

BRITANNIA LOSS PREVENTION INSIGHT

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HANDLING AND CARRIAGE OF STEEL AN OVERVIEW FOR THE MARITIME SECTOR



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THE CWA METALS & MINERALS DEPARTMENT

The CWA Metals & Minerals Department provides expert advice on a comprehensive range of metals and minerals, storage and marine transportation, especially related to the shipment of these commodities as bulk, break-bulk, bagged, drummed and containerised cargoes. The department comprises a team of specialists with extensive expertise of all industrial minerals, ferrous and non-ferrous metals.

CWA Metals & Minerals Department can also provide expert advice on ore mining and processing, metals smelting, refining and manufacture, minerals processing and refining. The department has an established track record of investigations into causation, advice on quantum and mitigation as well as loss prevention, risk management, safety and environmental studies.

INTRODUCTION

THIS LOSS PREVENTION INSIGHT REPORT EXAMINES THE DIFFERENT TYPES OF STEEL (PRODUCTS) CARGOES, THE CAUSES OF DAMAGE TYPICALLY SUSTAINED AND PREVENTIVE MEASURES THAT SHOULD BE CONSIDERED IN ORDER TO HAVE A CLAIMS FREE OUTTURN AT THE DISCHARGE PORT(S).

Steel is one of the most commonly used materials in the world, with large volumes being shipped annually. Steel products have high values and are easily damaged.

COMMON STEEL PRODUCTS SHIPPED BY SEA STEEL PRODUCTS ARE GROUPED INTO ONE OF THREE CATEGORIES: FINISHED, SEMI-FINISHED AND CRUDE STEEL PRODUCTS.

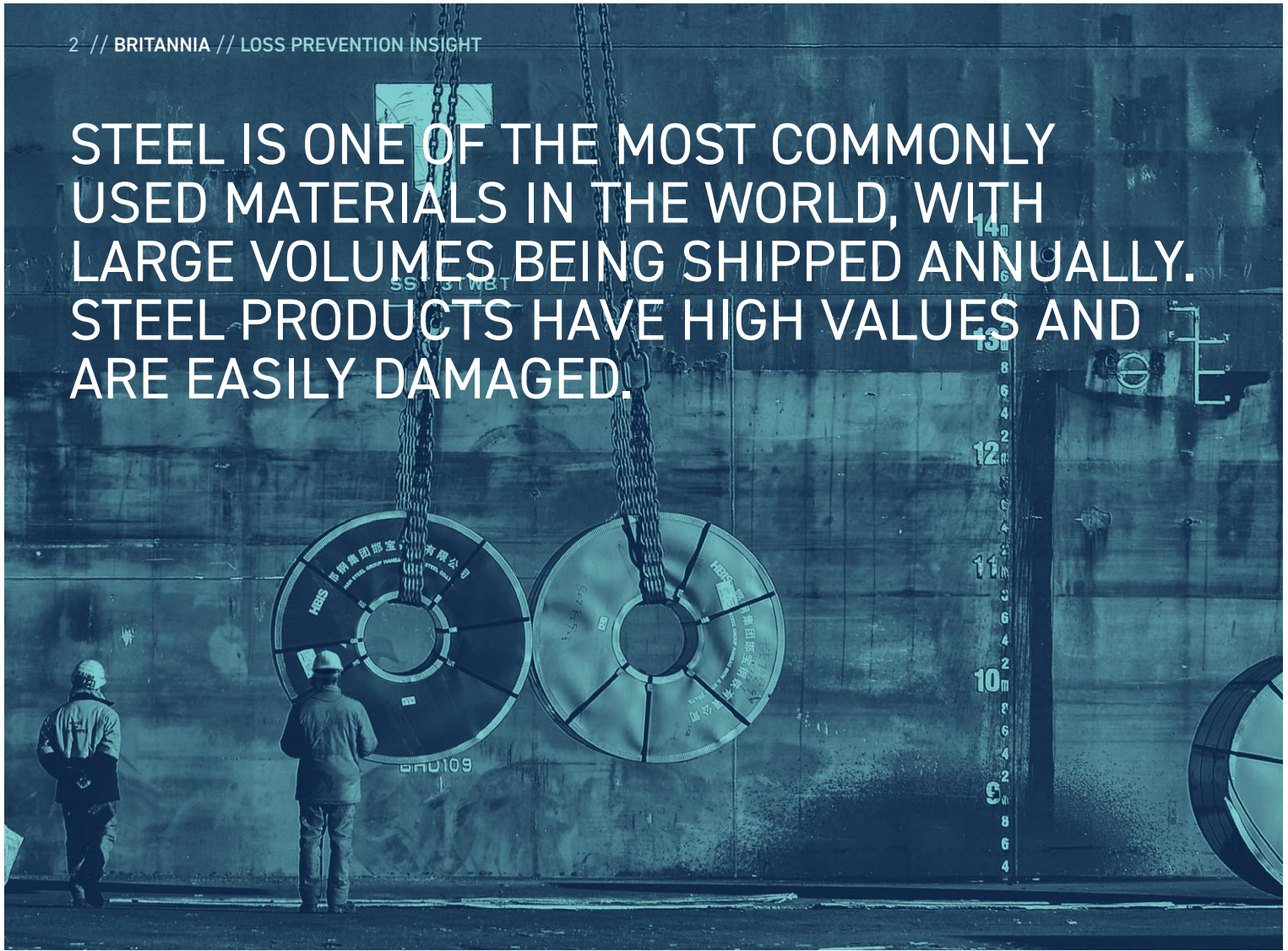
FINISHED STEEL PRODUCTS are typically higher value, more easily damaged and in final form either ready for use or for processing into the end product. They are often wrapped or have a protective covering. The most valuable product in terms of potential claims is Cold Rolled Coils (CRC) which are usually covered in water resistant paper and a light metal envelope to afford additional protection.

