Cargo transport by sea is by far the cheapest per kilogram per kilometre moved relative to the other major forms of transport used by other humanitarian agencies, and is convenient for bulky pre-planned consignments. Sea transport is unfortunately also one of the slowest methods of delivering cargo as well. Sea transport will likely not be used to service immediate needs in rapid on-set disasters, and is more appropriate for pre-positioning or to serve post disaster and longer term needs.

**Common Terms in Sea Transport**

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping Container</td>
<td>A standard predefined set of containerised shipping units that are used throughout all sea shipments. Shipping containers come in many variations to meet the needs of different shipments. Containers also have unique container numbers that can be tracked, and when in movement containers will be sealed using industry standard container seals. The vast majority of containers come in 20 foot and 40 foot dimensions.</td>
</tr>
<tr>
<td>Full Container Load (FCL)</td>
<td>A volume of cargo from a single party or consignment capable of filling an entire shipping container.</td>
</tr>
<tr>
<td>Less Than Container Load (LCL)</td>
<td>A volume of cargo from a single party or consignment not capable of filling an entire shipping container.</td>
</tr>
<tr>
<td>Twenty Equivalent Unit (TEU) / Forty Equivalent Unit (FEU)</td>
<td>Short hand for identifying a measure of volume equivalent to the container size and identifying slot space on a dock or a ship. One 20-foot container is equal 1 TEU. One 40-foot container is equal 1 FEU or 2 TEUs.</td>
</tr>
<tr>
<td>Port of Loading (POL)</td>
<td>The port at which a cargo is loaded onto a vessel and disembarks.</td>
</tr>
<tr>
<td>Port of Discharge (POD)</td>
<td>The port at which a vessel arrives and unloads cargo.</td>
</tr>
<tr>
<td>Direct Service</td>
<td>Vessel Schedule wherein cargo is loaded/unloaded from the same vessel.</td>
</tr>
<tr>
<td>Transhipment Service</td>
<td>A shipment where a container changes multiple ships throughout the transport, where cargo is offloaded at another port to connect to the vessel destined to the final point of delivery. There can be a single transhipment or multiple transhipments.</td>
</tr>
<tr>
<td>Live Load / Unload</td>
<td>When a forwarder or transport company sends or drops a container at a shipper’s facility and waits for the container to be loaded / unloaded without leaving within a stipulated period of time.</td>
</tr>
<tr>
<td>Drop and Pick</td>
<td>When a forwarder or transport company leaves a container at a shipper’s facility for one or more days without being present for the loading / unloading.</td>
</tr>
<tr>
<td>Stripping</td>
<td>Removing contents from a container, either at the port or consignee’s location. May or may not involve breaking the container seal; a container may be opened prior to delivery for a variety of reasons including inspection and breaking down of a consolidated consignment. Also sometimes called destuffing or devanning.</td>
</tr>
</tbody>
</table>
**Stuffing**
Loading a container for shipping, at a container freight station, consignees’ location or consolidation warehouse somewhere in the middle. Sealing the container may or may not occur at point of stuffing.

<table>
<thead>
<tr>
<th><strong>Shipside / Quayside</strong></th>
<th>Storage and handling of cargo occurring at a port alongside or near a sea transport vessel.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Berth</strong></td>
<td>A designated location in a port where a vessel can park and moor, usually along the long edge of a ship to provide safe and easy offloading. Maritime vessels vary dramatically in size, both in length and depth under the water they may draft, so berthing space must be designated by a port captain or port official, and must match the needs of the vessel.</td>
</tr>
<tr>
<td><strong>On Deck Stowage</strong></td>
<td>The placement of cargo and containers stored on the surface deck of a ship for the duration of the transport. On deck refers to anything above below deck storage with free access to the air above the boat, however on deck storage might still start below the upper rim of the vessel.</td>
</tr>
<tr>
<td><strong>Below Deck Stowage</strong></td>
<td>The placement of cargo below the main deck of a shipping vessel.</td>
</tr>
<tr>
<td><strong>Bulk Carrier</strong></td>
<td>A vessel specially designed to transport unpackaged bulk cargo, such as grains, coal, ore, steel coils and cement, in its cargo hold(s). Bulk carriers are ideal for transport of grain or loose materials that may be removed with special equipment on the receiving end. Frequently, bulk carriers will require re-bagging on the receiving end of the shipment.</td>
</tr>
<tr>
<td><strong>Break Bulk</strong></td>
<td>Cargo transported in large, unitised quantities not contained in a standard shipping container. Break bulk cargo may be items like large machine parts, construction materials or even vehicles, and can be stored in specialised below deck compartments.</td>
</tr>
<tr>
<td><strong>RoRo</strong></td>
<td>Any vessel that has capacity for vehicles to “Roll on / Roll off.” Might include regular vehicle ferry service, but also many long haul ships may have this capability.</td>
</tr>
<tr>
<td><strong>Stevedore</strong></td>
<td>A dock worker engaged with loading, offloading and management of maritime shipping activities.</td>
</tr>
</tbody>
</table>

