Chapter 12 – Steel

This chapter discusses the susceptibility of steel cargoes to damage, particularly pre-shipment. Where damaged cargo is presented for shipment, bills of lading (B/Ls) should be rigorously claused and any damage that is claimed on outturn should be properly surveyed.

In steel trading, profit margins are small and the competition is intense. This trading climate has produced an industry that is highly automated and where plant is expensive and needs to be used to its utmost potential if it is to be worked economically. Anything that leads to delay on the production lines, or that requires extra manual handling, increases the cost of the product.

Therefore, any steel delivered damaged or blemished will almost certainly be the subject of a claim from the receivers. If the cargo is discharged in anything other than the condition described in the B/Ls, claims against the carrier may be expected.

Steel is often imported by merchants who work to very narrow profit margins and are, accordingly, extremely claims conscious. A merchant may, for example, order coils of say 1,120 mm width, knowing that they have buyers for coils of 510 and 610 mm widths, intending to cut them to the required size. If, however, the coils arrive with their edges crimped or cut, this may not be possible. In the same way, while the bending of the flange at the extreme end of a beam may in itself seem unimportant, this beam may

have been ordered in a 20 m length, with the merchant knowing that they have a market for 3 m and 6 m long beams. In both cases, the merchant may find that, after cutting to the width and length needed, they are left with material of a width and length that is not readily marketable. Current business methods do not encourage large stock holding and merchants do not want to keep capital tied up in goods that are deteriorating while they are in their custody.

Finally, the merchant is affected by the steel market where rapid fluctuations in demand mean fluctuations in price, which may leave large quantities of steel for which the merchant cannot get a profitable price. In these circumstances, an aggressive attitude may be expected towards carriers with regard to any damage for which they can possibly be held responsible.

The import of steel into the USA gives rise to more claims against ocean carriers than in any other part of the world.

This chapter describes the more common types of steel products transported and their susceptibility to damage. It emphasises the importance of accurately clausing the B/Ls and makes some recommendations on stowage and the way in which cargoes found damaged on outturn should be examined.

12.1 Types of Steel Products

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Rolled steel. **Sheet steel.** **Steel rods.**

Figure 12.1: Steel products.

12.1.1 Sheet Steel

Sheet steel is mainly carried in the form of coils, although smaller quantities are often carried in packs.

Hot rolled coils
Coils are produced by heating and rolling steel ingots through reduction mills. As the thickness of the steel is reduced, its length increases and, for convenience in handling, the long narrow sheet is rolled into a coil. The coil is tightly strapped through the core and around the circumference and made ready for transportation to the load port. The coils are described as hot rolled coils or raw steel and they will require further processing at their country of destination.

Figure 12.2: Coils of hot rolled steel.

The coils are usually between 1.20 and 4.50 m in diameter and weigh between 5 and 15 T each.

Cold rolled coils

Rather than being prepared for shipment as hot rolled coils, the steel may be further processed in the country of manufacture to create cold rolled coils. The steel is passed through baths filled with a weak acid solution to remove rust and scale, a process known as pickling. The sheet is then washed, dried, oiled and re-coiled before being passed on to the cold reduction mill, where it will be cold rolled under tension. The end result is a product of better temper and improved finish.

Figure 12.3: Coils of cold rolled steel.

The higher quality surface finish of cold rolled steel makes it much more susceptible to rust damage, so it is usually packed in bituminous paper and kept away from moisture.

Cold rolled steel may be processed further by dipping the sheet into a bath of zinc to produce coils of galvanised steel sheeting. Alternatively, tin plate may be produced by covering one or both surfaces of the sheet with a thin layer of tin.

Cold rolled steel, galvanised steel sheet and tin plate are much more valuable than hot rolled sheet. They will be strapped in the same way as hot rolled coils but, before leaving the factory for transportation to the load port, will normally be wrapped in bituminous paper and then covered with fine gauge steel sheeting that is itself secured in place with metal strapping.

Packed sheets
Cold rolled sheets, galvanised sheets and tin plate may be carried in packs instead of coils. The bundle of cold rolled sheets that forms a pack is secured with steel strapping. It is then usually completely wrapped in bituminous paper and covered with a metal envelope. The package will be secured, by metal straps, to wooden skids.

12.1.2 Rolled Sections or Construction Steel

Rolled sections or construction steel are generally large sections in the form of 'H', 'I' or 'U' (channel) beams. They are produced by passing the steel ingots through a series of rollers.