SEMI-FINISHED STEEL PRODUCTS include blooms, billets and slabs. These are more robust steel products and will be further processed (usually re-rolled) at the final destination.

CRUDE STEEL PRODUCTS include unfinished ingots, pig iron and scrap. These will be subject to further extensive re-processing and may even be re-melted. They are of lower value and less susceptible to damage claims.

Within these three broad categories there are numerous grades, shapes and forms of steel with a wide range of values and propensity to damage. A brief description of the main types of steel are summarised in Appendix 1 on page 12.

STEEL IS ONE OF THE MOST COMMONLY USED MATERIALS IN THE WORLD, WITH LARGE VOLUMES BEING SHIPPED ANNUALLY. STEEL PRODUCTS HAVE HIGH VALUES AND ARE EASILY DAMAGED.



HAZARDS, TYPES OF DAMAGE AND CLAIMS FOR STEEL CARGOES

THE MAIN CAUSES OF DAMAGE TO STEEL PRODUCTS AND SUBSEQUENT CLAIMS ARE:

- Handling damage which accounts for many claims and results from incorrect lifting procedures, or inappropriate lifting equipment.
- Shifting of the stow in rough weather which will depend on whether adequate cargo stowage, suitable lashings and dunnage is used.
- Rust – appropriate ventilation procedures are essential to protect steel products from condensation (cargo sweat and/or ship sweat). The presence of water – sweat, precipitation, sea spray and/or sea water ingress into the cargo holds – will all cause steel to rust.

Sea water is ten times more harmful to steel than fresh water.

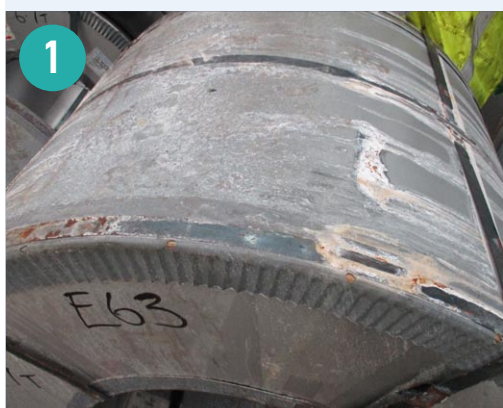


Figure 1: Sea water ingress damage to the outer covering of a CRC.