**Sea Transport Arrangements**

Very rarely are sea cargo vessels owned or wholly leased by single agencies that also solely utilise them for their own shipping purposes. The overall size, cost, time and general nature of sea freight necessitates that no single entity but those with massive and regular volumes of cargo could ever utilise an entire vessel at once. As a remedy to this, the vast majority of sea cargo is arranged through freight forwarders, and is negotiated based on the POL/POD, consignment size, type and special handling needs. Shippers sending any goods via sea should liaise with their forwarders to identify the correct modality of moving their cargo from one place to another.

In sea shipping, there are heavily trafficked and well-known routes that many vessels use known as “shipping lanes,” especially between high volume ports. Between these shipping lanes, there are also what is known as “shipping lines,” or fleets of shipping vessels privately owned and managed by a company or a consortium. In addition to shipping lines, there are also a variety of smaller merchant fleets and individual vessels who work on contract for cargo movement.

Due to the sheer number of individual shippers that may be sending cargo on a single vessel, it’s extremely unlikely any one vessel will be departing from and arriving at the exact destination specified by the shipper. Cargo shipped via sea faring vessel will frequently use transhipment service, being offloaded and reloaded onto two or more vessels while en route, staying in a secure port in between loadings while waiting for the correct vessel heading the correct destination. The linkages of a transhipment service are worked out by brokers and forwarders on behalf of the shipper, and shippers usually don’t get involved with routing, only becoming involved with cargo at the final destination.

**Containerisation / Loose Item** – The preferred method of shipping via sea is the use of containerisation units. Shipping containers, through their standardised construction, fit onto a wide variety of sea faring freight vessels. Containers are usually sealed at the POL, and as such can switch between multiple vessels and ports while en route with minimal risk of tampering or theft. Generally, shippers should seek to maximise their shipments by trying to reach a whole number of either 20 foot (TEU) or 40 foot (FEU) container or containers. Loads smaller than a full container load (FCL) might have to wait until a full container load is available, otherwise shippers might have to rely on what is known as “consolidation,” or sharing of one container with one or more other shippers. Less than container load (LCL) cargo using consolidation might require waiting to find another shipper or shippers going to the same final destination as you. Consolidation also does not allow for fully unopened containers to be delivered to a consignee’s facility as the cargo will need to be broken down and separated at the port, which increases the chances of loss or theft. Special items such as generators, vehicles that cannot fit into a container, or special handling containers like refrigerated containers (reefers) may also be transshipped using two or more vessels. For oversized or bulky items, they may also be shipped by the piece, however there may be fewer available vessels with the right stowage space heading to the correct locations, which might drive up costs and slow down the entire process of shipping.