12.1.3 Small Section Material, Rods and Wire

Small section material
This may be composed of special steel alloys or of steel that has been given a special finish at the factory. Small section material is usually destined for use in the manufacture of machine tools, for components for electrical machinery or for steel furniture.
Other uses include the construction of ladders for fire escapes, racks in factories or warehouses, railings and numerous other appliances or fittings where a quality finish may be required. Small section material is shipped in bundles and may be wrapped.

Reinforcing bars
Reinforcing bars are often referred to as 'rounds', 'concrete iron', 'deformed reinforcing bars' or 're-bars'. The use of the word 'deformed' means that the bars have ridges introduced into their surface during production. The ridges improve the bond of the bar with the concrete and so increase the constructional strength of a finished structure.

Wire rod
Wire rod is mainly produced by drawing larger bars through dies. It is prepared for shipment at the factory by being rolled into coils and, usually, 4 or 5 coils are strapped together to form a unitised coil bundle (see Figure 12.4).

Figure 12.4: Unitised coil – bundles of wire rods.

Bright basic wire
In the country of destination, the wire may be cold drawn through dies so that the gauge is reduced and the wire elongated and polished to form what is called bright basic wire.

Wire rod is used in the manufacture of numerous goods such as nails, wire mesh and galvanised wire. A large quantity of this wire is chromed and used in the manufacture of supermarket shopping baskets and trolleys.

12.2 Susceptibility to Damage

12.2.1 Rust

Courtesy of Danny Cornelissen/ portpictures.nl

Figure 12.5: Coils showing external rust.

All steel is susceptible to damage by rusting, which is a continuous and progressive process. The longer it continues, the greater the damage to the product. Rust that appears insignificant at the time the consignment leaves the mill or is loaded on board the ocean-going ship may develop to a serious extent by the time the consignment reaches either the load port or the discharge port, even though there has been no failure on the part of the inland or ocean carrier to care properly for the cargo.

Mill scale

When raw steel leaves the mill, it is covered by a thin layer of hard oxide known as mill scale. This will protect the steel from deterioration by rust as long as it remains an unbroken skin covering all surfaces of the product. Unfortunately, mill scale is very brittle and is easily shattered or splintered off the steel and, when this happens, rusting takes place. Rusting is accelerated in areas where bare steel and mill scale are in close proximity.

The ordinary shocks to which steel products are subjected in their transport to the carrying ship are sufficient to jar some of the scale off the surface of the steel. The scale will also gradually fall away if the steel is left exposed to the weather for any significant length of time.

Rust damage to coils

The coiling process is itself often sufficient to loosen the scale and expose the steel to rusting. With hot rolled coils, much of the rust will probably be removed in the normal course of further processing in the country of destination. However, if the rust has developed to the extent that the surface of the steel is damaged or pitted, the steel may be unfit for the purpose for which it was originally intended.

Rust damage to construction steel

Construction steel is not usually packed and will almost always be rusted to some extent. It is not unusual for steel producers to fill orders for constructional steel from stock that has been held on their premises for some time. It is usually transported from the factory to the load port by rail, either in open or covered wagons, or in lighters that are usually covered but may not be weathertight, so there is a danger of free water collecting in the bottom. Cargoes are frequently assembled a week or a fortnight before the ship arrives at the loading berth and, as this steel is usually stored unprotected in the open, it will be exposed not only to the weather but also to the atmosphere. Where the atmosphere contains salts and/or is polluted, the steel can be seriously attacked.

Rust damage to small section material

Small section material may be wrapped, but should still be transported and stored under cover, protected from the elements. Unfortunately, this is not always done and frequently piles of small section steel rods are to be seen stored in the open, covered by very patched or old tarpaulins. Claims may be expected if material of this type is received rusty since much of it is used in the production of furniture and fittings, where appearance is very important. This is particularly true of painted material, which is highly susceptible to rusting where the surface has been scratched.

Rust damage to reinforcing bars

Reinforcing bars are normally shipped unprotected in bundles, which can retain a lot of water if they have been exposed in open storage for any length of time. As the wetness on the outside of the bundles dries quickly, the interior of the bundle may be considerably rustier than is apparent from an examination of the outside. Unfortunately, the 'purpose-built' deformations on the bars are susceptible to erosion by rusting.

If the reinforcing bars are subject to strict specifications (as for example in any US federal project), erosion of the deformation may mean that the goods are off-specification.

