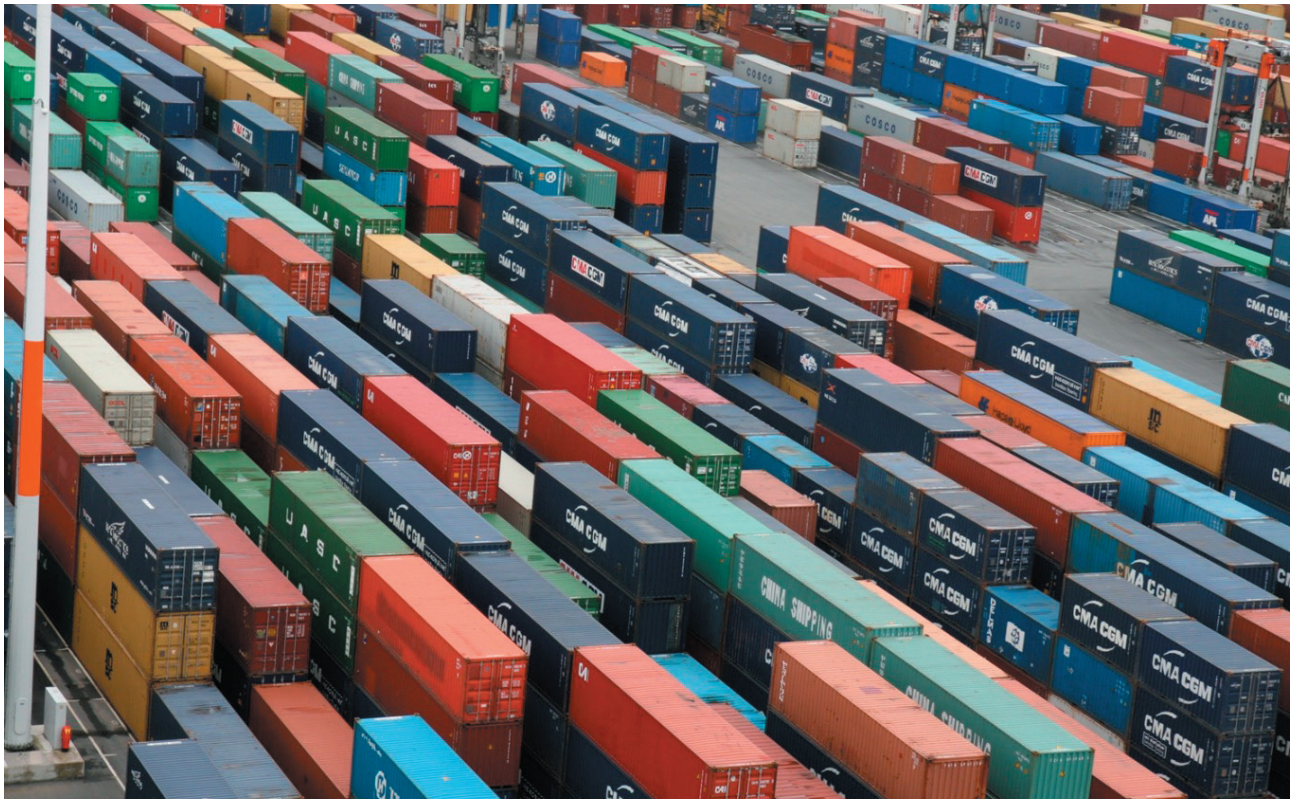
PAMPHLET 08

CONTAINERISATION, CONTAINER CHARACTERISTICS AND THE SOLAS CONVENTION

également disponible en Français

1. CONTAINERS AND CONTAINERISATION

The container has become an essential component of the timber logistics chain.
The container is an item of transport "equipment" designed to contain all general goods (general-purpose container) or specific goods (special-purpose container), either in bulk or lightly packaged, especially for transportation, without intermediate handling or break of load, by any means of locomotion (road, sea, rail, etc.) or a combination of several of them. It can be stacked, handled, seized by ad hoc devices and adapted for intensive use (International Chamber of Commerce - ICC).



Container storage at the port of Le Havre (© Emmanuel Groutel - WALE)

There are various types of container, including:

- DRY: for all uses
- REEFER: temperature-controlled
- OPEN TOP: without metal roof
- OPEN SIDE: with removable sides
- FLAT RACK: without sides
- TANK: for transporting gases, liquids or powdered products.

The statistical unit is the TEU = "twenty-foot equivalent unit".
For example, a 40-footer = 2 TEU

Table 1. TEU

Container identification: BIC code and ISO code

Containers are standardised by the *International Organization for Standardization* (ISO) and *the Bureau International des Containers et du Transport Intermodal* (BIC).