**Dedicated Charters** – Occasionally an agency or organisation will need to take full possession of a vessel for a single voyage or for an extended period of time. These vessel specific charters are governed by a contracting structure known as a “charterparty.” In a charterparty arrangement, the ship owner provides the vessel as a dedicated resource along with crew, and usually provides for the cost of fuel and maintenance, though the specifics of the arrangement are identified in the contract. Examples of dedicated charters in humanitarian aid might include:
- Leasing an entire bulk carrier vessel for the movement of loose grain from one location to another
- Long term leasing a cargo vessel to provide regular cargo service to locations not serviced by the commercial market
- Long term leasing of passenger vessels for special purposes (hospital boats, rescue boats, etc)

**Unique Concepts to Sea Transportation**
Port Demurrage – Sea cargo in a port accrues demurrage at a different rate than airports or border crossings. Due to the size and complexity of port operations, containers and bulk cargo items are typically given two weeks of free storage before demurrage accrues. This port demurrage rate is variable however, and free demurrage may vary for container and break bulk cargo based on the carrier agreement with the port, the shipping line companies, and the local governments ranging from two days to fourteen days.

Flag Carrying Vessel – The majority of the surface area of the world’s oceans are considered international waters, and vessels themselves may spend the majority of their time in non-incorporated international water. By binding international maritime law, all vessels must still be registered as a “flag carrier” for some country on earth. A vessel carrying the flag of a certain country does not mean the vessel was manufactured there, nor does it mean the crew or anything about the operation is connected to that country, it only means that’s the country the vessel is registered in. By regulation, vessels must spend at least some portion of the year docked in the country through which they are registered. Regulation also states that the country to which the vessel is registered has the ultimate authority and responsibility to enforce safety and pollution standards, and prosecute any violators under local law.

Vessel Limitations – Modern shipping vessels are becoming larger and more sophisticated, however it is extremely difficult - and at times impossible – to update seaports to accommodate these ships for a number of reasons. Additionally, many vessels might require additional specialised Material Handling Equipment (MHE) that isn’t always available in every port, especially under developed or neglected ports in countries prone to natural disasters and conflicts. Limitations vessels might face include:

- **Hull Draft** – Some vessels have drafts too deep for some harbours, which are limited by the natural topography of the ocean floor.
- **Offloading** – Smaller and unimproved seaports may lack the offloading equipment to move containers and bulky items. Vessels moving these items may need deck mounted cranes to move items themselves.
- **Size** – Vessels that are too long may not be able to adequately berth to offload cargo.
- **Flag Carrying Vessels** – Some vessels may be banned from entry to harbours due to their source origin or registered flag.

Port Operations

Seaports can be enormous compared to other ports of entry, such as an airport or a border crossing. Seaports must be large enough to accommodate vessels of various sizes, but also can have an extremely large storage and holding capacity. The largest container ports in the world process tens of millions of TEU containers each in a single year. Large ports can be extremely busy, with dozens of ships being loaded and offloaded with specialised cranes and MHE at any given time. Ports also tend to be highly secured and scrutinised – due to the high volume of goods, illegal smuggling and human trafficking have become large concerns for many countries. Based on the sheer size of the operations, vessels may not be able to berth or off load for days or even weeks, instead having to moor off coast waiting for berthing space to open up. It’s also very common for cargo to be delayed while being offloaded and moved around a port, especially in chaotic post emergency periods.

Port limitations can also impact the speed at which cargo can be offloaded, or even prevent offloading at all. Things such as the number of operating cranes, the number of available truck drivers or the available hands to move cargo may lead to significant port congestion. The lack of the appropriate handling equipment can adversely limit a port to the point it cannot service some vessels. In countries or locations with limited or unimproved facilities, it may be impossible to off load certain vessels. Small ports may lack cranes sufficient to move full sized containers or oversized cargo, requiring vessels to carry their own on-board MHE. Even if a port has proper MHE, if the equipment is old, poorly serviced, or the ground operators have limited or poor training, offloading and releasing cargo can be slowed down substantially.

Example Port Operation Overview:

![Port Operation Diagram](image)

Material Handling Equipment

Ports require specialised equipment to load and offload cargo from vessels. In sea operations, cargo normally arrives containerised, however cargo can also be oversized or bulk. Special equipment is required to properly load and offload items.
**Reachstacker** - Large vehicle designed to pick up and carry full-sized containers around a container yard. Reachstackers have different sizes, and may have maximum load limits under a fully loaded container. Reachstackers are usually not used for offloading vessels, unless the vessels are small and in unimproved port conditions - they are mostly used for rearranging containers in a shipping yard, or loading containers onto truck bodies for onward movement.