Rust damage to wire rod
Wire rod is usually shipped unprotected and, in many cases, the pickling and other processing that the wire rod later undergoes will be sufficient to remove any rust that may have formed. However, if the surface of the wire has been damaged or pitted, it may be necessary to eliminate this by reducing the diameter of the wire, in which case the wire may be off-specification.

Figure 12.6: Typical small section steel.

12.2.2 Physical Damage

The nature of the steel industry is such that any physical damage, such as bending or denting, is likely to give rise to a claim.

Loose and deformed coils
Care should be taken not to displace or break the steel strapping. Where coils are brought forward in railway wagons, it is particularly important that they are well secured so that they do not come adrift with the motion of the train (which may be considerable if the wagons are shunted). If the strapping is displaced or broken, the coil will become loose and possibly deformed. An added danger with loose coils is that abrasive matter may get between the turns of the steel and chafe or scratch the surface. Any deterioration of the surface of either hot or cold rolled steel may be serious since, if pitting, scoring and chafing are not removed, the surface of the finished plate may be marred. Blemishes of this type cannot usually be eradicated without some waste of material.

Telescoping
Coils may also become telescoped, ie some laps may be projecting on one side of the coil. If the telescoping is excessive, it may be difficult to put the coil onto the de-coiling machine at the receiver's premises.

Figure 12.7: Hot rolled coils that have telescoped.

Crimped edges
The edges of coils may be crimped by careless use of lifting equipment. The misuse of handling gear can lead to chafing damage even when the coils are wrapped. The edge of packaged sheets may be crimped, bent or cut if they overhang the wooden bearers.

Distortion
Constructional steel may be damaged if the flanges are bent by the careless use of lifting gear. If the bundle is incorrectly packed, the whole section may be distorted.

Kinked or bent smaller section material
If smaller section material is bent or wire rod is kinked, the value of the material will be reduced. If the rod is kinked or bent, it may damage the dies through which it is drawn and the finished product may have a score mark or nick that can only be removed by reducing the diameter of the wire, which involves the risk of putting it off-specification. Heavily twisted or nicked wire cannot be straightened satisfactorily and, therefore, it may be regarded as scrap.

12.3 Clausing Bills of Lading for Pre-shipment Damage

Before steel cargoes are loaded into the ship, they will have already been subject to considerable risk of damage, both by exposure to the elements and by the number of times they have been handled.

It is extremely important, therefore, that any pre-shipment damage is noted on the B/Ls. The services of a skilled and conscientious surveyor are usually necessary.

For steel shipments, some qualification of pre-existing damage does appear in the mate's receipt or B/L, although this should not necessarily make the B/L a 'foul' B/L. Letters of credit need to be amended or there will be a tendency to issue a clean B/L against a Letter of Indemnity (LoI).

Masters and agents of ships stemmed to load steel cargoes should contact the local UK P&I Club correspondent, who can normally arrange for a surveyor to be instructed to attend the loading of cargo.

12.3.1 Rust Damage

Nowhere is the need to clause B/Ls greater than in the case of rust. Without exception, whenever a consignment is rusty, this should be stated in the B/L. Cargo interests may insist that the rust is normal or customary, or will not affect the value of the cargo, or will be removed in any event by further processing and that the B/L can be issued clean without any danger of prejudicing the interest of the carrier. However, representations of this type are to be ignored. The best way of protecting the carrier's interests is to clause the B/L. If the rust is normal or customary, there should be no difficulty in the B/Ls being negotiated through the banks. Masters should not concern themselves with the marketability of the cargo but should focus on describing the condition of the cargo as seen.

When clausing B/Ls against rust, it is essential not to qualify the word rusty in any way (eg by using words such as 'atmospherically' or 'superficially' or 'slightly'). The reason for this is that rust that may appear, on loading, to be only slight may have worsened progressively during the voyage (without there being any fault on the part of the carrier in the care of the cargo) to such an extent that the cargo is pitted or otherwise seriously affected on discharge. If the damage on outturn is more severe than the damage noted on loading, a court may be tempted to attribute the deterioration in the condition of the cargo to some alleged fault of the carrier in the care of the cargo. This danger is minimised by simply describing the cargo as 'rusty'.

