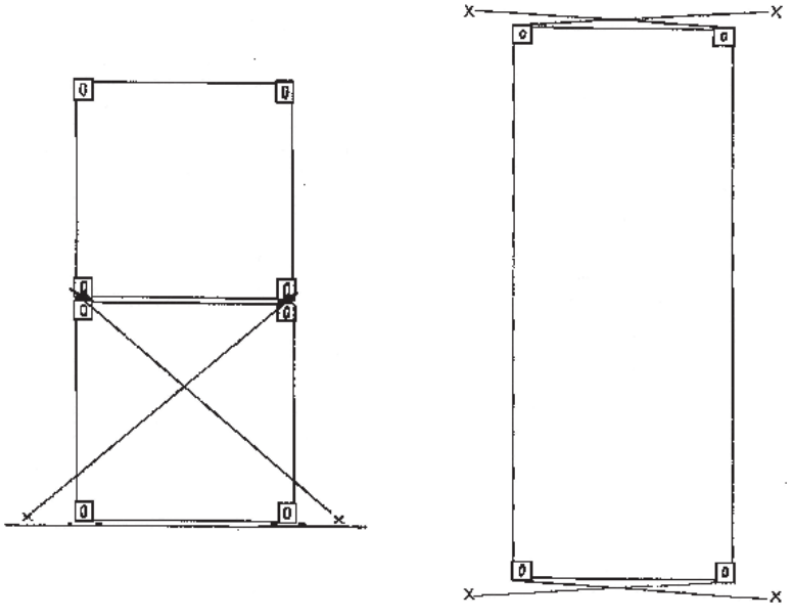
2.2.3 Cargo distribution should be such that the structural strength of the ship is not adversely affected.

Parent topic: Chapter 2 - Principles of Safe Stowage and Securing of Cargoes

Securing

2.1 All containers should be effectively secured in such a way as to protect them from sliding and tipping. Hatch covers carrying containers should be adequately secured to the ship.

2.2 Containers should be secured using one of the three methods recommended in figure 1 or methods equivalent thereto.



Cargo Securing Manual

Portable securing devices:

Type	Manufacturer	Type designation	Quantity[1)]	MSL [kN][1) 2)]	Sketch
Lashing Bar	NN Inc.	LB-2	350	T = 245	see page 17
Lashing Wire	NN Inc.	SEL-K1	220	T = 176	see page 17
Turnbuckle	NN Inc.	CTB-1-HH	350	T = 98	see page 17
Lashing Chain	NN Inc.	K-HS-11	175	T = 73	see page 17

T = Tension, S = Shear

Cargo Sec. Device	Inspection Check if/for:	Maintenance	Actions to be:
Elephantfoot pots	deformed		repaired or replaced
	corroded		replaced if top plate is less than 75 % of original
Turnbuckle	bent	* see below	straightened
	pins damaged or missing		renewed
	hook damaged		renewed
	destructive, thread		scrapped
Lashing chain w/tensioner	link is deformed		replace if any link is deformed
Wire rope lashings	permanent kinks flattening corrosion drying out of the fibre core protrusion of the fibre core		replaced if any of the listed defects are found
Shackles	bolt damaged or missing		renewed
	bent		scrapped
	wear and tear		scrapped
Twistlock	handle damaged/missing	* see below	straightened/renewed
	spring/ball/bolts and nuts damaged		renewed
	amount of small cracks		scrapped
Bridgefitting	nuts damaged or missing	* see below	renewed
	bent		straightened
	destructive; thread		scrapped

* Threads of turnbuckles, twistlocks and bridgefittings should be greased regularly, at least every 3 months.

4.1.1 General principles of cargo securing

1. Cargo shall be secured according to recognised principles, taking into account the dynamic forces that may occur during sea transport and the most severe weather condition expected. Ship handling decisions should take into account the type of cargo and stowage position of the cargo and the securing arrangements.

   - Care should be taken to distribute the forces as evenly as possible.
   - If in doubt the lashing arrangement should be verified using an acceptable calculation method.
   - The securing gear should be adapted to the cargo to be carried.
   - Lashings are to be kept as short as possible.