The container number is a means of tracking the container and is shown on the bill of lading (B/L).

The container and its owner are identified using the code proposed by BIC in 1969 and standardised by ISO in 1972.

Coding on a container © Emmanuel Groutel - WALE

The following is marked on the right-hand door of a container:

- A four-letter owner/operator code (MCLU, MAEU, DVRU, etc.), the last letter being a U (for Universal, i.e. conventional).
- A six-digit serial number and a seventh check digit (to validate the recording and/or transmission accuracy of the data). This code, which is the result of a calculation, guarantees that the identification of the container is unique.

Ex B.I.C code: **CGMU 222000 2**

Below this unique identification number are 4 numbers or letters indicating the type of container. Other information is then provided: tare weight, maximum laden weight, maximum authorised load weight and container volume.

Container dimensions and loading weights

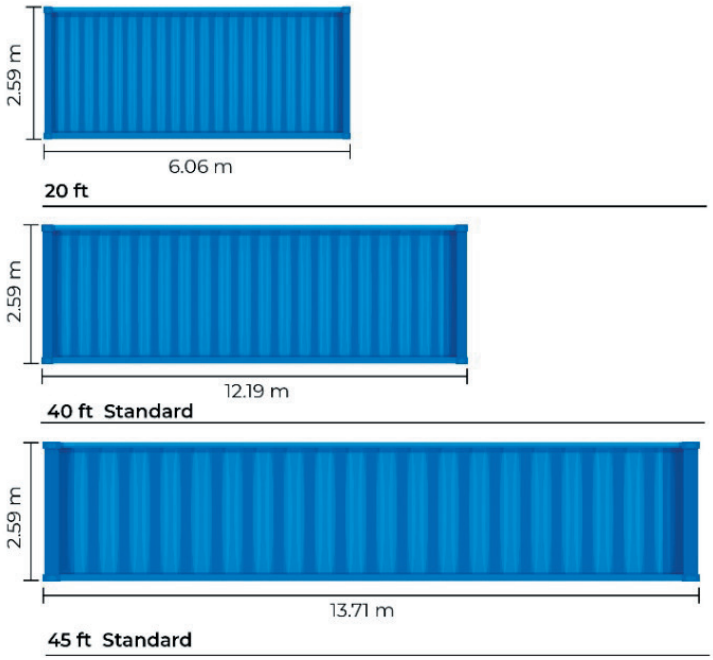
The external dimensions of the containers, width, length and maximum weight are defined to make the container as multimodal as possible by offering maximum volume. As an intermodal transport unit (ITU), the ISO container must be able to be transported by road, rail or sea. It must therefore comply with the clearance limits for road and rail transport.

However, dimensions may vary slightly from one shipping company to another.

20' DRY CONTAINER 20' x 8' x 8'6"	40' DRY CONTAINER 40' x 8' x 8'6"	40' HC CONTAINER 40' x 8' x 9'6"
Internal dimensions Length: 5.900 m Width: 2.352 m Height: 2.393 m **External dimensions** Length: 6.058 m Width: 2.438 m Height: 2.591 m **Door opening** Width: 2.34m Height: 2.28 m **Other measurements** Tare: 2,230 kg Cubic capacity: 33.0 m^3 Load capacity: 28,250 kg TEU equivalent: 1 TEU	**Internal dimensions** Length: 12.034 m Width: 2.352 m Height: 2.395 m **External dimensions** Length: 12.192 m Width: 2.438 m Height: 2.591 m **Door opening** Width: 2.34 m Height: 2.28 m **Other measurements** Tare: 3,720 kg Cubic capacity: 67.3 m^3 Load capacity: 28,780 kg TEU equivalent: 2 TEU	**Internal dimensions** Length: 12.034 m Width: 2.352 m Height: 2.700 m **External dimensions** Length: 12.192 m Width: 2.438 m Height: 2.896 m **Door opening** Width: 2.34 m Height: 2.585 m **Other measurements** Tare: 3,900 kg Cubic capacity: 76.0 m^3 Load capacity: 28,780 kg TEU equivalent: 2 TEU

Table 2. Indicative dimensions of three types of general purpose container

45' containers may also be proposed.



Container dimensions and sizes – source VS&B Containers Group

At the bottom of the left-hand door of the container is a plate known as the CSC plate, which is the certificate of seaworthiness granted to a shipping container that complies with a set of rules and conditions defined by the International Maritime Organization (IMO). In order to be transported at sea, a container must comply with international transport standards and meet safety requirements.

This certificate is valid for five years from the date of construction of the container, and is renewed every 30 months thereafter.

