

UPM CARGO HANDLING MANUAL – PAPER

About this manual

UPM Logistics aims to deliver UPM products to its customers on time and in a sound condition. UPM also aims to provide a healthy and safe working place for its own employees and its partners' employees. In order to achieve our goal that the supply chain earns reputation of excellence in the eyes of the ultimate customer, UPM has published the third version of Cargo Handling Manual.

The manual contains the minimum compulsory requirements for handling, transporting and warehousing UPM products, and they are valid globally for all parties (internal and external) in the logistics chain. UPM requires that all its partners and suppliers comply with any applicable International or National Laws and Regulations. Laws and Regulations that are more rigid than the manual prevail.

The personnel must be skilled, trained and capable of handling and transporting UPM products. Furthermore the personnel are to be instructed in environmental protection and when relevant, qualified to transport and handle hazardous goods. Training in applying the requirements contained in this manual will be provided by UPM in accordance with a separate plan.

The manual has been prepared in accordance with the best knowledge and understanding we have today. If you feel there is a better, more secure, more efficient way for handling, transporting or warehousing, we invite you to challenge us. Please do not hesitate to give your feedback either to your nearest UPM representative or through the following e-mail address: technics.logistics@upm.com.

Finnish Customs has granted UPM-Kymmene Oyj an AEOF Certificate on the 11th of July 2011. AEOF Certificate's owner has a Customs Security Certificate for customs and logistics operations and is therefore justified for certain benefits in EU, for example simplified custom procedures and facilitations for customs declaration phase inspections.

Certificate's owner needs to meet safety standards regarding safety management, premises and personnel safety, logistics and production safety and also delivery chain safety. Safety standards require that premises are safely organized and safety procedures are in order. These procedures have to concern certificate's owner's business and making business with carriers, port operators, suppliers and other service providers.

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Safety first

UPM's clear objective is zero fatal and serious accidents. We strive to reduce and eliminate accidents under our control through continuous improvement and effective risk management. We expect the same high safety culture from our business partners and their employees. Co-operating together in safety we can improve the safety of the whole supply chain ensuring safe workplace for all the workers.



For loading areas and warehouses one of the highest risk is collision between pedestrians and vehicles. Therefore any unnecessary and extra walking in loading areas and warehouses is prohibited. It is important to make yourself visible for others if there is a need to be outside of vehicle and communicate, for example with eye contact, to make sure that others have noticed you.

Personal protective equipment (PPE) has to be worn when in loading areas and warehouses. The required PPE varies between sites but the minimum requirement for PPE are

- High visibility vest or clothes
- Safety shoes

Additional can be required

- hard hat or bump cap
- safety goggles
- in case of noise, ear protection.

For chemical loading/unloading the required PPE depends on the chemical and can be, for example, chemical resistant clothes and hard hat with full face visor. Required PPE are instructed with signs at the gate of the site.

The loading shall not be carried out without the proper personal protective equipment!

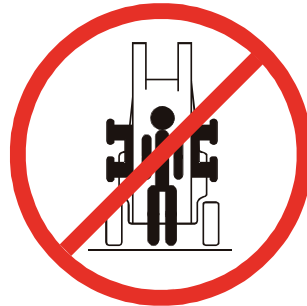
Safety equipments for the drivers:

1. reflective vest
2. safety shoes
3. light eye protection
4. hard hat protection



Following product handling safety cautions are valid for each manual sections:

While driving in the loading area the addressed speed limit has to be obeyed and extra attention to be paid for other traffic. The speed limits are site specific and are instructed with signs.



It is important to follow the capacities whether it is fork lift, truck, railcar or loading ramp etc.



Driving and walking under hanging loads is prohibited.



During truck loading/unloading the fork lift driver has to pay extra attention to know where the truck driver is while loading at all times. It is prohibited for the truck driver to come into the trailer/container while fork lift is in it and the fork lift driver has to make sure the truck driver is not in the trailer/container before driving into the trailer/container.



All the instructions has to be followed to ensure safe working to prevent accidents. In many cases the reason for the instruction to be done has been an accident or near miss.

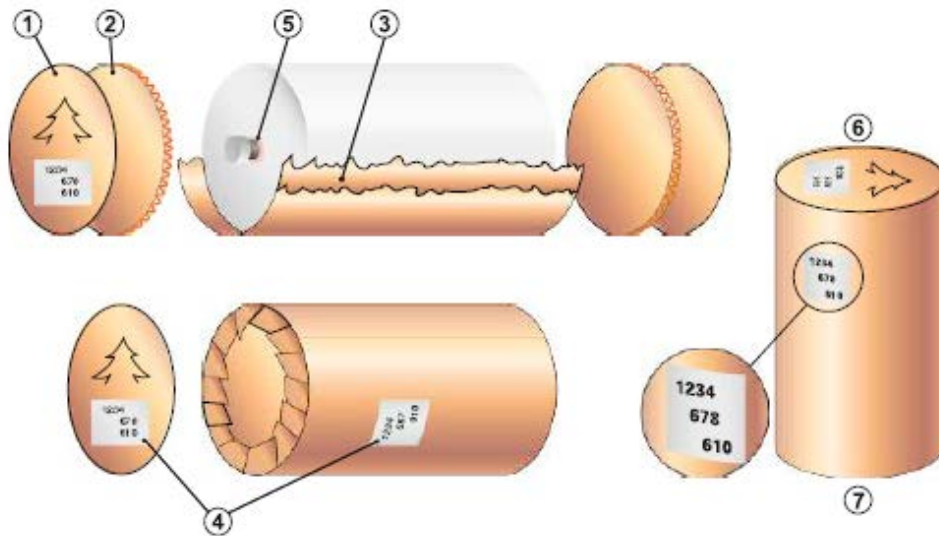


Everyone is obligated to report any accidents, near misses or observations. With reporting we can prevent accidents and improve safety.

1. Paper packages

Paper reel

The purpose of paper reel packaging is to protect the product against mechanical wear, tear, moisture and dirt. Paper reels are either packed separately or in "multipack-packages" in various types of wrappings e.g. Kraft liner, Kraft paper that protect the product.



Picture 1. Paper reel typical package construction (Source: Ophal)

1. Outer end shields (cap, head covers, headers)
2. Inner end shields (cap, head covers, headers)
3. Belly wrapped or side
4. Label & Barcode
5. Core
6. Top
7. Bottom

Source: icmPrint

Paper pallet

The purpose of paper pallet's packaging is to protect the product against mechanical wear, tear, moisture and dirt. Palletized paper can be placed in sheets, reams or in boxes on a pallet. Typically shrink foil is used to protect the product.



Picture 2. Paper pallet construction

1. Paper packages

Paper reel label content

1 UPM		2 Brand Name (Sales Grade)		15 Environment Logo	
3 Production Unit (Mill)		4 Basis Weight		14 Area reserved for Customer specified Bar Code Stickers	
5 Consignor's Reference on Label (Order Number)	6 Width	7 Diameter			
8 Package ID	9 Core diameter	10 Web length			
11 Weight (Gross)		13		Area reserved for Customer specified Bar Code Stickers	
12 Customer specified optional data		13 Mill's other optional information 20 Made in Finland			
16 UIC Transport Bar Code		17 Weight Warning Sign		18 Graphic sign for multi-pack	
		19 Recommended Clamping Force			

For Transport Use Warning Sign Only

Label content in detail ¹

- Preprinted UPM logo (missing from a neutral reel label²)
- Brand name (sales grade from SAP)
- Production unit (mill)
- Basis weight in g/m² with one decimal³
- Order number from SAP (see p. 5)
- Width of a single reel in mm; multipacks number of reels/pack * width of a single reel³
- Ordered diameter in mm; if ordered by length then actual diameter³
- Package ID; all supported codes listed on p. 7
- Core; core diameter in mm³
- Actual web length in m; multipacks length of a single reel³
- Gross weight of the package in kg³
- Customer specific optional information from SAP (4 rows of free text, max 36 characters); can't contain destination port due to AEO regulation
- Other mill optional information (position, joints, other info); mill specific (not customer specific)
- Area reserved for customer bar codes, orientation of stickers can vary (mill specific bar codes are supported, see info on p. 8)
- Environmental logo (optional)
- Transport Bar Code (GMES UIC Code), see p. 9 for decoding
- Weight warning sign expressed in increments of 250 kg (package weight rounded up to next incremental level)³ starting from 1000 kg
- Graphic sign for multipacks; number of reels per pack printed on top
- Recommended clamping force in kN; calculated from weight of pack (p. 23)
- Arrows for unwinding direction (mill and winder specific)

¹Blandin with NA label layout (separate file)

²available for Kymi and Nordland reels only

³or in other non-metric unit when selected

2. Handling

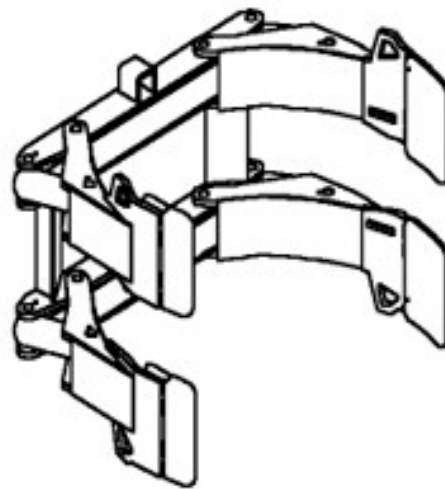
2.1. Paper reel clamps

The correct clamps are extremely important for avoiding damages. The number of clamp pads depends on the possible number of reels. Each reel must be clamped by a minimum of one pair of pads.