**Shipside Container Crane** - A large crane capable of offloading full-sized containers directly from the deck of a ship. Shipside container cranes may either be stationary, or capable of moving to meet the needs of the operation. The cranes are usually very tall - well above the decks of most vessels rated for that port and are capable of lifting loads up to the max weight of containers.

**Gantry Crane** - Another form of movable container crane, one that specifically straddles both side of a vessel or stack. Gantry cranes can be large enough to reach over the deck of an entire vessel, but may also be used for loading and offloading trucks or piles of cargo.
<table>
<thead>
<tr>
<th><strong>Unloader / Grain Vacuum</strong> - A specialised tool for offloading loose, bulk cargo such as grain or sand with an extended adjustable arm that reaches into the deck of a bulk carrier. Unloaders can have a mechanical function, scooping and lifting bulk cargo like an elevator inside the arm. There are also configurations where the arm is a giant vacuum for grains called a &quot;grain vac&quot;, that pushes loose grain out the back to a pre-set destination.</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Unloader / Grain Vacuum" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Ship with Deck Mounted Cranes</strong> - Some ships may require their own onboard mounted MHE, such as deck mounted cranes. On-board MHE helps alleviate the problem of working within ports that have limited handling equipment.</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Ship with Deck Mounted Cranes" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Grain Conveyor</strong> - A large mechanical conveyor that can either lift and dump grain, or be used to slowly offload grain from the belly of a bulk carrier. If used for offloading, there is usually a bagging operation occurring at the receiving end.</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Grain Conveyor" /></td>
</tr>
</tbody>
</table>

---

**Sending Goods by Sea**

**Sea Transport Documentation**

The overall requirements for and types of documentation used for sea transport remain consistent with most shipments (waybill, packing list, proforma, etc). There are documents specific to sea shipping however. These might include:
Bills of Lading (BOL) - The BOL is the transport waybill for a sea freight consignment. BOLs are conceptually one of the oldest mutually recognised forms of consignment tracking; traditionally seaborne trade was one of the few ways countries conducted official trade. The BOL states to whom and on what terms the goods are to be delivered at destination. It is one of the most crucial documents used in international trade in that it ensures the shipper receives their payment and the consignee receives their cargo, and without an official BOL the goods will not be released. Modern BOLs are highly standardised, and BOLs generated by different shipping lines will look almost identical in layout. Many shipping companies will require BOLs even if the vessel is not moving between two different countries – the BOL also represents a contract between the vessel owner and the owner of the good being shipped.

There are three types of BOL arrangements that can be used:

- **Original BOL** - Consignee has to handover all three sets of original BOLs to their customs agent at destination to release the cargo. With original BOL, possession of the goods is determined by possession of the BOL - whoever possesses the original BOLs may be entitled to demand possession of the goods from the carrier. Shipments using original BOLs may be delayed if the documents are lost or not in hand at the time of clearing.

- **Seaway BOL** – Original BOL is not required and cargo can be released directly to the consignee by their customs agent. Seaway BOLs are useful because the physical document does not need to be present, and the consignee can begin clearing as soon as cargo arrives. Many banks do not accept Seaway BOLs if a letter of credit is required however.

- **Telex Release BOL** – In telex BOLs, the supplier surrenders the original BOL to their export/forwarding agent at origin and transmits using telex directly to customs at destination request to release of cargo to the consignee.

BOLs are usually issued in a set of three originals and several non-negotiable copies. The BOL is signed on behalf of the ship owner by the person in command of a ship or the shipping agent, acknowledging the receipt on board the ship of certain specified goods for carriage. It stipulates the payment of freight and the delivery of goods at a designated place to the consignee therein named.

The BOL is the major shipping document and has three roles:

- It affirms the contract of carriage and sets out the terms thereof. It is evidence of the contract between the consignor and the shipping line, and on the reverse details the conditions of carriage.
- It is the carrier’s receipt for the carriage of goods by sea and is signed by the master or another duly authorised person on behalf of the ship owner, acknowledging receipt on board the ship of certain specified goods that he undertakes to deliver at a designated place.
- Possession of the original BOL gives the title to the goods being carried. It is considered good practice for the consignor to ensure that at least one original BOL reaches the consignee in good time since the consignee will receive the goods only against presentation of at least one original BOL.