**HANDLING
DAMAGE
ACCOUNTS FOR
MANY CLAIMS
AND RESULTS
FROM INCORRECT
LIFTING
PROCEDURES.**

CHARTERPARTY

WHEREVER POSSIBLE, THE CHARTERER SHOULD BE ASKED TO CLEARLY IDENTIFY THE TYPES OF CARGO TO BE CARRIED BEFORE CONCLUDING THE CHARTER. The charterparty should ensure compliance by the charterers to the vessel's loading manual, cargo securing manual and class requirements. It should be clearly stated that stowage plans, securing plans and full cargo manifest should be provided before arrival at the load port. The vessel's particulars, specifications and limitations should be accurately recorded in the Charterparty.

Charterparty requirements for clean bills of lading to be issued and allowing agents to sign bills of lading on behalf of the master should be avoided. Bills of lading should accurately record the condition of the cargo as loaded on board.

PRECAUTIONS AND BEST PRACTICE TO AVOID CLAIMS

INTRODUCTION

CLAIMS ARISING FROM THE SHIPPING OF STEEL PRODUCTS CAN BE SIGNIFICANT AND THEREFORE CARE SHOULD BE TAKEN TO ENSURE THAT THE CONDITION OF THE CARGO IS MONITORED AND RECORDED WITH HIGH RESOLUTION PHOTOGRAPHS TAKEN (INCLUDING DATE AND TIME) AT EACH STAGE OF SHIPMENT.

Damage often occurs during shipment to and storage at the port of departure. Therefore, a pre-loading report is crucial to record the cargo's condition. Photographs should be taken prior to loading recording the condition of the steel on the wharf, including any signs of rust and steel damage such as bent bars, bruised coils, loss of strapping/unwinding/telescoping of coils and damaged packaging. Exposure to sea spray, particularly in strong winds, can be identified by a silver nitrate test and should be carried out when steel is stowed on the wharf. If this test is positive, confirmation by laboratory analysis is required.

Steel coils, especially the coil edges, are particularly prone to damage. All damage to the cargo and any protective covering found on the wharf should be recorded including the nature, type and extent of damage, along with identifying marks for the steel.

Coil shape is maintained by three evenly spaced steel bands around the perimeter of the coil and by four evenly spaced steel bands through the eye of the coil. Without such bands, coils can partially unwind, or telescope, resulting in a greater susceptibility to mechanical damage and subsequent claims. Any evidence of unwinding and telescoping before loading or during stowage should be photographed and an attempt made to ascertain the extent of the problem. Ideally any coils showing telescoping should be rejected for carriage.



Figure 2: When in contact with chlorides, silver nitrate solution changes from a clear solution to being milky.



Figure 3: Multiple CRCs being lifted by webbing slings.



Figure 4: Drain channels on cross joints and coamings should be free of debris. Rubber packing should be in good order to help with the weathertight integrity of the hatch covers.

Coil surfaces are easily damaged, especially if the correct lifting equipment is not used. Webbing rather than chains or wires should be used to lift coils both during loading and discharge. Forklift trucks used to handle coils should be fitted with a single, round section lifting tine or prong. Traditional rectangular forklift tines may cause distortion to the coil centre due to point loading. If incorrect equipment is used this is a handling deficiency and should be recorded with photographic evidence and a letter of protest issued to the stevedores.

PRE-LOADING

HOLD PREPARATION

- Holds should be swept clean, be free of previous cargo residues, washed down with fresh water and completely dried.
- Hatches should be operational and weather tight.
- Bilges should be dry and pumps and non-return valves operational. The bilges should be isolated when not being pumped out.
- Hatch covers should be dry before opening them.
- Rubber hatch cover seals should be in good condition and the cleats should operate correctly.
- Drainage channels should be free of debris and coaming drains clear and operational.
- Hatch covers, access hatches and vents should be tested for weather tightness prior to loading. An ultrasonic weather tightness test is preferred to a hose test.
- The hold cleaning, testing of bilges and hatch testing for weather tightness should be recorded.