A "**last voyage**" container is a container with a certificate of seaworthiness valid for six months to make one final voyage.

https://info-container.fr/wp-content/uploads/2017/09/plaque-CSC-container-225x300.jpg
https://www.cma-cgm.fr/produits-services/conteneurs
https://www.vsnb.com/container-dimensions-and-sizes

Example of a CSC plate
© Emmanuel Groutel - WALE

2. SOLAS CONVENTION AND VERIFIED GROSS MASS (VGM)

The SOLAS[3] (Safety of Life at Sea) Convention is a directive imposed by the IMO which came into force on 1 July 2016.

This regulation was deemed necessary to ensure that shippers provide the carrier with a reliable indication of the exact gross weight of the container for safety reasons. Many accidents affecting both people and property have occurred as a result of inaccurate weight declarations.

This convention (Chapter VI Regulation 2) stipulates that for ships to which the convention applies, containers will only be allowed to be loaded on board provided that their **Verified Gross Mass** has been communicated to the ship's master and to the terminal representative for the purposes of preparing the ship stowage plan. Moreover, the measurement and declaration of this Verified Gross Mass is the shipper's own responsibility.

This figure, which corresponds to the total gross mass of a full container, can be obtained either by weighing the container after it has been stuffed and sealed using calibrated and certified equipment, or by adding together the weights of all the stuffed items (goods, packaging, protection, etc.) and then adding the tare weight of the container.

1. International Convention for Safe Containers
2. https://www.imo.org/fr/about/pages/default.aspx
3. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/520306/MSC.1-Circ.1475.pdf

Method 1

Actual weight of container including tare weight when packed

Method 2

Weight of all goods, including packaging and container tare weight

Weighing methods with 5% tolerance

The second method follows a five-step procedure:

1. The shipper first determines the weight of each of the goods in the container, either by using a weighing instrument, by obtaining the weights from the manufacturers or by retrieving them from their database. If necessary, the shipper can also request the weights from the professional responsible for the stuffing.
2. The shipper consolidates the weight of the packaging,
3. Then all handling supports and fixing accessories (pallet, dunnage, securing material, etc.).
4. The tare weight of the container used is that indicated on the container.
5. In a fifth and final step, the shipper adds together the weights and tare values obtained.

Given the technical and financial constraints imposed by the first method, professionals are led to declare the mass of the goods to be transported themselves, based on their volume.

Where timber is the commodity being transported, some specific problems may arise:

1. The density of wood varies with moisture (on average 7 kg per cubic metre per percent of moisture).
2. The density of a given species may vary according to a number of factors, including its geographical origin and tree growth rate.
3. Certain data/factors can distort the assessment of mass: allowances on dimensions, whether in terms of thickness and width to take account of shrinkage, or in length to compensate for end splitting problems, or the presence of perishable sapwood for logs. Sapwood in fact forms natural, degradable packaging for timber.

The ATIBT offers various tools to improve this assessment. Although it is very difficult to determine the average moisture content of timber with large cross-sections, there are formulas that can be used to estimate changes in the density of wood as a function of its moisture content.

Technical reference documents on tropical woods (Atlas, CIRAD technical data sheets, etc.) provide average densities at a reference moisture content of 12% for the most widely marketed species.

What are the consequences of not submitting a VGM before cut-off?

Failure to provide a VGM to a shipping line before the deadline may have a number of consequences:

- If a terminal at the port of loading has adopted a "**No VGM, No Gate-in**" policy, the container may be refused at the gate. Additional charges may then be incurred from the carrier or for the time taken to submit the VGM before the container can be accepted for entry.

- Cargo delays may impact the fluidity of the supply chain if a container does not load on its intended voyage due to the absence of a VGM. In addition, potential demurrage and/or detention charges may apply when a container is standing idle at the terminal awaiting VGM submission.

There are many risks associated with non-compliance with this agreement:

- Danger to people
- Load imbalance
- Danger to ships
- Loss of containers through unstowage
- Collisions with other vessels
- Fines and penalties
- Unfair competition

WEBOGRAPHY

https://www.cma-cgm.com/products-services/verified-gross-mass?pk_vid=1a561e8f2f7643e116802483856e5f4a

https://www.imo.org/en/OurWork/Safety/Pages/Verification-of-the-gross-mass.aspx

https://www.maersk.com/news/articles/2020/04/22/solas-vgm-requirement

https://fr.kuehne-nagel.com/en/-/knowledge/sea-freight/solas-vgm-regulations

Document produced by ATIBT's Timber-Material-Standardisation Commission
by Emmanuel Groutel / WALE (President) and Jean Gérard / CIRAD (Secretary). November 2023 - funded by ITTO