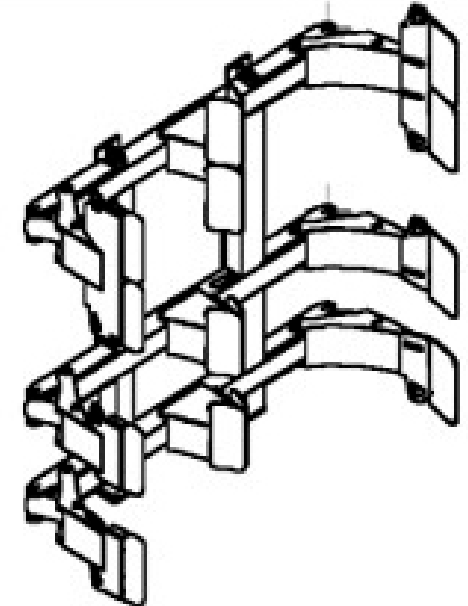
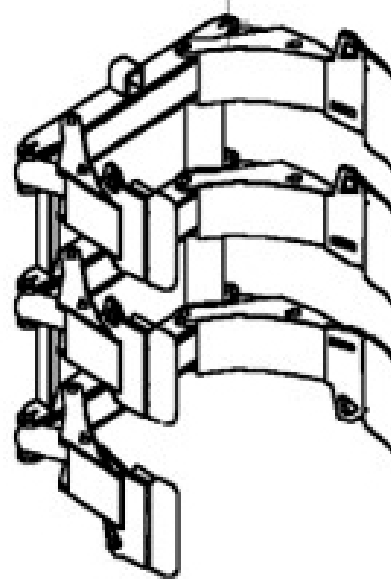
Jumbo Reels (width > 3,0 meter) and/or Super Jumbo Reels (width > 3,80 meter) must be clamped by a minimum of three arm pairs but four arm pairs are recommended. The pad material has a great impact on friction.

Checklist to select the correct truck/mast:

- Needed maximum lifting capacity?
- Needed lifting height?
- Mast with tilting functions
- Mast with free lift function?
- Checklist to select the correct clamp:
 - Max- and min diameter
 - Weight of the reel
 - Reel width
 - Special needs for clamp selection due to railway wagon, container loading
 - Number of reels per handling
 - Rotation of clamp



Picture 3a. Different paper reel clamps types (source: Bolzoni Auramo)



As general recommendation selects as big pad size as possible to ensure as much friction as possible and pressure even distribution. The material and friction surface of the pads must be chosen in

accordance with handling condition (i.e. port outside vs. mill/printing house inside warehouse). For in-house handling the recommendation is to use rubber pads. For outside handling the recommendation

is to use pads with higher friction material. In case of unwrapped or foil wrapped reels must be handled, the softer (urethane) is recommended. The usage of steel friction (fish bone) pads is not recommended by UPM.



Picture 3b. Different clamp contact types (source: Bolzoni Auramo)

2. Handling

Additional recommendations for clamp trucks are:

- Automatic mast tilt control system
- fire extinguisher on board/automatic
- “blue spot” warning system
- clamp middle point indicator (painting, laser/led)

Its critical to inspect clamp condition prior handling in order to ensure safe and damage free handling.

Check that the arms, pads and frame are clean (no crease etc.) and there are no sharp edges to damage the paper reels. In damage prevention point of view the pad friction material condition is critical (see picture below). Lack of friction surface/poor condition will cause lack of compression force and other wrapper damages.

Following items should be inspected:

- Clamping arms
- Contact pads and pad surfaces
- Frame
- Hydraulics and hoses
- Mounting

2.2. Super Jumbo reels

UPM is using a name Super Jumbo Reel for reels width more than 3,8 meters. These reels can be max 4,32 meters width and weight 6,5 tons. Handling of these high value reels requires high skilled persons and proper equipment.

It is recommended to use four or three pad clamps and also using of suitable clamping force is critical in order to avoid wrapper and reel damages.



Picture 4. Poor condition of clamp pad friction material.

2.3. Clamping force

Correct clamping force is the most critical factor for safe and damage free handling. Too little force will cause wrapper damage or dropped reel, too much will cause out-of-round reel or core damage.

It is not just the weight [kg] of the paper reels which is defining the Recommended Clamping Force.

Factors affecting the clamping force:

- paper grade
- reel weight and dimensions
- the friction of contact pad and wrappers
- wrapper and winding tightness
- environmental conditions
- dynamic loads

The clamping force calculation formula in metric units:

$$F_c = k * W * g / 1000$$

Where:

F_c = Clamping force in kilo Newton [kN]

k = Clamping factor

W = Reel weight in kilograms [kg]

g = Acceleration of earth's gravitational pull
[9.81 = 10 m/s²]

Newsprint 1,2 – 1,5 (1,5)

Directory 1,3 – 1,6 (1,6)

SC, LWC, Fine 1,6 – 2,3 (1,9)

Currently UPM is calculating recommended clamping force with k-factor 1,6 or 1,9 depending of the paper brand.

2. Handling

2.3.1. Clamps with manual clamping force control (UPM primary recommendation)

UPM requires that clamps are equipped with adjustable clamping force devices. UPM requires that the clamp force (auxiliary equipment) must be adjustable by i.e. 4-way valve. The recommendation is to monitor the valve setting by using "traffic light indicator" on the truck (picture 5.). Recommendation is to check the clamp force at least every second month with proper documentation. Additional measuring is needed in case of incident or change of clamp.

Secondly its highly recommended to equip each forklift with label/sticker where the operator can see the setting pressure of each stage.



Picture 5. 4-way pressure control valve with indicator lights (source: Bolzoni Auramo).



Picture 6. Proper label of compression force pre-setting with indicator lights.

2.3.2. Clamps with automatic/intelligence force control

Different systems are offered by different suppliers. So called intelligence clamp systems are basically weighting of paper reel and are automatically adjusting the clamping force in the clamp according the detected weight. One of the main benefit is that the possibility of human error by selecting the wrong clamping force can be excluded. The disadvantage is the fact that such a system always will work according predefined settings – which means that only one clamping factor can be selected (see page 9.).

As consequence so called intelligence clamps might be suitable solution in case of handling always the same paper grades (i.e. newspaper). Furthermore, the variation of reel sizes and weights should not be too wide.

Anyway, UPM gives recommendation to use four stage valve systems for ports, warehouses and printing plants which wide spread of different reel sizes, weights and brands.



Picture 7. CTX Intelligent clamp screen inside the cabin (source: Bolzoni Auramo).

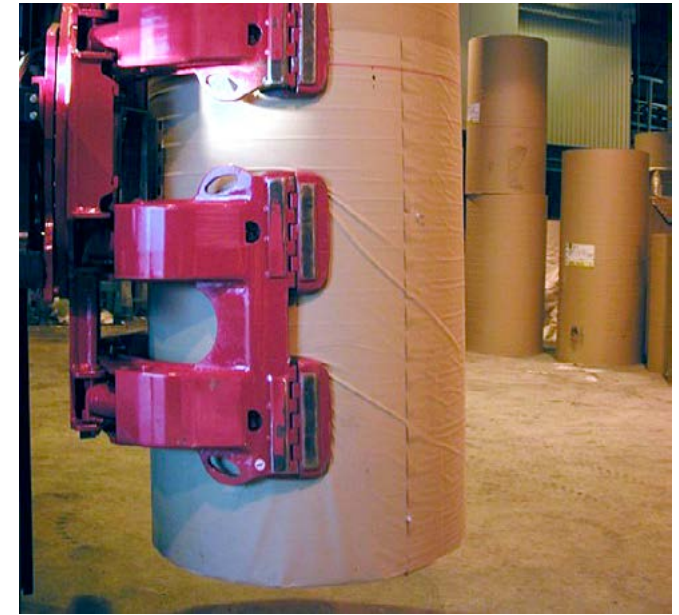
2. Handling

2.3.3. Importance of correct clamping force

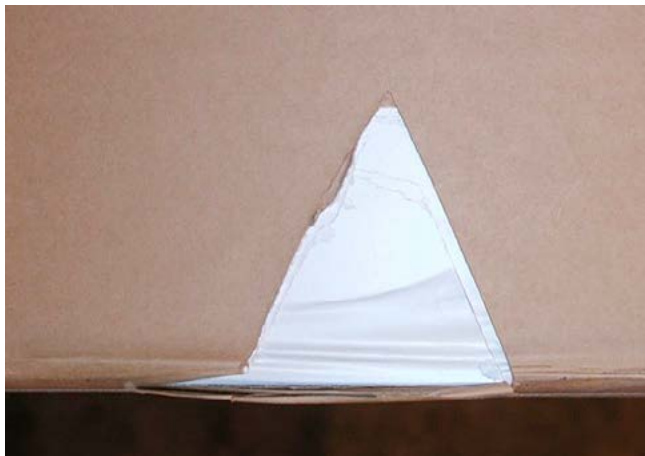
One of the most important thing prior clamping the reel is to select correct clamping force for the product. Naturally too low force causes reel to sliding / drop from the clamps and too high force cause out of round damages. Even correct clamping force is selected it can happen that still too low pressure occurs visually. Typically, this is due to technical failure of the clamp, i.e. hydraulic cylinder failure of non-lubricated rails in so called parallel clamps (due to increased metal friction).