VERIFYING THE CONDITION OF THE CARGO

A significant proportion of steel cargo damage can be attributed to the way stevedores handle and stow cargo. Any damage to the cargo should be recorded and immediately shown to the stevedores and shippers by the master.

ROLE/APPOINTMENT OF A SURVEYOR

It is recommended that a surveyor is appointed to check the condition of the cargo prior to loading and to assist the master during loading operations. The surveyor should take numerous high resolution photographs and check for any signs of rusting, damage and lack of banding integrity. Any deficiencies should be recorded, in detail, using clear and concise terminology on the mate's receipts and the bills of lading.



IT IS
RECOMMENDED
THAT A SURVEYOR
IS APPOINTED TO
CHECK THE
CONDITION OF
THE CARGO PRIOR
TO LOADING.

The following are of particular importance:

SHIP MAINTENANCE ESSENTIALS:

- Check that the hatches are operational and weather tight
- Ensure the holds are completely dry and clean
- Check the bilges are dry and the pumps and non-return valves operational, with the bilges isolated when not being pumped out

MOISTURE OR SEA WATER DAMAGE, AND STEEL INTEGRITY:

- Check steel surface condition for evidence of rusting
- Use silver nitrate test (seawater oxidises steel ten times faster than freshwater) - milky solution indicates the presence of chlorides, but this does not necessarily indicate seawater chlorides.
- Following a positive silver nitrate test, send samples for a full chemical analysis to an approved laboratory for confirmation
- Consider how the steel products have been stored: have they been exposed to precipitation or sea spray?
- Check banding integrity for Hot Rolled Coils (HRC), CRC and Wire Rod in Coils (WRC).
- Check bands around the circumference of the coil and through the eye
- Maintain coil shape and prevent telescoping

RECORD AND QUANTIFY:

- Evidence of any damage e.g., straps broken or missing
- Evidence of rust
- Evidence of unwinding or telescoping
- Quantity of the cargo affected
- Any damage / deficiencies against the cargo manifest and bill of lading identifying the packages affected

LOADING

PREPARATIONS

Prior to commencing loading, check the proposed loading plan, ensuring that the stowage is safe. Consult the vessel's cargo securing manual, the latest edition of the IMO's Code of Safe Practice for Cargo Stowage and Securing, and the vessel's safety management system for advice on securing.

The vessel's loading manual, which is based on Class Common Structural Rules for Bulk Carriers, will identify the correct loading conditions in the holds. The master will need to check this is correctly applied when loading steel coils.

If the proposed loading condition is not covered in the loading manual, then the master will need to calculate the anticipated loadings on the tank top/double bottom structure. Some vessels are provided with specialised software to carry out these calculations. Detailed calculations are necessary to take account of the point loadings imparted in the ship's structure by a coil cargo.



PRIOR TO COMMENCING LOADING, CHECK THE PROPOSED LOADING PLAN, ENSURING THAT THE STOWAGE IS SAFE.

To determine how many tiers/coils can be safely carried, the master will need to refer to the vessel's loading manual and cargo securing manual. Coils must be suitable in both makeup and strength to withstand the anticipated dynamic loadings that will be imparted on the bottom tier (by the tier(s) loaded on top).

It is not recommended to load coils that have been fitted with wooden bracing pieces within the eye of the coil. Bracing is often used to prevent ovalisation due to excessive weight from coils loaded on top. Poor application or damage to the wooden bracing, causing it to move, may lead to cargo damage due to overloading. The use of wooden bracing may indicate that the shipper anticipates that the coils are not strong enough for the planned stowage arrangement.

Where steel slabs are to be carried, charterers/shippers may request for the 'California Block Stowage' (CBS) method to be used. Such a method may be acceptable on vessels with box shaped holds, although not on those with traditional bulk carrier shaped cargo holds. Using this method on a traditional bulk carrier, the slabs will be loaded within the hatch square and not winged out to the sides of the hold. Some dunnage will be used as tomming between the block and the vessel's sides, although this is often not sufficient when considering the weight of the slabs. It is strongly recommended that when the CBS method is proposed for traditional bulk carrier cargo holds, this is rejected as its sole purpose is to speed up cargo handling operations. The safety of the vessel must take priority.