In the 20th century, London based P&I Clubs issued circulars setting out clauses that were suitable for describing pre-shipment rust damage to steel. These included:

- Rusty
- rusty edge
- rusty end
- top sheets rusty
- rust on metal envelopes
- goods in rusty condition
- wet before shipment
- covered with snow.

However, to avoid misunderstanding, it is now recommended simply to describe the cargo as 'rusty'.

12.3.2 Physical Damage

Any physical damage, such as denting or bending, should also be entered on the B/L. Where packaging is damaged, this should be noted as well, together with any obvious damage to the contents.

12.4 Loading and Stowage

Courtesy of Danny Cornelissen/portpictures.nl

Figure 12.8: Steel coils ready for loading.

The most suitable ships to be engaged in steel trade, from the point of view of loading and stowing, are bulk carriers with wide, large hatches and unobstructed holds. Residues of previous cargoes that may have an adverse effect on steel, particularly salt and fertilisers, should be very carefully removed.

Loading and stowage of steel cargoes requires skilled and experienced stevedores. Steel can easily be damaged, or damage the ship, if not handled with care as each separate lift is likely to weigh in the region of 5 to 12 T.

Cranes used for loading and discharging containers are the best equipment for handling steel cargoes. Lifting gear such as wire slings, spring laid rope strops or chains should be adequately protected to avoid damaging the edges of coils. Winch drivers should be instructed to avoid violent acceleration or braking when lifting or lowering coils.

Forklift trucks should have the forks adequately protected with timber unless they are specially designed for use with steel cargoes. Crowbars should only be used when handling material not capable of being damaged by them.

Locking coils

Generally, coils should be given bottom stow. A method of stowing coils that has been used with success is stowing them in athwartships rows with their major axes horizontal and in the fore and aft line. The bottom tier of coils should stand on double lines of good dunnage, placed athwartships, so that any moisture that may collect on the tank top or ceiling of the hold can run to the bilges without damaging the cargo. This dunnage also helps to spread the weight of the coils over the tank top plating. The first coils loaded are placed in the wings against the bulkhead and then the row is extended inwards towards the centreline of the ship. Invariably, a gap will be left on the centreline

and the first coil of the second tier in that row will be placed in that gap. The next coils of the second tier will be placed in the wing above and outboard of the extreme wing coils of the first tier and these three coils, ie the one on the centreline and the one in each wing, will effectively jam and block off the first tier of that row (see Figure 12.9). These three coils are known as the locking coils. The remainder of the second tier in that row will be placed in the cantlines of the coils beneath them. The same procedure is followed for each further tier until the first row has been built up to the required number of tiers.

Coils of up to 10 or 12 T in weight may be stowed in 3 tiers, but over this weight it is better that a new row is started in the same way, ie loading the first 2 coils in the wings, against the first row loaded.

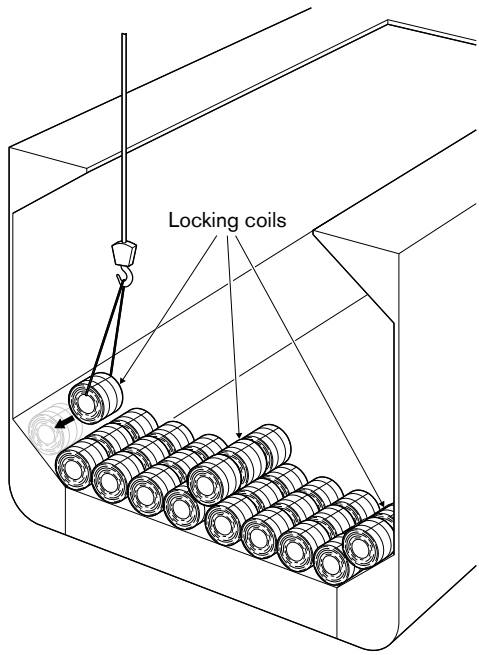


Figure 12.9: Locking coils.

Loading and stowing coils

It may be difficult to manipulate coils into positions out of the reach of the crane or derrick, and attempts to swing the coils into position in the wings or at the fore or aft ends of the hold may cause damage. The use of dedicated trucks and equipment has improved the means by which steel coils may be properly handled.

It is better to stow coils at least 2 tiers high. A single tier of coils nearly always allows movement and, as result, the stow may work loose. If there are insufficient coils to make 2 complete tiers over the whole surface of the hold, the hold should be partially floored out with 2 tiers of coils so that the stow ends in a brow or wall across the hold. The face of the coils should be protected by a strong timber fence when other cargo, such as constructional steel, is stowed adjacent to them.