Too low clamping force is often easier to spot visually (sliding signs in wrapper). Other way round, often out of round reel caused by too high pressure unfortunately reveals not until than during the customer printing operations.

In worst case too, low clamping force causes reel drop/ serious accident, but also well-known phenomenon so called "plastic bag effect" where the reel itself slides inside the wrapper and causes serious/deep lower edge wrinkles to the reel.



Picture 8. Visual sliding signs of too low clamping force

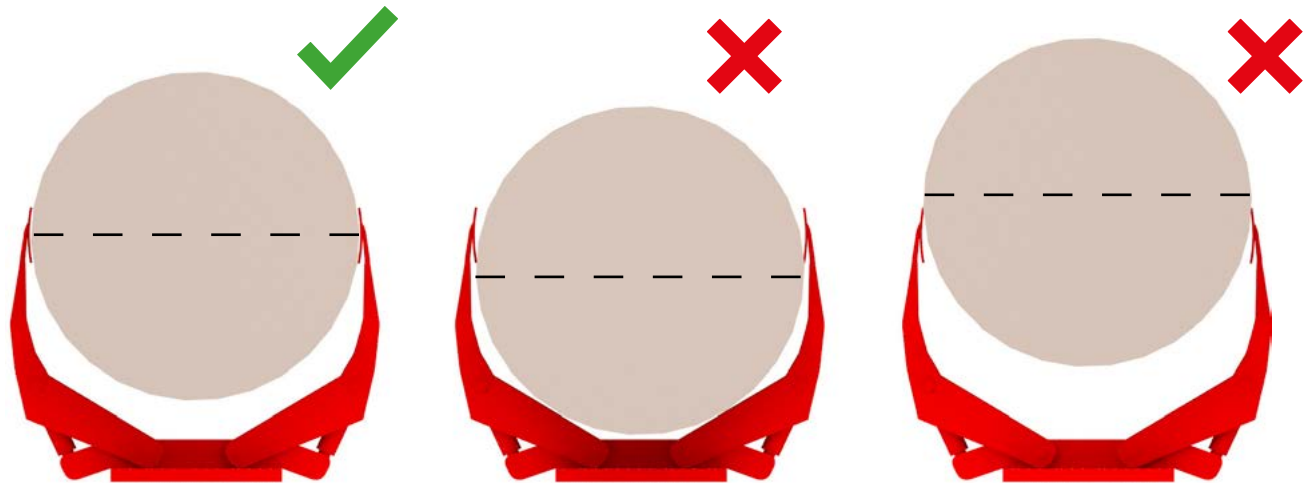


Picture 9. Lower edge wrinkles/damage due to too low clamping pressure.

2.4. Handling of Paper reels

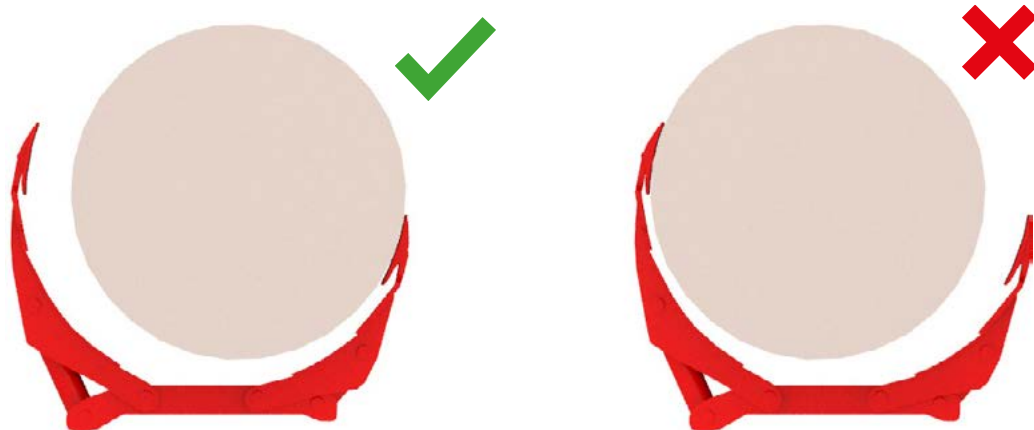
Before the handling of paper reels the condition of clamps and pads must be checked. On daily basis / before every working shift the following must be checked:

- Cleanliness, no crease/oil etc.
- Hydraulics and hoses
- Clamping arms,
- No cracks, dents
- Contact pads and pad surfaces
- Sharp and torn edges will damage the reel.
- Pads return springs must be also intact due to high risk to damage next reel in stack.

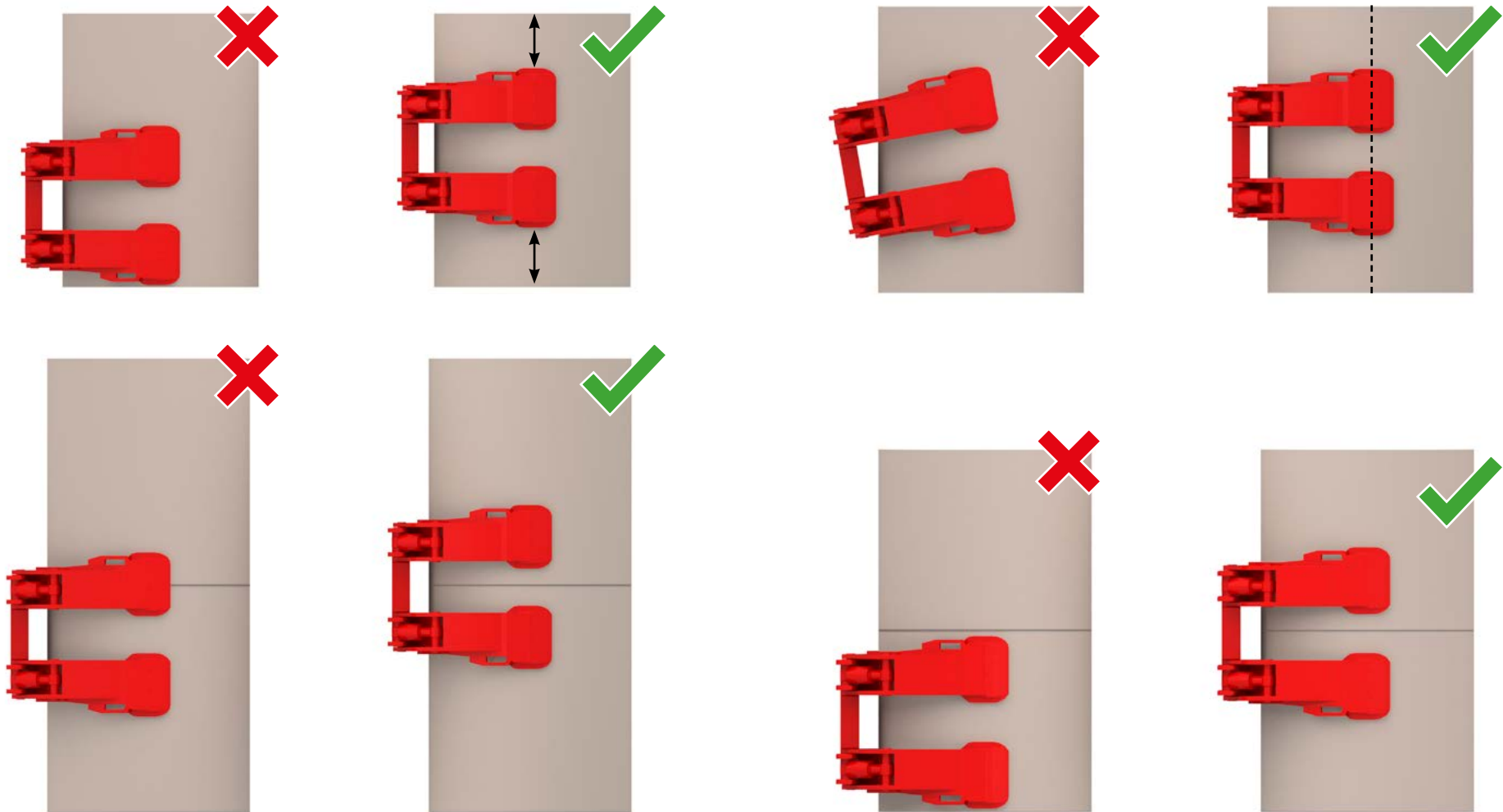


2.4.1. Clamping

- Always select correct clamping force!
- Clamp position always in the middle of the reel.
 - i. not too deep which might cause belly damage
 - ii. not too "lip" which might cause reel drop
- Clamp fixed arm always first to the reel, then the moving. Otherwise there is risk for reel stack collapse!