**Terms of the BOL:**

There are three different entries possible in the box headed “consignee”:

- To bearer: this means that any person having possession of the BOL may collect the goods; such person is not required to disclose their identity or to explain how they came into possession of the BOL. The mere fact that they have possession of and present the BOL is sufficient. Issuing BOL “to bearer” is not common practice and carries significant risk.
- To order: this is the form of BOL used most frequently in commercial transactions. As long as the shipper holding the BOL has not endorsed it, he is entitled to dispose of the goods. By endorsing it, he transfers his rights to the endorsee, that is, the person to whom the BOL is assigned by endorsement. Title to the goods is thereby transferred to the new holder of the BOL who may in turn assign it by endorsement to somebody else.
- To a named party (straight BOL): in contradiction to a BOL “to order”, the straight BOL - one in which it is stated that the goods are consigned to a specified person - does not entitle the shipper to dispose of the goods. That right is vested exclusively in the receiver who alone has the right to collect the goods, upon presentation of the BOL and proof of his identity. Named parties are by far the most common and secure form of named consignees.

Other commonly used BOL terms:

- **Straight BOL** - Assigned by means of a document instrument in writing, evidencing the assignment, which the assignee must present to the master of the vessel together with the original BOL when he collects the goods. On a straight BOL, the term “to the order of” printed on standard BOL must be crossed out, and the deletion initialed by both the shipper and the Master.
- **Clean BOL** - Declares there is no damage or loss of cargo in transit. Goods may sometimes be ‘received alongside’, which can result in a delay prior to the physical loading of the goods onto the vessel.
- **Unclean BOL** – Contains a notation that goods received by carrier were defective or damaged.
- **Through BOL** - Issued when a shipper wishes the carrier or shipping line to arrange for transport to a destination beyond the port of discharge. The through BOL, in addition to the agreement to carry goods from port to port, includes a further journey (by sea or land) from the port of ship's destination to a distant place (for instance, a destination inland instead of a port).
- **House BOL (HBL)** – An internal document generated by a forwarder or broker to provide relevant information to a client. HBLs may not always be presented as official documentation used during the customs process.
- **Master BOL (MBL)** – the official BOL generated by the shipping line or vessel operator. MBLs will generally bear the most accurate information, and many customs authorities will only use MBLs for customs clearance purposes.

Example BOL:
# MASTER BILL OF LADING

**Conocimiento de Embargo**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>Shipper</strong></td>
<td>Company Name, Address &amp; Zip Code (Embarcador)</td>
</tr>
<tr>
<td>2. <strong>B/L No.</strong></td>
<td>Signature No. Reserve No.</td>
</tr>
<tr>
<td>3. <strong>C/NT No.</strong></td>
<td>CAT - XXXXX</td>
</tr>
<tr>
<td>4. <strong>C/NT No.</strong></td>
<td>CAMN</td>
</tr>
<tr>
<td>5. <strong>Shippers Order</strong></td>
<td>Det BILL OF LADING NO Conocimiento de Embarque</td>
</tr>
<tr>
<td>6. <strong>DATE</strong></td>
<td>Date (Fecha)</td>
</tr>
<tr>
<td>7. <strong>TIME</strong></td>
<td>Time (Hora)</td>
</tr>
<tr>
<td>8. <strong>Emergency Number</strong></td>
<td>Emergency Contact Information (Número de Emergencia)</td>
</tr>
<tr>
<td>9. <strong>MARINE TAG</strong></td>
<td>träck No.</td>
</tr>
<tr>
<td>10. <strong>CONSIGNEE</strong></td>
<td>Complete Name, Address, &amp; Zip Code (Consignado a.)</td>
</tr>
<tr>
<td>11. <strong>NOTIFY PARTY</strong></td>
<td>Complete Name, Address, &amp; Zip Code (Dirección de Notificación de Llegada a)</td>
</tr>
<tr>
<td>12. <strong>Vessel Name</strong></td>
<td>Vessel Name (Nave)</td>
</tr>
<tr>
<td>13. <strong>Port of Loading/Unloading</strong></td>
<td>Port of Loading/Unloading (Puerto de Carga/Descarga)</td>
</tr>
<tr>
<td>14. <strong>Port of Destination</strong></td>
<td>Port of Destination (Puerto de Destino)</td>
</tr>
<tr>
<td>15. <strong>Place of Delivery</strong></td>
<td>Place of Delivery (Lugar de Entrega)</td>
</tr>
<tr>
<td>16. <strong>Marks &amp; No. of Containers</strong></td>
<td>Marks &amp; No. of Containers (Marcas &amp; N° de Contenedores)</td>
</tr>
<tr>
<td>17. <strong>Description of Cargo</strong></td>
<td>Description of Cargo (Contenido)</td>
</tr>
<tr>
<td>18. <strong>Weight</strong></td>
<td>Weight (Peso)</td>
</tr>
<tr>
<td>19. <strong>Measurement</strong></td>
<td>Measurement (Medidas)</td>
</tr>
<tr>
<td>20. <strong>Freight Charges</strong></td>
<td>Freight Charges (Flete)</td>
</tr>
<tr>
<td>21. <strong>Per Unit</strong></td>
<td>Rate Per Unit (Tarifa por Unidad)</td>
</tr>
<tr>
<td>22. <strong>Currency</strong></td>
<td>Currency (Moneda)</td>
</tr>
<tr>
<td>23. <strong>Signature</strong></td>
<td>Signature (Firma)</td>
</tr>
</tbody>
</table>