Each individual coil in the top tier of the stow should be secured by driving wedges between it and its adjacent coils on either side and fore and aft.

12.5 Securing Shipments of Steel Coils by Flexible Metal Bands

Steel coils may be successfully secured by using flexible flat metal banding secured by clips. Securing clips around the bands and tensioning the bands is undertaken using pneumatically-operated tools.

When utilising strapping bands, it is essential that the manufacturer's instructions are strictly observed and that the correct procedures are closely followed at the time of loading. The following points should be carefully borne in mind when using bands:

- The strapping band system uses fewer personnel to secure the cargo as straps are easier to thread through the coils, and rigging/bottle screws and bulldog clips are not required
- the straps can be rendered bar tight at the outset of the voyage (in contrast to wires, which may still not have reached the full limit of their elasticity and may subsequently slacken off during the voyage)
- it is necessary to utilise an air compressor when strapping bands are used

Remember that such pneumatic tools need regular servicing and require trained operators.

- normal lashing wire of 16 mm diameter loses 30% of its strength in the area of the bulldog clips. The actual breaking strain may, therefore, be considered as 5.6 T. Metal strapping bands have, in general, a breaking strain of 4 T
- when a 'key coil' is secured with 16 mm wire lashings through the core and with additional cross lashings over the top, a breaking strain of 44.8 T can be achieved (8 lashings × 5.6 T = 44.8 T). This compares with a breaking strain of 32 T when single strapping bands are used, which would be considered adequate for coils weighing up to 15 T. Where very heavy coils are carried, double strapping bands should be applied.

When properly utilised, the strapping band securing system meets all the necessary requirements, ie it is of adequate strength and is acceptable for securing average steel cargoes.

Owners are advised to appoint a surveyor on their behalf in the load port to ensure that the securing system has been properly applied and that the manufacturer's instructions are carefully followed.

Forward compartments
Particular attention should be paid to cargo in the forward compartment of a ship, where the effects of heavy pitching are more pronounced.

Coils of differing dimensions

When coils of differing dimensions and weights are being stowed, the lighter, smaller coils should be given a top position. Precautions should be taken to ensure that the smaller coils cannot work down too far into the cantlines of the rows of larger coils underneath, as this may cause them to become deformed. There is no objection to overstowing a coil cargo with wire rods, bales or other cargo. Whether a floor of dunnage over the stow of coils is necessary will depend on the nature of the overstowing cargo.

Sheet steel in packs

Sheet steel in packs should also be stowed on double lines of athwartships dunnage. The ordinary principles of cargo stowage may be applied to the stowage of these packs. They are less likely to shift than coils as they stow more compactly.

Dunnage for constructional steel

The recommended method of stowing constructional steel entails the use of considerable quantities of dunnage. Quantities of timber, amounting to between 75 and 100 T per 10,000 T, of cargo are quite common.

Dunnage, which is usually 6 × 1 inches (15 × 3 cm), should be laid in double lines athwartships at intervals along the length of the steel that is stowed fore and aft. The dunnage is inserted to assist in reslinging the steel for discharge and to help bind the steel into a solid block. As the steel is very heavy, it needs to be supported at intervals of about 10 ft (3 m) along its length.

Care should be taken to ensure that each line of athwartships dunnage is vertically over the line immediately beneath it (see Figure 12.10). If this precaution is not taken, the steel may become warped.

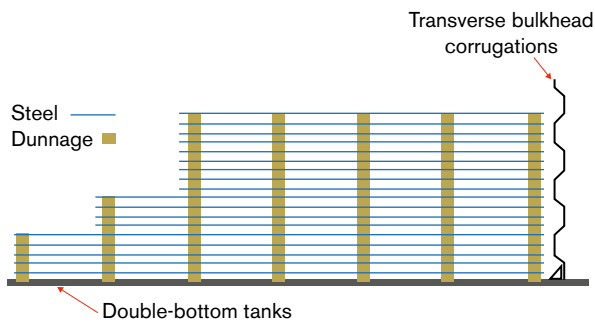


Figure 12.10: Dunnaging constructional steel.