2. Prior to loading cargo, the following should be checked:

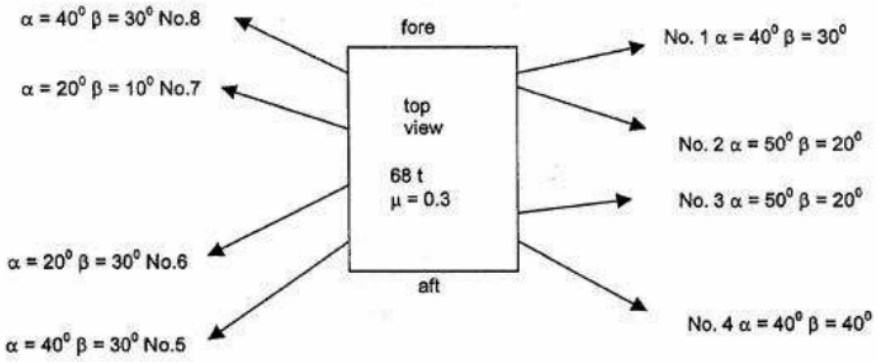
   - Relevant deck areas are, as far as practicable, to be clean, dry and free from oil and grease.
   - Cargo, cargo transport unit or vehicle to be suitable for transport.
   - Necessary securing equipment is to be found onboard.
   - See item 5.

3. The securing equipment should be:

   - available in sufficient quantity including reserves
   - suitable for the purpose**
   - of adequate strength*
   - practical and maintained**

   * The required strength, which depends on the lashing forces, can be calculated based on methods for evaluating forces as outlined in this manual.

The top view shows the overall securing arrangement with eight lashings.

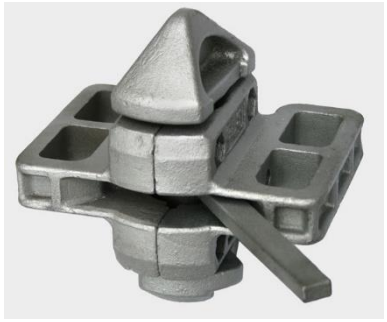


Calculation of balance of forces:

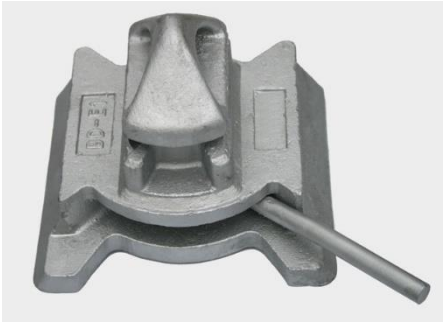
No.	MSL (kN)	CS (kN)	α	β	f_y	Cs x f_y	f_x	Cs x f_x
1	108	80	40° stbd	30° fwd	0.86	68.8 stbd	0.58	46.4 fwd
2	90	67	50° stbd	20° aft	0.83	55.6 stbd	0.45	30.2 aft
3	90	67	50° stbd	20° fwd	0.83	55.6 stbd	0.45	30.2 fwd
4	108	80	40° stbd	40° aft	0.78	62.4 stbd	0.69	55.2 aft
5	108	80	40° port	30° aft	0.86	68.8 port	0.58	46.4 aft
6	90	67	20° port	30° aft	0.92	61.6 port	0.57	38.2 aft
7	90	67	20° port	10° fwd	1.03	69.0 port	0.27	18.1 fwd
8	108	80	40° port	30° fwd	0.86	68.8 port	0.58	46.4 fwd

Transverse balance of forces (STBD arrangement) Nos. 1, 2, 3 and 4:

$F_y < \mu \times m \times g + CS_1 \times f_{y1} + CS_2 \times f_{y2} + CS_3 \times f_{y3} + CS_4 \times f_{y4}$ = Friction force + Lashing force
$312 < 0.3 \times 68 \times 9.81 + 68.8 + 55.6 + 55.6 + 62.4$
$312 < 443$ this is OK!












Textainer Equipment Management
Container Status and Specifications

TGHU771226-2

Container Status and Move History

Container History	Container Status	Move Date	Bk Ref #	Lease Code	Customer Name	Location
Current Status	DISPOSED	2004-JUL-14				
Previous Status 1	ON HIRE	2001-SEP-21		TWNL0336	EVERGREEN	SSZ01 - SSZC - SHZ-F-SSZ, CHINA

Container Specifications - 40 HIGH CUBE (ISO 45G1)

Manufactured:

Factory Name:	SSZC, CHINA	**Manufacture Date:**	2000-OCT-01	**Mfr. Serial Number:**	NOT AVAILABLE
Orig. Eqp Range:	NOT AVAILABLE	**Manufacture Model:**	NOT AVAILABLE		

Container Ratings & Dimensions:

Gross Weight:	N/A	**Payload Capacity:**	N/A	**Allowable Stacking:**	N/A
Tare Weight:	N/A	**Cubic Capacity:**	N/A		
Rack Test Load:	N/A	**Stacking Weight:**	216000 KG		
End Wall:	N/A	**Side Wall:**	N/A		
Exterior Height:	N/A	**Interior Height:**	N/A		
Exterior Width:	N/A	**Interior Width:**	N/A		
Exterior Length:	N/A	**Interior Length:**	N/A		
Door Height:	N/A	**Door Width:**	N/A		

