ACACIA MARINE SERVICES LTD.

Acacia Marine Services LTD.
P.O. BOX 537
KIBBUTZ BEIT HASHITA
ISRAEL 18910
TEL: +972-4-6536384/5
E-MAIL: office@acacia.co.il
COMPANY ID #: 513331330

- MARINE SURVEYORS
- INTERNATIONAL PROJECT CONSULTANTS
- AGRICULTURE & ENGINEERING EXPERTS
- HEAVY-LIFT SUPERVISION

Member of IIMS

ZIM Instructions for carrying Condense Mass Cargo/Steel Coils

Preface:

Shipping condensed mass cargos (including but not limited to steel coils) in standard containers holds a potential risk for containers, vessels and crews.

The potential risks while carrying Condense Mass Cargo :

1. Shifting of the cargo inside the container (might even tear the Side Panels and drop outside the container) - caused by improper lashing of the cargo inside the container.
2. Collapse of the containers floor - caused due to concentrated mass of the cargo inside the container, without spreading the weight properly along the container's floor.

Three recent cases can be mentioned :

- Shifting coils inside a container on-board the "ZIM America" required the crew to open the container and perform lashing o/b to prevent the coils from breaking outside.
- Shifting coils broke through the side panel in KST while the container was handled, causing extensive damage to the container and risking the crew and terminal workers.
- A container carried 4 coils in total weight of 27 Ton from India to Italy, and upon discharge found all the 14 Cross-Members bent beyond ISO regulations. The container had to be declared as Total-Loss.

Below are some photos that demonstrate different cases that were revealed recently :





ACACIA MARINE SERVICES LTD.

Acacia Marine Services LTD.
P.O. BOX 537
KIBBUTZ BEIT HASHITA
ISRAEL 18910
TEL: +972-4-6536384/5
E-MAIL: office@acacia.co.il
COMPANY ID #: 513331330

- MARINE SURVEYORS
- INTERNATIONAL PROJECT CONSULTANTS
- AGRICULTURE & ENGINEERING EXPERTS
- HEAVY-LIFT SUPERVISION

Member of IIMS

Instructions for Shipment of Condense Mass Cargo:

The following instructions must be carefully followed. Condensed Mass cargo which is not being stuffed according to the following instructions should not be accepted.

- Maximum payload allowed per container : **22 Tons**

- Maximum allowed weight for each coil : **8 Tons**

- The shipper's obligation for good practice in proper stuffing, lashing and securing of the cargo stowed therein is compulsory.
  All Condense cargo must be lashed. No loose cargo is allowed in the container.

- The shipper must provide a "**Lashing Survey**", performed for each shipped container using a qualified Marine Surveyor. The survey report should be sent to ZIM Local Office prior to the shipment, and shall be considered as a mandatory condition to the shipment.

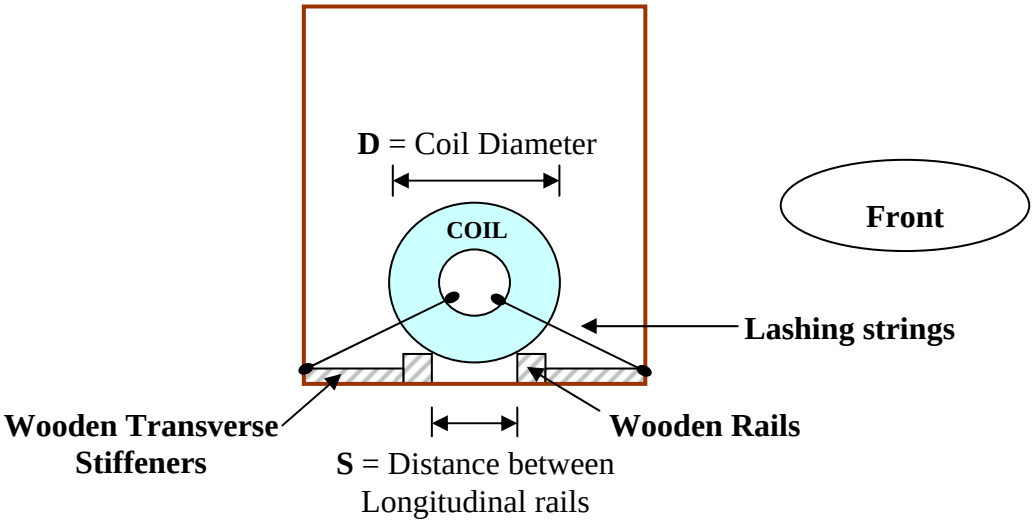
ACACIA MARINE SERVICES LTD.