2. Handling

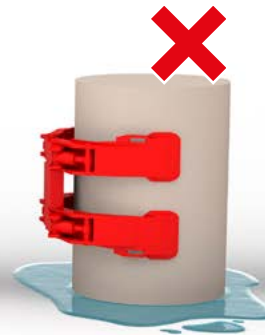
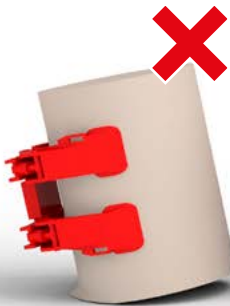


- Mast position should be always vertical when handling reels
- Clamping in middle of reels due to risk of damages
- No free riding reels! **All reels must be in the control of a clamp always; this is for health and safety reasons and for correct handling.** The recommended clamping force for each reel stated in the reel label should be followed.

2. Handling

2.4.2. Lifting and moving the reels

- When moving reels, always leave sufficient space between the floor and the reel end. Recommendation is leave abt **20–30 cm** space.
- Do not drive while reel is in rolling/horizontal position in the clamp!
- Always make sure that you are having sufficient visibility from the clamp truck, the recommendation is to drive backwards when having a reel in clamp.
- Never drive with reel in up position due to risk of vehicle collapsing.



- Do not land the reel on the edge!
- Do not drop reel from the clamp, first land the reel on the floor before opening the clamp
- Do not drag the reel on the floor!
- Do not place reel on wet or dirty floor!

2. Handling

2.4.3. Turning the reel

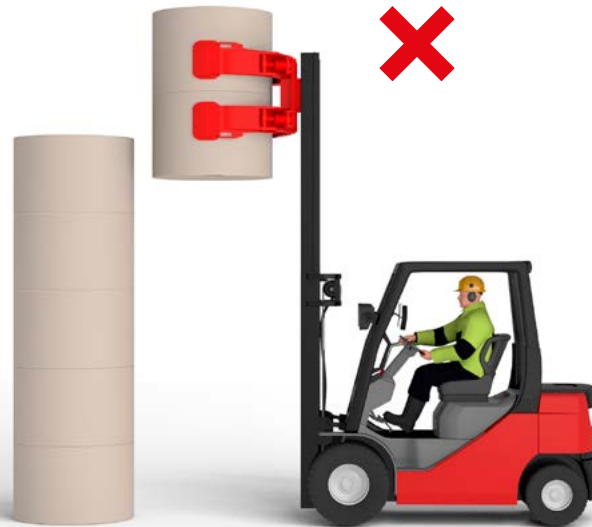
- Before turning the reel in the clamp lift the reel enough to avoid edge damages.
- Always turn the reel against warehouse wall or solid object in case of accidental slipping of the reel.
- Never handle/turn the reel against humans in any circumstances (keep always enough safety distance)!



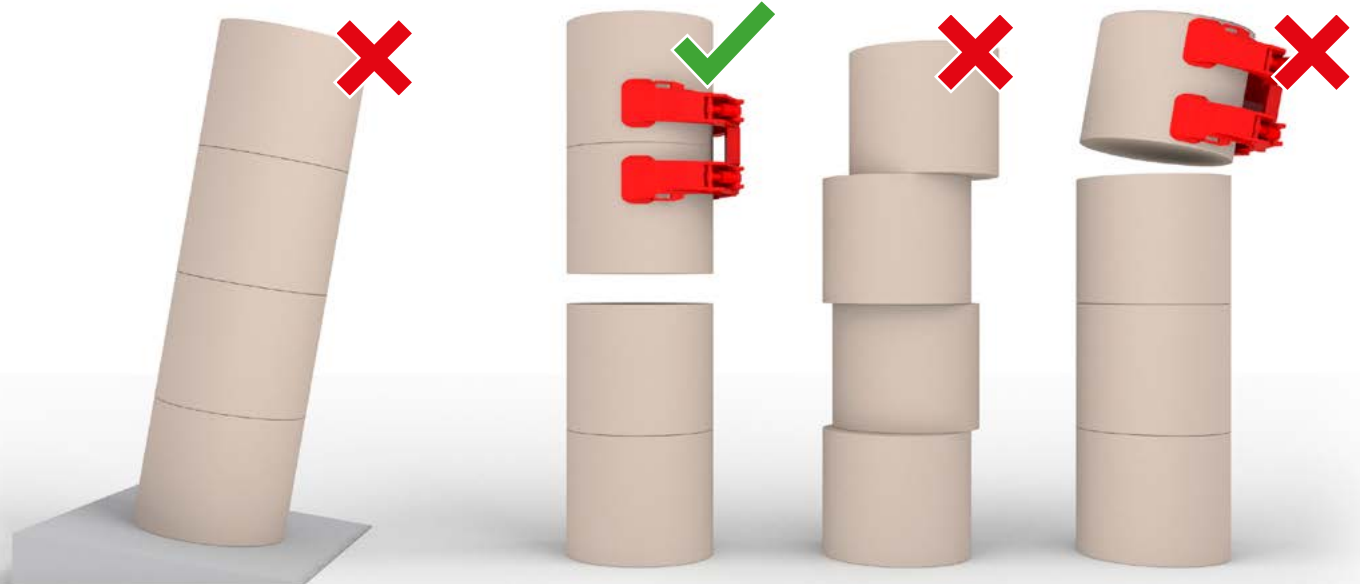
2. Handling

2.4.4. Stacking of the reels

- Clean the warehouse floor before placing reels on.
- Ensure proper lifting height when stacking to avoid reel stack collapsing
- Never operate free riding reels due to high risk of reel dropping / OHS hazard!



- If floor is slanted, do not place reel there.
- No overlapping edges
- Small gap between reel stacks should be used to avoid edge damages
- Leave safety gap between reel stacks, walls and roof constructions.
Min safety gap between piles are ~5 cm



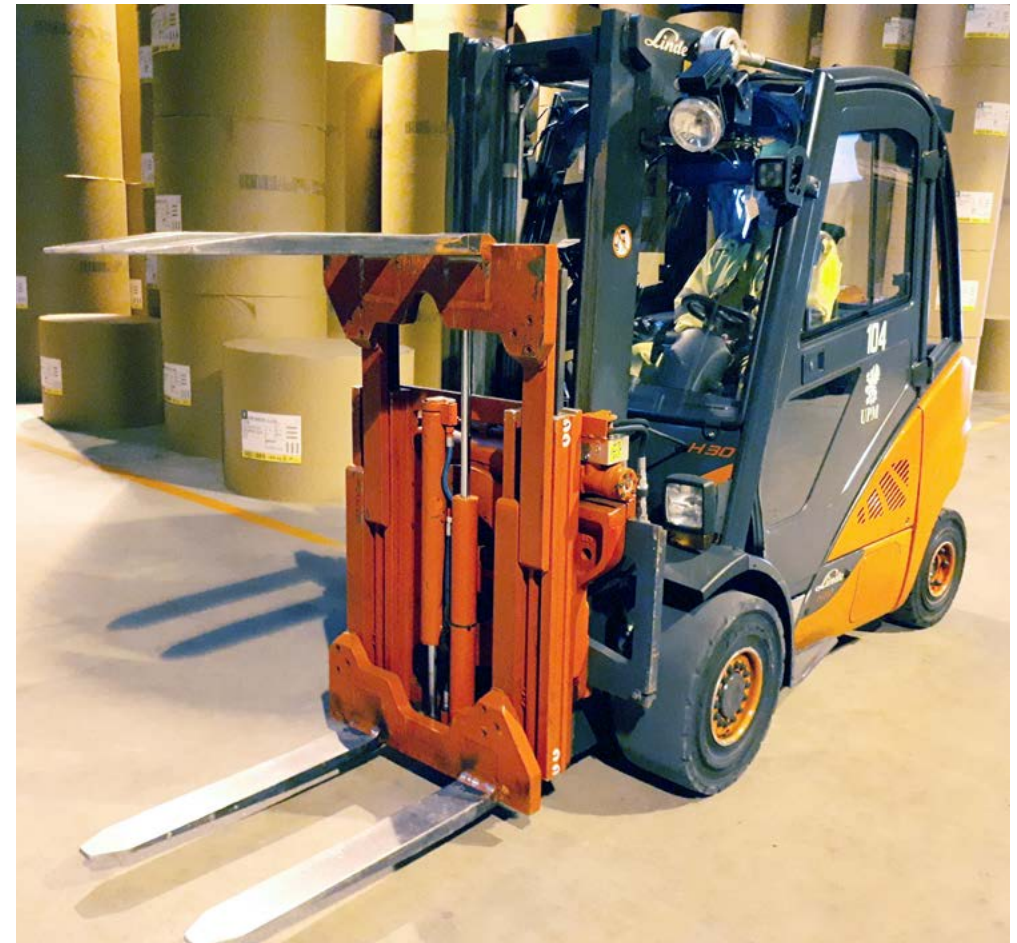
2.5. Paper pallet handling equipment

Printing and office papers are often transported in sheets, reams and boxes stacked on pallets. Non-standard pallet sizes are common as paper sheet sizes vary a lot. Pallets should be handled with adjustable width forks or purpose-built pallet forks