**Particulars Furnished by Shipper**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>24. <strong>TOTALS</strong></td>
<td>Totals (Totales)</td>
</tr>
</tbody>
</table>

**Contact Information**

- **Shipper's Name**
- **Mailing Address**
- **Including City, State and Zip Code**
- **Consignee's Name**
- **Complete Mailing Address**
- **Including City, State and Zip Code**
- **Notify Party**
- **Complete Mailing Address**
- **Including City, State and Zip Code**
- **Contact Information for Person to be notified at Destination**
- **Include Full Name, Phone Number and/or E-Mail Address**

**PARTICULARS FURNISHED BY SHIPPER**

- **Marks & No. of Containers**
- **Description of Cargo**
- **Weight**
- **Measurement**
- **Freight Charges**

**Contact Information**

- **Shipper's Name**
- **Mailing Address**
- **Including City, State and Zip Code**
- **Consignee's Name**
- **Complete Mailing Address**
- **Including City, State and Zip Code**
- **Notify Party**
- **Complete Mailing Address**
- **Including City, State and Zip Code**
- **Contact Information for Person to be notified at Destination**
- **Include Full Name, Phone Number and/or E-Mail Address**
Non-Traditional Movement – there may be instances in which cargo is moved via a seafaring vessel in which no BOL is used. Such an instance might be when cargo is moved using ocean waterways without moving between two countries, when the sea carrier or vessel owner isn't large enough to participate in regular maritime shipping practices, and when natural disasters or conflicts preclude the normal procedures associated with sea shipping. In such instances, individuals or organisations should still endeavour to utilise standard shipping best practices, such as use of packing list and waybill, to prevent loss or theft along the way.

Cargo Configuration for Sea Shipping

Cargo shipped via sea tends to require a lower attention to detail, especially if cargo is shipped using standard shipping containers. There are still a few things shippers should know when prepping cargo for sea movement however.

Container Shipping

Modern shipping containers have standardised interior, exterior and door dimensions. Containers also have pre-defined weight limits, set by the structural integrity of the containers and the rating on the cranes and vehicles used to move them. Shipping container weight will often be discussed in the following terms:

- **Tare** – The weight of an empty container; weight generated by the container itself.
- **Net** – The weight of the goods placed in the container.
- **Gross** – The combined weight of the container and the contents of the container.

Containers may be made of different materials, altering the tare and gross weight availability.