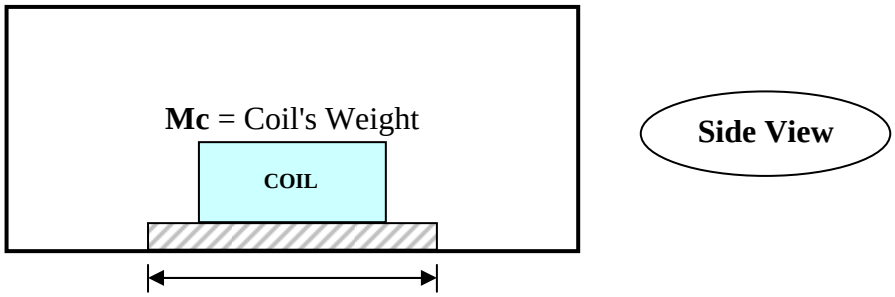
Acacia Marine Services LTD.
P.O. BOX 537
KIBBUTZ BEIT HASHITA
ISRAEL 18910
TEL: +972-4-6536384/5
E-MAIL: office@acacia.co.il
COMPANY ID #: 513331330

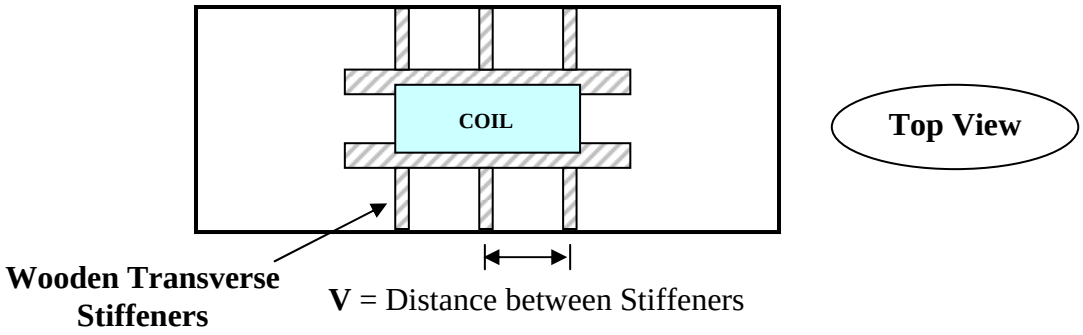
- MARINE SURVEYORS
- INTERNATIONAL PROJECT CONSULTANTS
- AGRICULTURE & ENGINEERING EXPERTS
- HEAVY-LIFT SUPERVISION

Member of IIMS

Proper Bedding of a Coils inside the container :







Acacia Marine Services LTD.
P.O. BOX 537
KIBBUTZ BEIT HASHITA
ISRAEL 18910
TEL: +972-4-6536384/5
E-MAIL: office@acacia.co.il
COMPANY ID #: 513331330

Calculating Length of Wooden Longitudinal Rails :

- Each coil should be bedded between two Longitudinal rails made of Hard-Wood.
  As a Rule-of-Thumb, the length of each Wooden Rail (**T**) should be calculated according to the following formula :
  T (Length in meters) = Mc (Coil Weight in Tons) * 0.22
  For exact calculation refer to Appendix A.

Calculating Distance between the Wooden Rails :

- The Transverse distance between Longitudinal rails (S) should be set so that **the bottom of the Coil will not touch the container's floor**. Optimal distance between the bottom of the Coil and the floor is 5 cm.
  The Minimum distance between the longitudinal rails (**S**) should be D/2 (half of Coil's Diameter).
- The rails should be properly reinforced to the container's floor.