It is recommended to meet with the stevedores and/or the cargo superintendent prior to commencing loading and make sure that the loading and securing plan is agreed. Ideally avoid loading in spaces with non-vertical sides. If this is unavoidable, ensure that the cargo is winged out so far as is practicable, and any remaining free space is squared off with heavy timber tomming. This will be particularly important in hold 1 and probably the aftermost hold.

The position of the framing should be marked on the tank top and the markings extended up the lower hopper tank plating to assist with the correct placement of dunnage aligned with framing to spread the load.

It should be established who is undertaking the securing of the cargo and providing the dunnage and lashing equipment. It should be ensured that all dunnage and lashing equipment is certified and in good condition.

The stowage of steel coils is quite complex and guidance should be sought from experts when in doubt. Guidance on dunnage placement is given in the IMO's Assembly Resolution A.714 (17) 1991 Code of Safe Practice for Cargo Stowage and Securing (CSS Code), as amended.



Figure 5: Stowage and securing in end cargo holds can be more challenging due to their shape.



IT IS STRONGLY
RECOMMENDED
THAT FINISHED
AND SEMI-
FINISHED
PRODUCTS ARE
NOT LOADED
DURING
PRECIPITATION.

DUNNAGE AND STOWAGE

The dunnage used should be suitably dried to avoid transfer of moisture to the steel products and to the hold atmosphere.

The dunnage should also be phytosanitary-certified and approved to ensure the wood is pest free. Ordinarily the dunnage will be stamped with an International Plant Protection Convention (IPPC) mark to show it has either been fumigated or heat treated in accordance with the International Standard for Phytosanitary Measures (ISPM) No.15, where applicable. Without this certification/stamping, the vessel may be banned from offloading cargo and dunnage in some countries. Hardwood dunnage is preferred to avoid crushing during the voyage and consequential cargo damage. All dunnage should be fit for purpose and of sufficient width and thickness.

Steel coils should be secured by wooden wedges. The wedges should be nailed in position to the supporting dunnage board to hold each coil on the tank top as the coils are loaded from the ship side towards the centre of the hold. The wedges are positioned to stop coils moving during rough seas. A centre coil, known as the locking coil, is positioned and secured by steel straps to the two coils immediately below. This coil applies pressure to the coils below, making the stow tighter. The locking coil should rest approximately one-third of the diameter of the adjacent coils into the tier. If the space remaining in the tier is larger, and the locking coil sitting lower than it should, it may be necessary to utilise two locking coils.

When loading long products (beams, bars, plate, pipes and rails) great care should be taken to place dunnage directly below and above the layer on the tank top and repeated for subsequent layers. High pressures can otherwise distort the steel cargo resulting in claims for bent plates/bars etc.

It is strongly recommended that finished and semi-finished products are not loaded during precipitation.

When non-steel cargo is stowed above the steel cargo on the same voyage, contamination due to oil drips, dust or contact with the non-steel cargo should be avoided. If the non-steel cargo has a high moisture content, this could cause damage to the steel cargo. Any cross contamination and the location where the cargo is stowed should be photographed and recorded.



Figure 6: Handling damage caused ashore should be carefully recorded, noting whether the steel product is damaged, or just the covering where fitted.

SECURING

Steel cargoes should be secured as per the vessel's cargo securing manual. Lashing which does not secure the cargo to the ship's structure and which does not include a vertical component should be avoided. However, in practice, steel coils are often lashed to each other to form a homogeneous block using steel banding.

ROLE OF CREW AND SURVEYOR DURING LOADING

The ship's crew and surveyor should verify that the cargo is handled, stowed and secured as per the agreed loading and stowage plan. Any handling damage should be recorded and included on the mate's receipts and bills of lading.

When cargo is in the hold, hatch covers should be carefully dried prior to opening them after precipitation, using brushes, squeegees and mops to ensure no water runs off onto the cargo when opened. It should also be ensured that all water has drained from the cross joints' drain channels to deck prior to opening.