When stowing beams, it is important that the webs are kept vertical and that the flanges overlap in an 'in and out' manner (see Figure 12.11) as the beams can become severely distorted when all flanges are overlapping in the same direction. The stow should be kept level and complete. Efforts should be made to avoid mixing sizes as this may create gaps that can later lead to the whole stow collapsing. Athwartships stowage of steel beams should be avoided if at all possible. In particular, try to avoid the ends of beams stowed at the bottom of the hold in a bulk carrier resting against, or terminating adjacent to, the sides of the hopper tanks in the wings of the compartment. If the

dunnage compresses during the voyage, the beams may settle, leaving the ends resting against the hopper tanks and the middle of the beams unsupported. As a result, the beams will probably be permanently bowed (and there is risk of damage to the tanks).

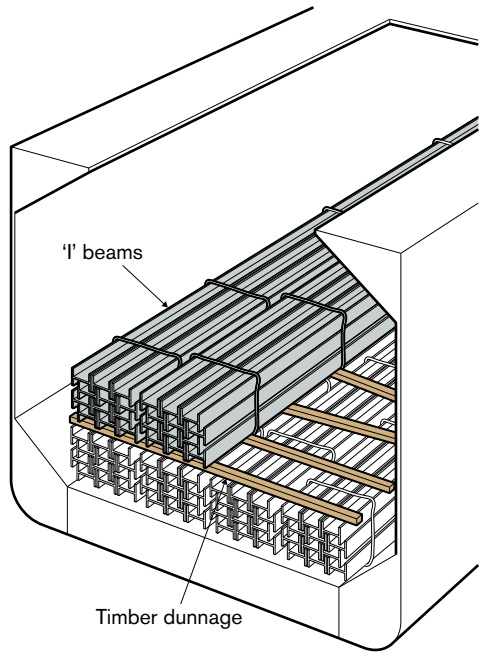


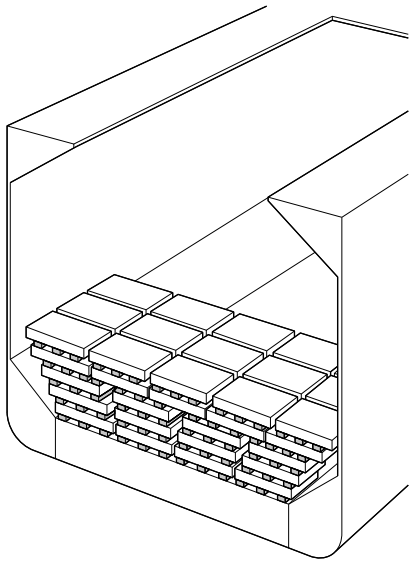
Figure 12.11: Constructional steel ('I' beams).
Note that the beams are stacked correctly, with the flanges 'in and out'.

12.6 Stowing and Securing Steel Slabs

The correct and safest method of carrying steel slabs, and heavy steel plates, is to stow with the longitudinal axis athwartships. This entails winging the stow out to the ship's sides and results in overlapping of horizontal layer ends. In the case of slabs, this method of stowage entails handling each slab individually in the hatch, using a forklift truck. Similarly, steel plates, depending on their weight per unit, can only be handled a few at a time.

Figure 12.12 shows a satisfactory method of stowage. An acceptable variation, that is useful when the complete tank top area is not to be utilised, is for Slab 1 to be stowed athwartships and Slabs 2, 3 and 4 stowed longitudinally to prevent movement of the stow.

It is essential that wooden dunnage is placed between plates or slabs, in order to correct any tendency to shift. In some cases, consideration may be given to the lashing of such stows with steel wires, preferably attached to steel eye pads. This applies particularly in the upper decks of tween deck vessels.



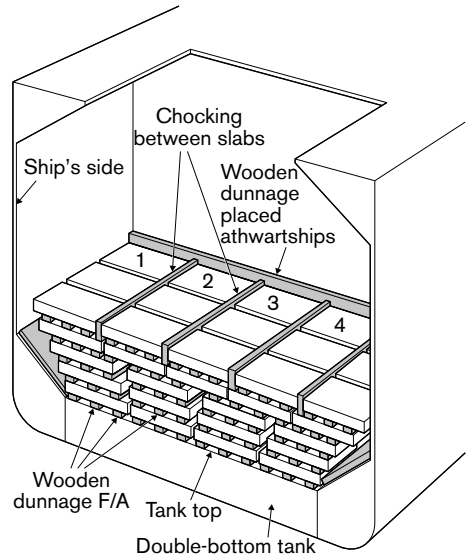


Figure 12.12: Slabs stowed athwartships. **Figure 12.13: Dunnage for steel slabs.**

Figure 12.14: Correct stowage of plate steel.