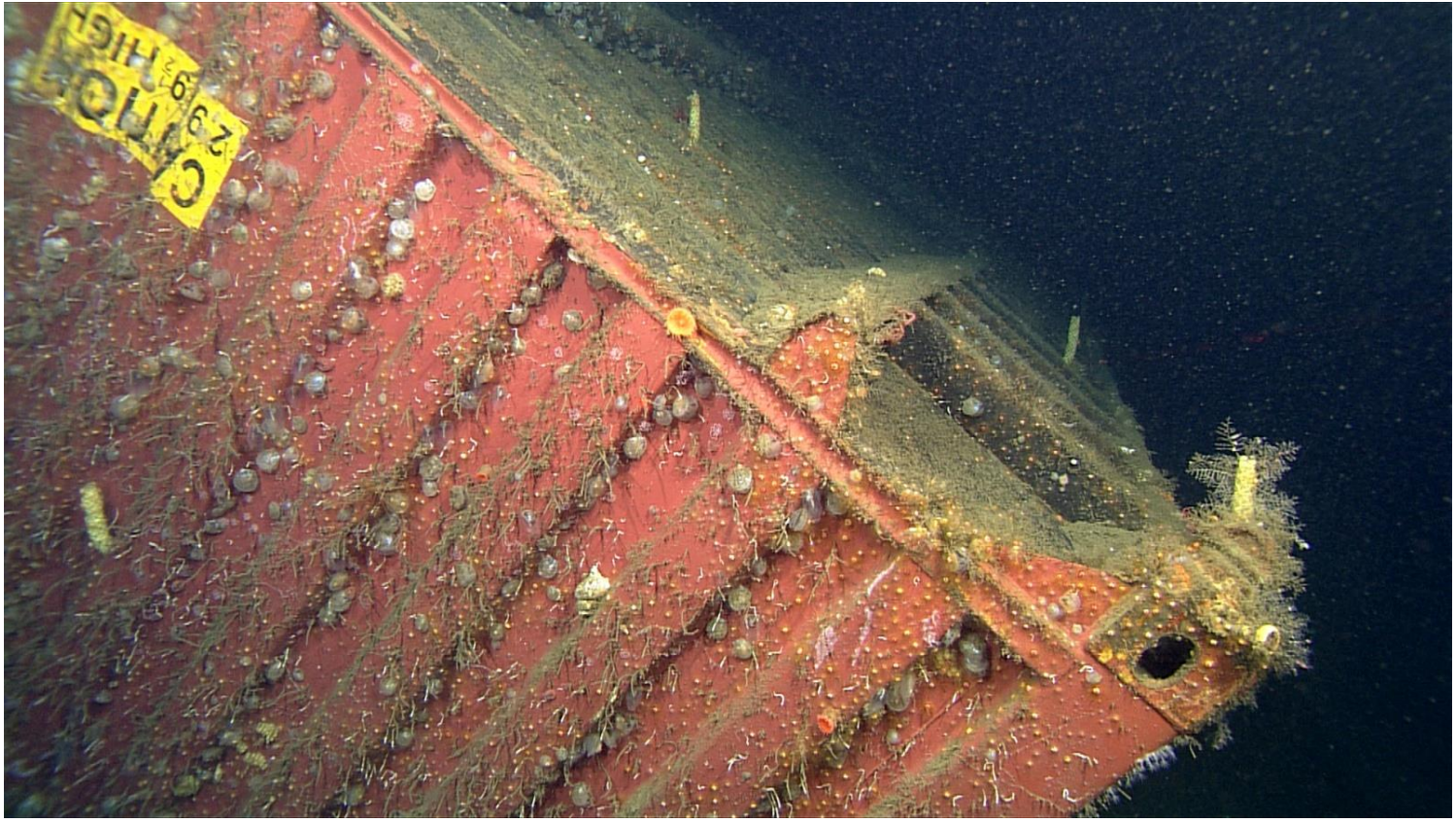
Container Materials:

Roof:	NOT AVAILABLE	**Sides:**	NOT AVAILABLE
Primer:	NOT AVAILABLE	**Topcoat:**	NOT AVAILABLE
Interior:	NOT AVAILABLE	**Underside:**	NOT AVAILABLE

Container Approvals:

TIR #:	NOT AVAILABLE	**CSC:**	
TCT:	NOT AVAILABLE	**Safety Convention:**	NOT AVAILABLE
UIC:	N/A	**Inspection Agency:**	NOT AVAILABLE

Comments:



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