THE VOYAGE

DURING THE VOYAGE

Rusting can increase significantly during a voyage of two weeks or longer. Throughout the voyage data on the temperature, relative humidity, dew point (inside the hold and the outside environment) and ventilation times should be recorded.

Cross contamination from materials stowed in the same hold as the steel can result in accelerated corrosion of steel; it is important that photographic evidence of this is recorded.

VENTILATION

Steel cargoes loaded in a cold climate and being carried to a warm climate should not be ventilated. However, steel cargoes loaded in a warm climate and being transported to a cold climate should be ventilated, weather conditions allowing.





RUSTING CAN INCREASE SIGNIFICANTLY DURING A VOYAGE OF TWO WEEKS OR LONGER.

With steel cargoes loaded in warm climates for discharge in cold climates the introduction of colder, less moist air will reduce the likelihood of sweat forming on the structure of the ship as the steelwork is cooled on passage (ship sweat).

- An accurate record of the periods of ventilation should be kept as well as bilge sounding records.
- The 'Dew Point Rule' requires that detailed records of the wet and dry air temperatures, showing relative humidity/dew point both internally and externally within the holds, are maintained to ensure adequate ventilation is applied to prevent sweat formation.
- Measurements should be conducted at least once a watch throughout the voyage, and ventilation applied where necessary and possible on a 24-hour basis and a detailed ventilation log maintained. Without this evidence it can be difficult to defend a claim due to sweat formation. Where ventilation is only monitored and conducted during daylight hours, it can be difficult to prove the vessel has correctly managed the ventilation to prevent the formation of sweat.

The following rules should be followed:

- **VENTILATE** if the dew point of the air inside the hold is higher than the dew point of the air outside the hold.
- **DO NOT VENTILATE** if the dew point of the air inside the hold is lower than the dew point of the air outside the hold.

If access to the hold is not possible during the voyage, the average cargo temperature at the time of loading should be compared with the outside air temperature. This should be done each watch and ventilation applied where necessary and possible on a 24-hour basis. For this method, the 'Three Degree Rule' is applied:

- **VENTILATE** if the dry bulb temperature of the outside air is at least 3°C cooler than the average cargo temperature at the time of loading.
- **DO NOT VENTILATE** if the dry bulb temperature of the outside air is less than 3°C cooler than the average cargo temperature at the time of loading, or warmer.

Avoid ventilating during periods of heavy weather or heavy precipitation when spray/sea water may be able to enter the holds through the hold ventilators. When weather conditions do not allow for ventilation, details should be recorded on the ventilation record.



Figure 7: Discharge of CRC. Note the dunnaging under the coils and the lashing of the coils into a tight homogenous stow using steel banding.

CHECKS DURING THE VOYAGE

If safe access to the holds is possible during the voyage, the cargo stowage and the securing arrangements should be regularly checked and the inspections recorded. Any failure of lashings or damage to the cargo, whether mechanical or corrosive, should be photographed and recorded. Safety procedures for entering enclosed spaces should be observed at all times.

DISCHARGE

During discharge:

- Correct handling equipment should be used. Any mechanical damage occurring during discharge should be photographed and recorded.
- Care should be taken to avoid precipitation and/or sea spray entering the holds via hold ventilators or when hold hatches are open.
- Finished and semi-finished products should not be discharged during precipitation
- The location where the cargo is to be stored i.e. warehouse, open yard or wharf (risk of seawater spray) should be noted. This information is important in the event of a claim for cargo deterioration at a later date.





DURING ALL STAGES OF THE SHIPMENT PROCESS – KEEP DETAILED LOGS AND PHOTOGRAPHIC RECORDS.

SUMMARY

IN SUMMARY, IT IS RECOMMENDED THAT THE FOLLOWING ACTIONS ARE TAKEN TO ENSURE THE SAFE AND EFFICIENT CARRIAGE OF STEEL.