During selection of suitable forks, the length of fork is important. The forks should be as short as possible to avoid damages when stacking pallets (damages to pallets behind). Secondly compressing forks are recommended (see picture 6.). The thickness of forks must not exceed the free space in the pallet base where the forks enter.



Picture 10. Different type of pallet forks



2.6. Handling of paper pallets

Ensure correct fork length to avoid protruding fork which might cause damages to another pallets in stack. In case long forks must be used its recommended to mark/paint signs in forks which helps operator to position the forks.



Ensure correct mast tilt and height when transporting the pallet to avoid pallet feet damages.



2. Handling

Ensure safe handling when operating two pallets on top. Its highly recommended to use "double forks" which allows securing also for upper pallet.



During stacking ensure that forks are not protruding which will cause puncture/ damage to the pallet behind.



3. Warehousing

3.1. Warehouse requirements

3.1.1. Building

The building should be well constructed so that the stored goods are protected even in extreme weather conditions. Ridged roofs are recommended but most important the rainwater drainage pipes and gutters have sufficient capacity and should be located on the exterior of the warehouse. Back flow backup systems are recommended.

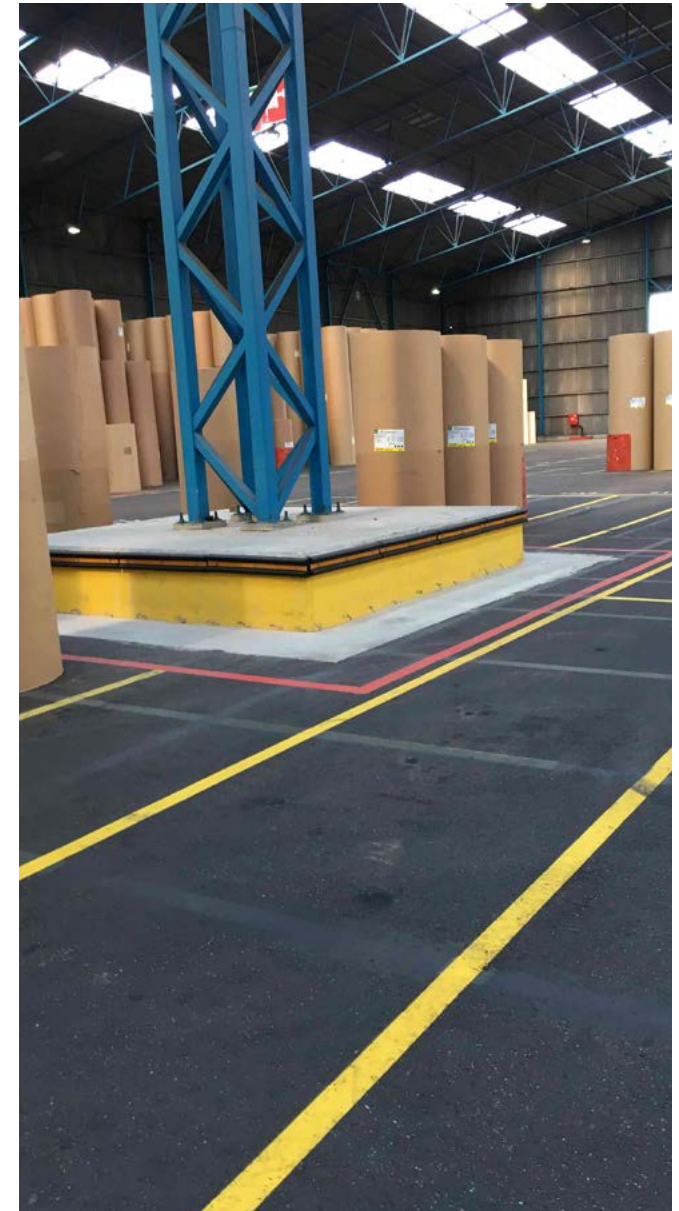
3.1.2. Flooring

The floor of the warehouse should be on a higher level than areas outside. It must withstand the weight of the stored cargo and of the machines operating inside the warehouse; the minimum requirement is **9 tonnes/square metres** (2240 lbs/sqft). As floor material polished concrete, bitumen and concrete or plastic material are acceptable. No loose particles are allowed on the finishing surface of the floor. The maximum inclination of the floor is 1/200. Bare ground with adequate loading capacity is accepted for timber.

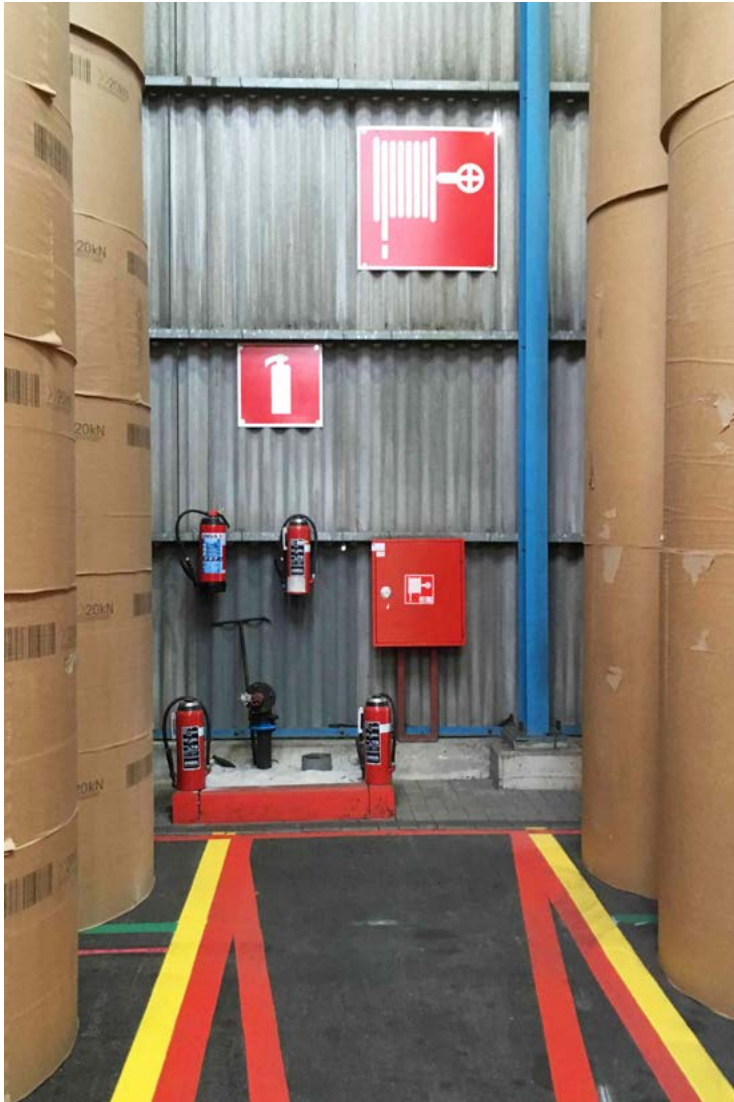
3.1.3. Markings and safety areas

Areas for stored cargo must be well marked with painted lines and numbers. Free space by the walls and pillars must be clearly marked. Vulnerable places like pillars, electric boxes, water pipes etc. must be protected by guard rails and painted as hazards.