Calculating Wooden Rail Cross-Section size :

- The cross-section of the rails should be set according to the following rules :
  - Coils below 4 Tons : 10cm * 10cm Wood section
  - Coils between 4-8 Tons : 15cm * 15cm Wood section

Example :

A Steel Coil that weights 7 Tons, should be carried on 2 wooden Rails of 15*15cm section, in length of 1.54m (T=Weight * 0.22 = 7 ton * 0.22).

Calculating Distance between Transverse Stiffeners :

- The Wooden Rails should be reinforced to the container's Side-panel using Transverse Stiffeners (web shaped) made of Hard-Wood, with Cross-Section of no less than 10*10cm.
- The maximum distance allowed between the Transverse Stiffeners (V) is 50 cm.
- The stiffeners should be properly reinforced to the Rails, and nailed to the container's floor every 40 cm.

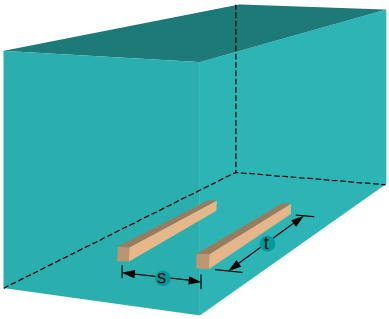
Acacia Marine Services LTD.
P.O. BOX 537
KIBBUTZ BEIT HASHITA
ISRAEL 18910
TEL: +972-4-6536384/5
E-MAIL: office@acacia.co.il
COMPANY ID #: 513331330

Appendix A - calculating the length of the Wooden Longitudinal Rails

The length of the longitudinal is determined by the weight of the cargo, but also by the distance between the rails.

As mentioned above, as a rule-of-thumb, the distance can be roughly calculating by the formula : Weight*0.22 , yet an accurate calculation can be made using the following method.

The following drawing demonstrates the bedding of the cargo :



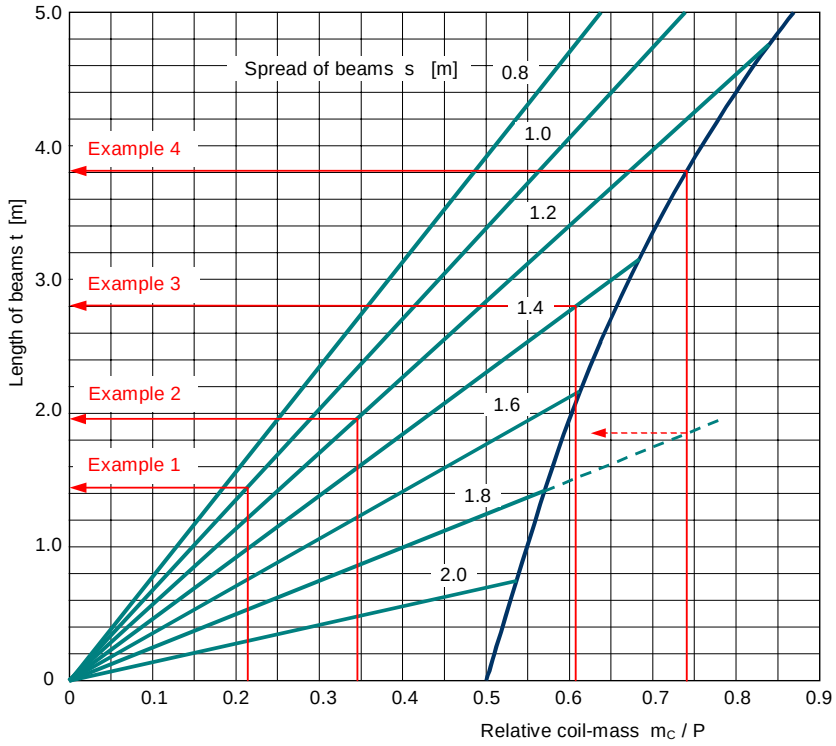
s- Spread between the rails (meter)

t - length of each rail (meter)

Mc - Coil's weight (Tons)

P - Max allowed Payload of the container (Tons)

Diagram for the determination of necessary Rail Length



Examples for using the Diagram :

m_C = 6 t; P = 28 t; m_C/P = 0.214; spread of beams s = 1.0 m:

The necessary length t of longitudinal beams per coil = 1.45 m.