- During all stages of the shipment process – pre-loading, loading, voyage and discharge – keep detailed logs and photographic records.
- Appoint a surveyor for checking the condition of the cargo prior to loading and to assist the master during loading and discharge operations.
- Ensure a detailed hold survey is carried out prior to loading.
- Ensure correct handling procedures and equipment are utilised during loading and discharge.
- Ensure correct dunnage and dunnage spacing is used for stowage and steel cargoes are adequately secured.
- Care should be taken to avoid sweat within the holds during shipment, particularly during journeys where high humidity levels are experienced.
- Ensure suitable ventilation procedures are performed throughout the voyage with monitoring and ventilation, where appropriate, conducted on a 24/7 basis.
- If safe to do so, carry out regular inspections of the stowage and securing of the cargo during the voyage.
- Avoid cross contamination when other non-steel cargoes are stowed with the steel cargo.
- Ensure the charterparty is in order and mate's receipts and bills of lading accurately record the condition of the cargo loaded on the vessel.

APPENDIX 1 – STEEL PRODUCT TYPES



Figure 8: Cold Rolled Coils (CRC).

COLD ROLLED COILS (CRC)

CRC are produced from Hot Rolled Coils (HRC). CRC surface quality is critical for most applications. A thorough examination of the packaging should be made for evidence of any water penetration or mechanical damage. It is important to check for signs of rusting on the steel strapping which holds the coil in shape or for any signs of sweating or condensation inside the packaging. A particular risk is coil squashing if loaded below heavier and larger diameter HRC. This is a readily avoidable problem if CRC are stacked separately to the HRC or loaded in an acceptable pattern on top of the HRC. Galvanised/tinned and stainless steel variants are higher value and have very stringent surface finish requirements. Damage to CRC may be limited to the outer metal packaging, with no damage evident to the coil itself.



Figure 9: Hot Rolled Coils (HRC) are uncovered, and as they are often stowed outside briefly, light rusting is not unusual. Heavy rusting as seen on most of these coils is not acceptable.

HOT ROLLED COILS (HRC)

HRC are often stored outside at the steelworks for short periods without weather protection. A light rusting of the outer lap of the coil and coil edges is normal and does not usually result in a claim. However, if water is driven by wind onto the sides of the coil, complaints are very likely. The water will be taken into the body of the coil by capillary action and will remain there, as evaporation will be slow. This results in accelerated rusting. Exposure to sea spray is even more aggressive and very likely to result in a substantial claim. The length of time that HRC are stored on the quayside should be minimised or the coils should be stored inside away from sea spray.

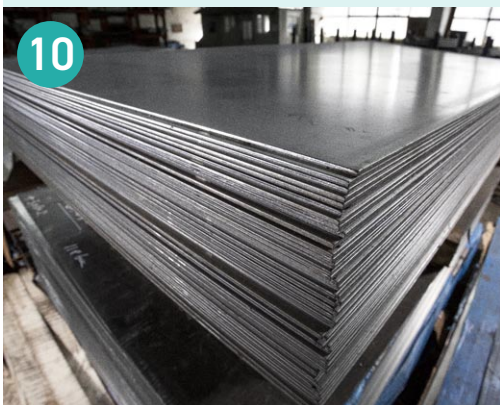


Figure 10: Steel Plate.

PLATE AND CUT-TO-LENGTH STRIP ('THIN' PLATE)

Surface and shape are most important; most applications require the surface to be rust free or at worst with light rusting. Oil splashing on plate surfaces will result in claims. However, most of this occurs at the producer mill, so early identification pre-load can be extremely helpful in mitigating claims. These products are also susceptible to bending. Care should also be taken to space the dunnage at regular intervals, with dunnage placement between tiers directly above each other in the stack to avoid bending. Again, galvanised and stainless steel variants are higher value and have very stringent surface finish requirements.



Figure 11: Steel Rails.

LONG PRODUCTS - BEAMS / COLUMNS / SECTIONS / CHANNELS / RAILS

Product shape/straightness is key. Therefore, careful slinging/lifting and carefully placed dunnage is a priority. Each piece of dunnage should be directly above the dunnage in the layer below and the spacing should not be excessive – normally not exceeding two to three metres.