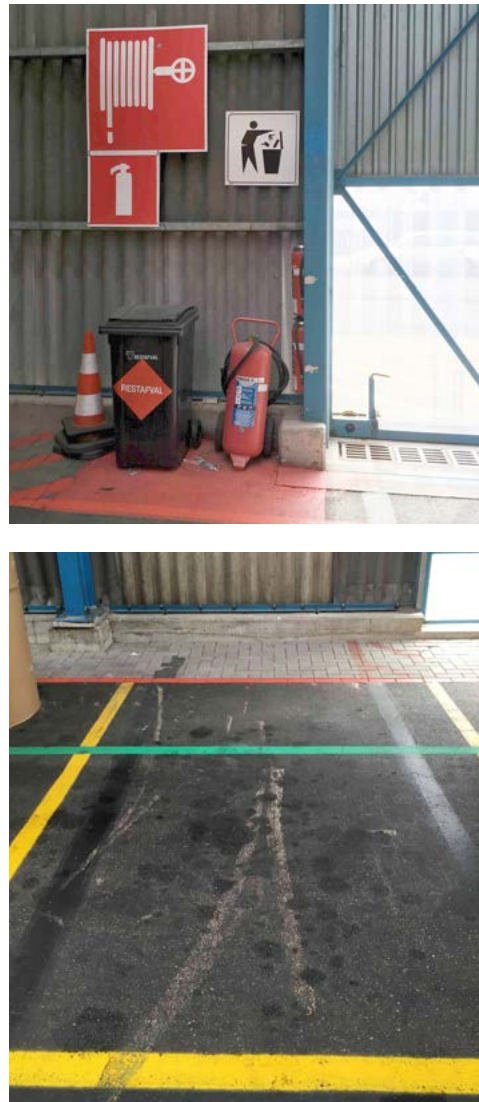
Recommendation is to paint green line which indicates reel inner edge place for the forklift driver. By utilizing this method passing the red line can be easily avoided (see picture 8.)



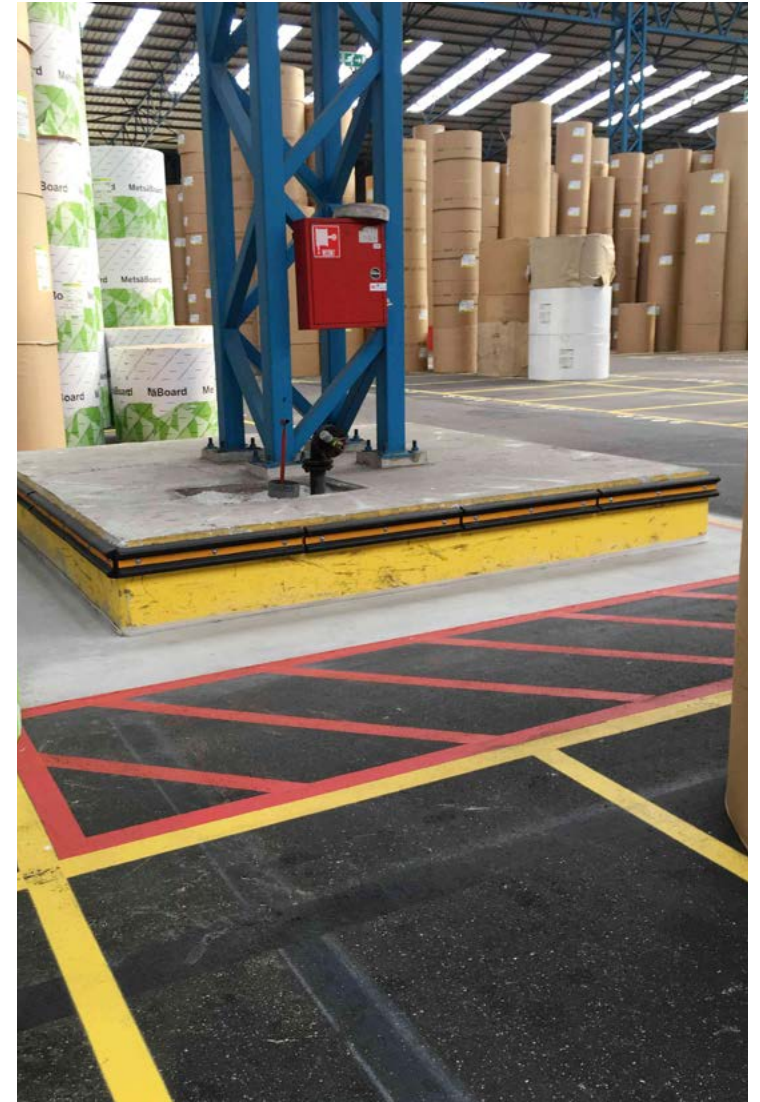
3. Warehousing



Picture 11. Proper safety markings.



Picture 12. Proper safety markings for safe handling and access to fire equipment's.



3. Warehousing

3.1.4. Warehouse traffic

Doors and aisles for warehouse traffic must be wide enough for vehicles and forklifts to meet and pass and there must be sufficient operating space in the loading areas. A grid or floor drain positioned in the door openings is recommended to prevent water, sand and stones entering the warehouse on vehicle tyres. The trucks should have their lights on.

3.1.5. Safety of working

Corner and hanging ball mirrors and other safety equipment are required for dangerous places to ensure high quality and safe warehouse working. Any visitors to UPM operations should report first to the local office and adhere to site instructions. Unauthorized people are not allowed to walk or stay inside the warehouse. Working personnel and visitors must wear safety gear as per UPM/supplier regulations.

Systems to prevent vehicle movement when loading are strongly recommended.

3.1.6. Lighting

Adequate lighting with minimum illumination of 200 candelas is required. Led, Fluorescent tube lamps and gas-discharge/luminous discharge lamps (HQL, NVA-T, HQI-T, HQI-BT types) are allowed. All lamps must have protective glass free covers. The safety margin from the highest point of the cargo stored to the lamps is one meter. Skylight and light colours for walls are highly recommended.

3.1.7. Food safety

Requirements of ISO 22000 Food Safety Management System shall be fulfilled during storage and transportation so that safety and quality of cargo are maintained. For more information about product specific ISO22000 requirement, please contact product contacts provided in the cargo handling manual site.

Bird and pest control

Warehouse operator should take all necessary actions to prevent pests and birds entrance to warehouse. For example bird droppings will contaminate the product and will lead product rejection and excessive investigations. Methods used to prevent birds entrance to the warehouse are keeping door always closed when not used, different visual deterrents, mechanical barriers/devices and audio/laser light devices etc.

In case of pest/ bird problem occurs its highly recommended to consult specialized companies. Special attention to the topic should be paid in ports where seeds etc material suitable for bird food are handled next to paper product warehouses.



Picture 13. Good example of improved visibility by replacing door lower part with transparent plexiglass

3.2. Safety and security

3.2.1. Warehouse location

Geographical and weather-related risks must be evaluated prior start using new warehouse facilities (i.e. flood, storms etc.). UPM logistics can provide detailed location analyse based on Nat Geo tool.

There should be enough free space between warehouses and other buildings. The safety distance depends on the wall materials used and the fire resistance of used materials. Exact distances depend on local requirements.

3.2.2. Fire protection

The warehouse and surrounding must be free of all kind of fire load. Fuelling and charging stations must be located outside warehouse. Trucks must be equipped with fire extinguishers. Parking of trucks is not allowed inside warehouse or directly next to outside walls due to fire risk.

The space of the warehouse should be separated by firewalls if the total area exceeds **10,000 square metres** or less if locally required. An automatic fire and smoke detection system must be installed. Smoke venting arrangements in the roof must be installed. Extinguishers, fire water post, alarming bells, buttons, markings etc. must be placed according to the national building regulations.

Fixed fire water system around the building is required. Check national regulations for specific details. UPM recommendation is **not to install** sprinkler system due to high risk for unexpected system failures/water damages. Never block access to fire posts etc. for example with cargo!

Hot work operations (e.g. welding and steel cutting) in the warehouse always require a special permit with special safety measures. They can only be carried out by authorized and licensed personnel. The owner of the warehouse is responsible for fire safety and for compliance with regulations. Monitoring of the area should continue for two to three hours after the work is completed

3.2.3. Main fire safety matters:

- Remove unnecessary fire load from the warehouse and surroundings (e.g. garbage, flammable liquids, wooden pallets)
- Do not park vehicles (forklifts) inside warehouse
- Protect surrounding materials that could easily catch fire
- Fire extinguishers must be kept available
- Monitor the nearby area for possible fire

3.2.4. Security

Security matters such as gates, fencing, monitoring, locking of the doors, alarming etc. must be managed so that the cargo stored in the warehouse will remain intact from intruders during the whole warehousing period.

3.3. Warehousing of products

3.3.1. General requirements

As standing safety rule unnecessary stay inside warehouse/around the product stacks must be always avoided especially during the handling operations. There is always a risk that product stacks might collapse due to technical or human error (see picture 8.).

UPM products must only be warehoused with compatible products. Products listed in the IMDG-code should not be warehoused inside same facilities. There should be no risk that other goods will cause any stains, odour or similar harm to paper products.