In recent years, other methods of stowage have been devised with the aim of speeding up the turnaround of ships and reducing expenses. One such system involves a series of heavy lifts into the ship, with each weighing up to 36 tonnes or more. Each lift is landed in a convenient position and succeeding lifts are landed adjacent to each other, in the square of the hatch, where all the cargo is stowed. No dunnage is used between the individual stacks and there is a gap between the cargo and the ship's side, both to port and starboard. Sometimes timber framings are erected to fill these gaps (see Figure 12.15). Metal strapping bands are sometimes used to secure each stack but, due to the sinkage of whatever wooden dunnage may be placed between slabs, these are often slack before the ship sails.

The use of such strapping bands for steel slabs should not be encouraged as they can be dangerous. The main criticism relates to their use in block stowage of bundles of steel slabs by direct loading into the hatch squares of bulk carriers, leaving the space above the sloping lower wing tanks free of cargo. Whatever lashing or securing is used in these circumstances, there is still the potential for a shift of cargo. It is of paramount importance that the stowage extends out to the ship's sides and that the top of the stowage is level. The only alternative would be to construct, and weld in position, substantial steel framing between the ship's side and the cargo above the sloping lower wing tanks. There is no objection to using block stowage methods in ships with box-shaped holds as long as the stowage extends to the full width of the ship and again the top of the stowage is level.

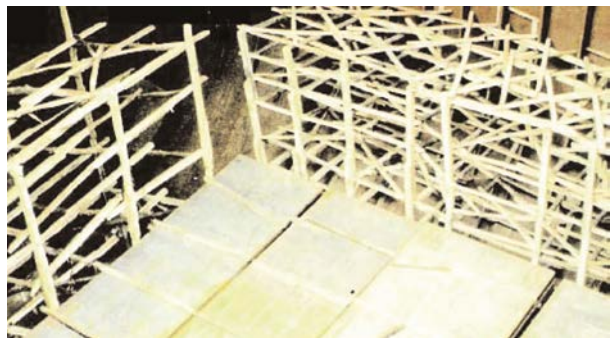


Figure 12.15: Flimsy timber framing.

Masters should be on guard against situations where steel plates may be presented for shipment that are too large to fit the hatch opening dimensions. Attempts may be made to persuade the Master to carry such plates on hatch covers or weather decks. If steel plate is loaded on deck, care should be taken to ensure that the plates are individually stowed, dunnaged, chocked and lashed. There should be no plate-on-plate interfaces. It is also important, in such circumstances, to clause the mate's receipts appropriately to reflect stowage on deck.

Small section material

Small section material, particularly rods and bars, should, wherever possible, be given a top stowage position and also stowed in a fore and aft direction. The stow should be kept level to ensure that the material is adequately supported at frequent intervals along its length. Rods and bars should only be handled with rope slings, and crowbars should never be used in manipulating the bundles into their stowage positions.

Unitised bundles of wire rods are usually stowed in the ship with their axes in a fore and aft direction and in a manner similar to that described for coils. It is not recommended to stow the bundles of rod more than 6 tiers high as the weight on the lower bundles may be excessive, causing the lower bundles to become deformed and the stow to collapse. As with coils, a two tier stow in part of the hold is preferable to a single tier over the whole floor of the hold. The face or brow of the stow also needs to be fenced or secured in the same way. Loading slings should be made of composition fibre or of

wire rope covered with rubber tubing. When forklift trucks are used, the forks should either be covered with timber or fitted with a specially constructed metal tube.

One common fault with bundles of wire rod is that, if the strapping bands break or work round the coil to one particular point on the coil, the unsecured turns open out and become crushed, distorted and twisted in the stow.

Reinforcing bars

Reinforcing bar bundles should be given good, level stow and should be well supported throughout their length to avoid any bending or distortion that may make them unsuitable for the purpose for which they are intended.

Pipes

Figure 12.16: Steel pipes ready for loading.

Pipes are usually shipped in bundles unless the diameter is very large, when they are usually presented for shipment in single pieces. Special stowage is frequently called for, particularly in the case of lighter pipes where top stowage is preferred. Where top stowage is preferred, pipes should be stowed fore and aft in the hold. On occasion, where pipes have been stowed with some fore and aft and some athwartships, one or other tier has become deformed owing to the weight of the overstowed cargo. These goods are most vulnerable at their ends and great care should be taken particularly where the ends are threaded to ensure that the threads are not nicked or otherwise damaged.