Example container carrying vessel:

Though there are dozens of varieties of containers available to meet a number of needs, the vast majority of containers what are known as “dry containers” at either 20 foot (TEU) or 40 foot (FEU) sizes. TEU and FEU are totally enclosed, and though they are called “dry” are not actually hermetically sealed. The containers themselves are lockable and stackable, with two TEUs being able to be loaded on top of or below an FEU. Standard dry containers are mostly made from steel, however aluminium varieties are available.

As containers move, they are physically “sealed.” A seal is usually a metal or plastic lock that can only be closed once. The only way to remove the lock is to physically cut it, thereby “breaking the seal.” Container seals don’t provide any form of structural security to the containers themselves, rather they are used as the process of tracking chain of custody. A proper container seal should have a tracking serial number on it. That serial number should be recorded at the point of sealing, and communicated to the ultimate recipient for cross reference. If the seal on the container at the receiving end does not match the seal at the beginning of the journey, then theft or tampering may occur. Based on the volume of sea shipping, container numbers are frequently only checked if there is problem with the piece counts or product identification.

Container Chain of Custody:

- **Container Stuffing** - When an empty container is filled or “stuffed” with cargo to be shipped. Stuffing can be done either at the customer's location, or at the port. Stuffing can be the responsibility of the customer, or for a designated third party designated in the terms of the contract.
- **Sealing the Container** - Sealing occurs after a container has been stuffed. Physically setting the seal can be the responsibility of the customer, or a third part company/agent identified by the customer.
- **Unseal the Container** - Breaking occurs at the end of the sea journey, and in the presence of the customer or the designated third party company/agent. Breaking can occur either at the port, or the container can be delivered all the way to the customer's location.
- **Container Stripping** - When a full container has it's contents removed or "stripped" of it's cargo. Container stripping can occur at the port, or at the customer's location, and is the responsibility of the customer or a designated third party designated in the terms of the contract.

Stripping/Stuffing Process

- When a container is dropped at a customer's location and left to be stuffed or stripped later, it is called "drop and pick." Drop and picks can be for a specific pre-defined interval, or they can be for as long as required by the client/contract. Drop and picks are good for clients who like to stuff/strip and seal/unseal containers themselves.
- When a container is stuffed at the time the container is made available, it is called "live loading." Live loading is the same process as loading onto a box truck, and usually containers are truck mounted if at a customer's facility.
The process of stuffing/Stripping and sealing/unsealing can be entirely outsourced to a third party. Many organisations who deal with less than full container loads rely on consolidators or third parties to take and ship their cargoes for them, ensuring all formalities are taken on their behalf. Self managed stuffing/stripping and sealing/unsealing is largely only useful for shippers who move large volumes of cargo and have robust supply chain monitoring processes in place.

When planning shipments in an TEU or FEU, shippers should consider the width, height, and total volume of a container. As an example, the interior width of a standard FEU is just under 2.4 meters while the width of a standard north American pallet is just over 1 meter on the short end while just over 1.2 meters on the long end; loading using this pallet type using any side by side configuration will inevitably mean losing some usable free space. The same goes for oversized pallets – pallets of excessive height will not be able to fit through doors if they exceed the door height, especially if pallets are moved by a hand truck or other form of MHE, meaning there will still be several centimetres of clearance required for the pallet to be picked up off the ground.

Cargo that is loose loaded into a container by hand may be able to fill up every available space, but loading and offloading cargo by hand can take extremely long periods of time. Unless a transporter is willing to do a drop and pick, the use of handloading may even be prohibitive. Additionally, many containers may be emptied and transloaded onto another truck where intermodal arrangements are not available, which would delay the process even further while increasing the risk of damage to cargo. In large scale response operations, shippers may opt to use palletised loading just to speed up the front and rear ends of the delivery.

Outside of the standard TEU and FEU dry container, there are several common types of shipping containers to meet different needs.