Figure 12: Rebar / Debar.



Figure 13: Wire Rod in Coils (WRC).

MERCHANT / REINFORCING BARS (REBAR / DEBAR) / WIRE ROD

These are a 'lighter' section and often bundled and susceptible to mechanical damage and bending. Light rusting is acceptable, although when in coil form the loss of mill scale during handling makes them more susceptible to rusting. Middle Eastern markets have strict rust standards and will reject rusted product. Documented pre-loading condition of bars provides protection from claims if the rusting has not materially worsened during the voyage. Wire Rod in Coils (WRC), can, if not carefully stowed, become entangled, leading to damage and extended time to discharge, this issue can be exacerbated by overstuffing with other steel products or other cargo, which should be avoided.



Figure 14: Steel Slabs.



Figure 15: Steel Blooms.

SLABS AND BLOOMS

These are mechanically sturdy but can be 'bowed' if not lifted with a suitable spreader bar. The end customer will insist on flat/straight product with no significant end-droop or longitudinal bend to allow smooth passage through steel mill reheating furnaces. Claims can be substantial due to the volume of steel affected.



Figure 16: Steel Billets.

BILLETS

Straightness in all directions is key. Billets are easily bent by rough handling anywhere from the producer's mill to the consignee's wharf. Billets should be handled with a long spreader bar, preferably equipped with fabric slings to avoid material droop. Damage can also be caused by forklift handling where the billets overhang the forklift tines by any appreciable distance.

Billets can be damaged in the producer's works when the continuous bar is cut to length resulting in kinked ends due to the forces exerted in the cutting operation. This type of damage is almost impossible to create with slinging operations and claims based on this defect lie with the producer.

PIPES / TUBES

These are often supplied with a surface coating which, if damaged, will usually result in a claim.



Figure 17: Pipes are usually bundled, with the ends in particular being susceptible to damage.



Figure 18: Pig iron / crude iron / beach iron.

PIG IRON / CRUDE IRON / BEACH IRON

These are ingots (typically loaf or pyramid shaped) which will be melted and reworked into steel products at a later date. Sometimes cast in sand moulds (hence the term beach iron) and some sand contamination is not a particular issue. It is a very brittle product therefore breakage of the ingots is to be expected, although this is unlikely to lead to claims. It is often loaded via tubs (buckets of anywhere between 10 and 30 tons capacity). The first few tubs should be lowered to the tank top and emptied (soft loading) to prevent damage to the vessel due to the high weight of the product, and to prevent breakage of the ingots. When spout loading, usually a pile of wooden pallets will be put on the tank top to absorb some of the impact, although the wooden debris will need to be removed from the cargo on discharge. Due to its weight, it should be ensured the cargo is evenly spread over the tank top. The carriage of this product is covered in the IMSBC Code, which categorises the product as Group C – neither liable to liquify, nor to possess chemical hazards.



Figure 19: Ensure scrap presented for loading is as permitted by the charterparty, because there are many different specifications.

STEEL SCRAP

This is of lower value and stored in bulk, but can be susceptible to contamination. Flammable impurities such as lithium-ion batteries, compressed gas cylinders, oil and grease and recycled automobile residue such as seats, plastics and tyres are particularly dangerous. It should be ensured that the scrap presented for loading is permitted by the charterparty, as often there are many different specifications including size limitations on the scrap that is acceptable, and certain items, commonly engine blocks, are often excluded. As for pig iron, soft loading should be employed.

THE CLUB'S LOSS PREVENTION DEPARTMENT
IS ALWAYS AVAILABLE TO SUPPORT MEMBERS
AND RESPOND TO THEIR QUESTIONS.



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MANAGERS:
TINDALL RILEY EUROPE SÀRL
Registered Office:
42 - 44 avenue de la Gare, L-1610 Luxembourg.

AGENTS FOR THE MANAGERS:
TINDALL RILEY (BRITANNIA) LIMITED
Regis House, 45 King William Street, London EC4R 9AN.
T: +44 (0) 20 7407 3588 | F: +44 (0) 20 7403 3942

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