12.7 Care on Board

To avoid rust damage, effort should be made to avoid loading (or discharging) during wet weather and all the hatches should be covered during rain showers.

Where the ship's personnel request to stop loading in wet weather, shippers frequently object and attempt to convince the Master and ship to continue loading. However, such pressure should be firmly resisted.

It is not advisable to continue loading in the rain even if the steel already inside the hatch has been covered with tarpaulins or plastic sheeting, since protection of this type has not been found to be of any great assistance in avoiding rust damage claims.

12.8 Fact Finding on Discharge

If damage is suspected on arrival at the discharge port, the Master should contact the P&I Club's local correspondents directly and ask for the appointment of a competent surveyor to examine the hatches and the stowage of the cargo.

Contacting them direct is usually preferable to contacting the ship's agents at the discharge port as these may be appointed by, and closely identified with, the cargo interests.

Photographs
The receivers of the cargo or the cargo underwriters often appoint surveyors who will want to board the ship and inspect the hatches and other openings into the holds. In the USA, cargo interests can obtain a court order granting them access to the ship for this purpose. When cargo interests' surveyors are on board the ship, they should be accompanied by the shipowner's surveyor wherever they go. Photographs taken by the cargo interests' surveyor should, if possible, be countered with photographs taken by the shipowners' surveyor. This will avoid selected images being used to support a claimant's case by giving the impression that the whole cargo was damaged to the same extent as the cargo actually photographed. High resolution colour photographs are recommended to reveal the extent of damage.

Seawater entry or condensation?
Sometimes, on opening hatches, a pattern of rust extending right down through the stow and coinciding with the hatch coamings or hatch joints, is discovered. While this may indicate that the hatches have leaked during the voyage, it may also be indicative of heavy condensation. In any event, it is imperative that the pattern of damage in each compartment is accurately noted, as only in this way will it be possible to distinguish between pre-shipment damage and damage incurred during the course of the voyage.

A careful examination should be made of any rust that is not pre-shipment in origin to establish whether it is caused by seawater or fresh water. An experienced surveyor should be able to distinguish the cause without resorting to silver nitrate tests, which can be misleading.

Stevedore damage
Any damage caused by the discharging stevedores should be noted so that recovery can be made from them for any claims lodged in relation to the damage.

12.9 Carriage of Steel in Containers

Special containers are available for the carriage of steel, which will reduce the risk of handling and water damage provided the steel is well secured within the container and the containers have been checked for holes prior to acceptance. However, unless precautions are taken and experts are involved in the securing of steel coils inside the container, there is a risk of damaging the coils as well as the container, with a risk of injury if the container breaks loose from the sling.

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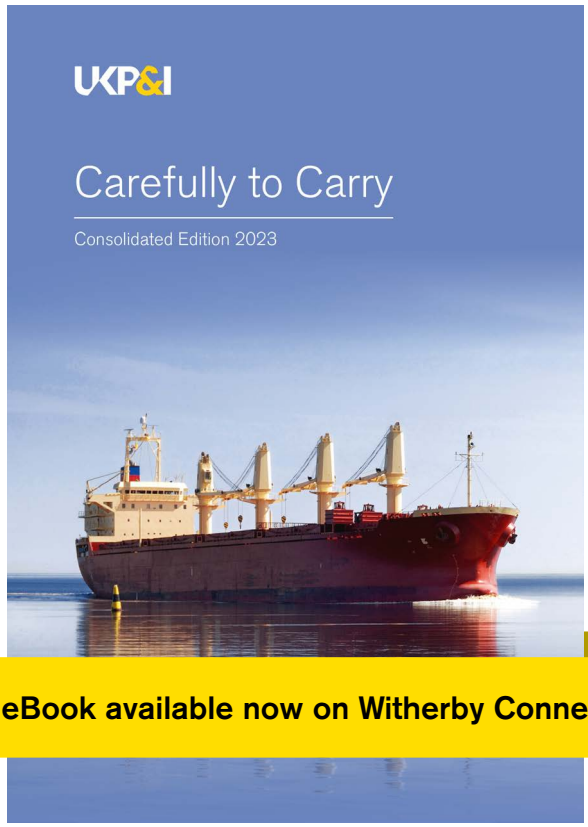

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