1. The warehouse floor must be dry and clean, free of sand, stones and other debris to avoid end damages.
2. Special attention should be paid to keep birds out of warehouses.
"Bird in distress" -signals and other means of prevention should be used.
3. Smoking is strictly prohibited inside the warehouses.
4. Warehouse must be equipped with sufficient lighting to ensure safe working.
Lights without protective covers (only plastic) should not be used.
5. No rubbish should be left in and around the warehouse.
6. No vehicle parking allowed inside the warehouses.
7. A computerised warehouse stock management system with the capability of linking in to UPM systems is required.



Picture 14. Example of reel collapsing accident.

3. Warehousing

3.3.2. Paper pallets warehousing

The stacking height depends of pallet type and size and the warehouse features (height and floor type). As standing rule paper pallets are stacked normally **three high** maximum. Four layers of pallets can be stacked if plywood sheets are used between layers to reduce stress on lower pallets and to increase stability of the stack. The stacks must be anyway stabile without risk for accidental collapse.



Picture 15. Proper stacking of copy paper pallets

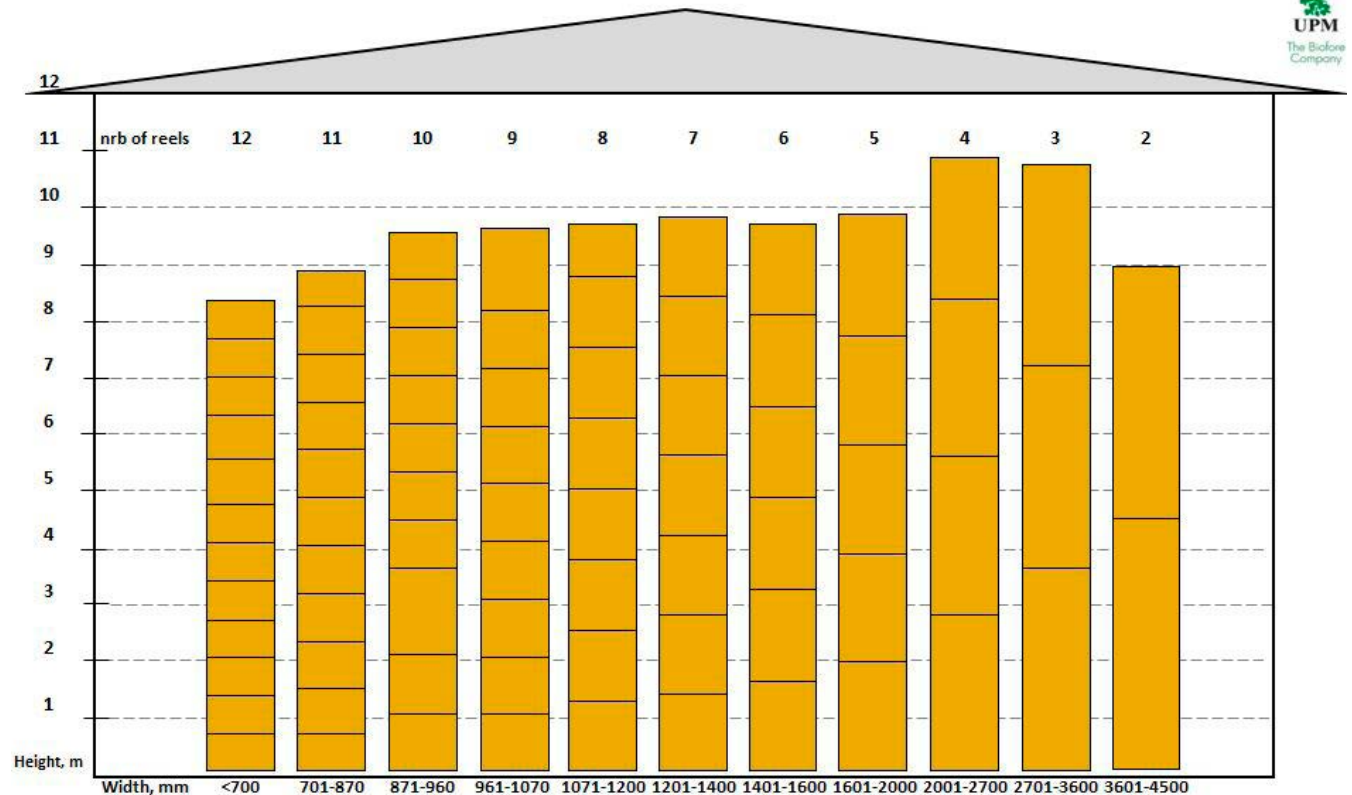
3. Warehousing

3.3.3. Paper reels warehousing

Warehouse floor must be completely free of stones etc. particles which might damage reel ends when stacking. Reels are stored in straight and stable stacks. The maximum height of each individual stack is depending on:

- Width of the reels
- Diameter of the reels
- Strength of the warehouse flooring (maximum storing capacity [t/m^2 or $\text{lbs}/\text{sq ft}$] should not be exceeded) attached calculation of weight per square metre)
- Warehouse height and roof constructions and pipes etc.
- Reels should be stacked vertically using either nesting or soldier stacking.

Paper reel stacking maximum heights for diameters >1150 mm can be seen in below picture. In case of diameter 1000–1150 mm minus one reel from stack and with diameter 900–1000 minus two reels.



Picture 16. Maximum reel stack height with diameter >1150 mm.

3. Warehousing

Reels must be stacked as below example:

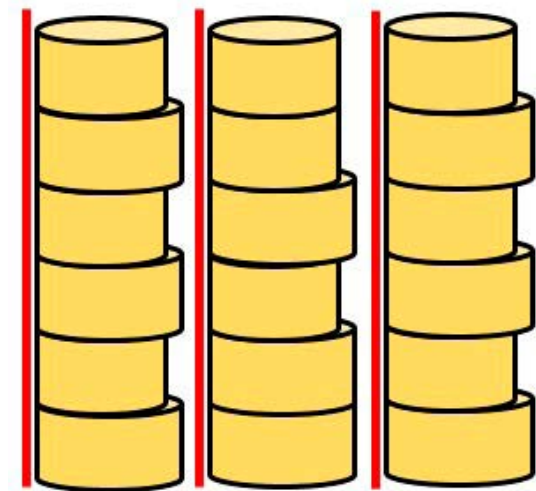
- Ensure cleanliness of warehouse floor prior commencing the work (no stones, water, oil, dirt).
- Do not stack on tilted/uneven floor due to risk of collapse.
- No overlapping edges in stacks.
- Leave safety gap between reel stacks, walls and roof constructions. Recommended safety gap between piles are **~5 cm**
- During winter season and moist conditions protective paper must be used under reel stacks. Above mentioned safety cap is also important due to proper air circulation.
- Free riding reels are forbidden due to high safety risk!
- Beware of roof constructions, pillars etc. High risk of reel falling/stack collapse in case of reels are contacting roof constructions.
- Reel diameter may vary inside same order. Because of this, make always front of reel stack straight!
- Its recommended to use "reel savers/protectors" around the stacks in corners etc.