- **Open Top/ Side** - Some containers come with open tops or open sides to accommodate oversized cargo such as vehicles. The containers will still have bases of regular dimensions to facilitate stacking and moving via cranes, however.
- **Oversized** – Some containers are made especially long or especially high to accommodate larger loads. Only special vessels and ports can accommodate this type of container however.
- **Cold Storage** – Cold storage or refrigerated “reefer” containers are used for transmission of any climate controlled or cold chain items. Reefer containers are designed to transport cold requirement items over the entire sea voyage, and require constant connection to electricity or fuel to maintain low internal temperatures. Self-contained reefers can technically be transported on any vessel that can accommodate regular TEUs and FEUs, but special training and handling may be required.
Oversized Cargo

Sea shipping is ideal for extremely large cargo; the cargo holds of larger ships can handle excessively large items, while the MHE used in port operations can handle weights not common in air or trucking. For transportation of oversized items, shippers must obtain proper exterior dimensions, and in the case of machine equipment, should obtain detailed material handling specifications available from the manufacturer or in the equipment manual. Non-containerised shipments may take some time to formalise, as a break bulk carrier with the appropriate size hold and free space may not be readily available. Additionally, it may be difficult to find vessels utilising the correct routing to arrive at a shipper’s intended destination. Shippers should begin conversations early with forwarders to determine the time and information needs to successfully ship bulk cargo.

Bulk Dry / Loose Cargo

Sea faring vessels have a unique capacity to carry enormous quantities of un-packaged bulk cargo; cargo that is loose dry cargo such as grain or ore. Bulk carriers can hold high volumes of loose items in one or a few large cargo holds in the middle of the vessel. Unlike containerised vessels, it is highly unlikely that bulk carriers would undergo a transshipment process – the act of getting loose bulk off and back on a ship is very energy intensive. Bulk carriers require special equipment and training to load and off load. Loading can occur with cranes or grain elevators, while offloading requires special cranes to scoop or even suck up fine granules. Depending on the needs on the ground, bulk cargo operations might even undergo bagging directly at the point, to facilitate quick loading onto to trucks for onward movement. Bulk cargo vessels are common for food operations in humanitarian response.

Physical Cargo Needs

Due to the long duration of sea shipping, shippers should be mindful of cargo that may have sensitivities to temperature, or have specific expiration dates. Cargo shipped in a container along regular shipping lanes may easily take up to two months to reach its destination, especially when customs clearance and demurrage are taken into account. Containers will remain sealed, and will be exposed to the sun and elements throughout the duration of its journey, meaning contents can be subject to extreme heat or extreme cold.

- **Medical cargo** – Pharmaceuticals and consumables that have expiration dates must be handled with transit times in mind. Many countries won’t import medical goods with less than 18 months of shelf life left, a time constraint that starts at the point of customs. This means medical goods must be procured and shipped with even longer shelf lives. Shippers should know the import procedures of the intended destination and plan accordingly. Temperature sensitive items may need reefer storage, even if not expressly stated by the manufacturer.
- **Food stuffs** – Containerised food items should be prepped for long storage – special temperature requirements must be identified up front, and fumigation may be required prior to loading.
- **Dangerous Goods** – Sea shipping standards around dangerous goods are less stringent, but must still be accounted for. Some DG items are reactive to metal, meaning long term exposure to shipping containers might actually damage the container resulting in additional cost to the
shipper. Other DG items become combustible with increased heat – even though cargo at origin or destination may not be exposed to extreme temperatures, containers can be offloaded and held in extremely hot climates while waiting transhipping on another vessel. For an overview of the process of shipping dangerous goods by sea, please review the Dangerous Goods section of this guide.

Planning Sea Movement

In planning movements by sea, port capability and the control of port activity needs to be understood in order to assess any possible constraints that could impede the movement of goods. The following factors will indicate the suitability of a port to handle the planned movements:

- The number, type and size of ships that can be handled at one time.
- Typical vessel waiting and discharge times.
- Availability of equipment to handle different types of consignment – for example, bulk, bagged, loose, containers etc., and its state of repair.
- Availability of labour, working hours and typical discharge rates for both manually.
- Unloaded cargo and containers.
- Operational factors that may constrain activity such as the risk of congestion or the impact of the weather at certain times.
- Port documentation requirements and the efficiency of procedures for clearing cargo.
- Storage facilities and infrastructure such as railways, roads.

Where the movement of goods is to an area under the control of the local public authority, a clear understanding of the requirements covering movement of goods must be obtained from the appropriate authority prior to initiating any movement.

Templates and Tools

Guide - Container Specifications