Correct stacking

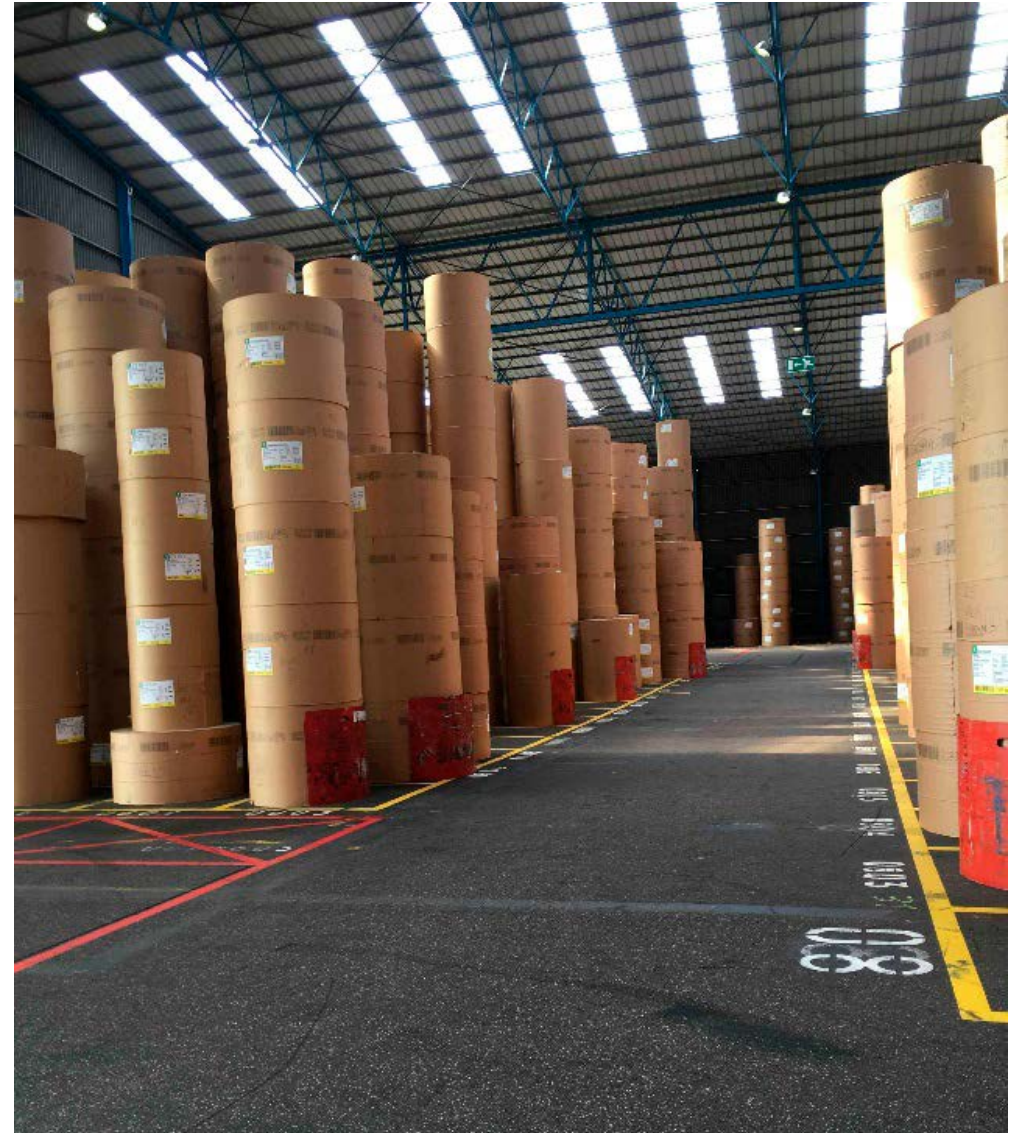


Incorrect stacking



Stacking of different diameters in same stack

3. Warehousing



Picture 17. Proper reel stacking in port warehouse

4. Transports

4.1. General information

Lashing and securing should ensure that the complete load remains safe and in the same position during normal traffic situations, including emergency braking and sharp turns. The purpose of lashing and securing of reels and pallets is to prevent products moving in different directions during transportation – there is a risk of damage and a risk of falling from the vehicle, causing external hazards.

Should be also noted that cargo unit (semitrailer or container) might be transported also by sea meaning that the cargo lashing must be valid also during sea voyage. Port or vessel crew are authorised to open and inspect the cargo securing in case it's not correctly done.

National laws and regulations that are more rigid than shown here prevail.

Lashing and securing material should be in good condition and damaged material must not be used. The driver of the vehicle and the loading group are responsible for securing the load according to the requirements.

4.1.1. General cargo unit requirements (Road and Rail)

Following criteria covers the requirement for cargo space in road and rail transports. The person in charge of loading operations must ensure that cargo spaces used for loading fulfil the following requirements. If any defects noted the unit must be rejected and reported and not used until corrective actions.

1. Floor

The floor should be completely dry on the inside. If not, there might be a leakage on the floor or curtains could be damaged. The lorry floor must support the weight of a 3 tonnes clamp truck under maximum charge, i.e. an overall minimum weight of about 7 tonnes. The floor should have no oil stains or there should be no protruding nails, bolt heads or similar.

2. Walls

Panels, frames and curtains. Any deformation such as bend, dent, or hole is not acceptable if it reduces the internal dimensions in any direction or the shape of deformation increases the risk of cargo damage.

3. Curtains

The opening and closing mechanism must be in good working order and the general condition must be acceptable and water tight.

4. Doors

The doors of the cargo unit should be in good condition and able to be closed and locked easily. Door sealing must be in good condition to prevent leaking.

5. Water tightness

The cargo space must be completely watertight. Any signs of wet floor might indicate leakage of the unit.

6. Cleanliness

The cargo space must be completely clean. No stones, debris and residues from previous cargoes (clean the cargo space before loading).

7. Odour

The cargo space should also be odourless. Sometimes previous loads leave a strong odour in the unit which can easily adhere to paper.

8. Lashing and securing material

There must be adequate lashing material (see section 4.3.1) in good working condition available. (Supplied as agreed between partners; railway company, warehouse, forwarding company.)

4.1.2. Authorised Economic Operator (AEO) Requirements

- Understand the importance of physical inspection of containers and trucks
 - Inspection includes hidden locker and compartment check
- Understand monitoring of goods in warehouse and in mill transport.
- Seal procedures
 - Working instructions of sealing procedures (must exist)
 - Storage of seals
 - Reliable sealing
 - Correct seal processing (seal number correlates with container or truck)
 - Correct documentation of seals

4.2. Road transportation

Loading must be carried out in accordance with the load plan and by correct handling, after checking that vehicle meets the requirements. Weight distribution of the load must be in accordance with the type of vehicle or trailer and maximum axle load. Persons undertaking load planning for UPM should ensure that the legal maximum weight per transportation unit is not exceeded.

All drivers must ensure that trailer, lorry or any other transportation unit will remain in its safe loading and unloading positions during the entire operation.

During loading the following issues must be checked:

- shipment includes all goods ordered
- quality, size and packing markings in each unit loaded or to be loaded are correct
- packages fulfil requirements
- dispatch markings are correct

Reels and pallets can be loaded from the side or sides, from the rear by driving inside with clamp truck or by using the Joloda, like in the picture below, or other automated system.

Reels and pallets should be placed in accordance with loading patterns and unloading method which should ensure the maximum payload and security.

Protective paper and anti-slip material should not be used at the same time.

Lashing and securing of products must be done always based on national laws and regulations.

4. Transports

4.2.1. Cargo securing equipment

Adequate amount of suitable load securing material in good condition must be available. These equipment's must be used in accordance with the instructions issued by the manufacturer, shipper or loading location.

Lashing points

Lashing points must be inspected and in sound condition before loading starts. Max. distance between lashing points is **600** millimeters and strength should be minimum **2500 daN**. Smaller distances between the lashing points and/or flexible multi locks are preferred.

Edge protectors

To avoid edge damages to UPM reels and pallet products, the usage of suitable edge protectors is compulsory.

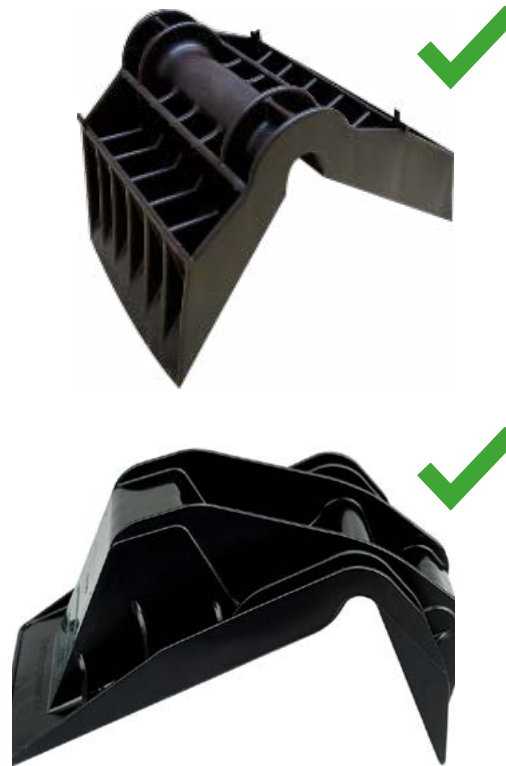
Requirements for edge protectors for paper reels:

- protectors must be stiff, strong and stress resistant
- equipped with internal edge
- protectors must be equipped with a pressure distribution profile matching the reels round
- surface (one curved leg)
- operable in temperature range of -20°C to 30°C
- equipped with belt guide bars
- identification marking "branding/product name"

Too soft plastic protectors; cardboard protectors or edge protectors without internal edge are not suitable to protect the fragile edges of paper reels against the

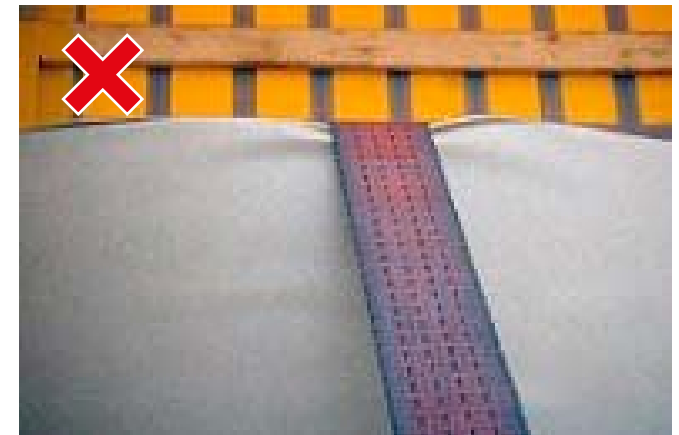
lashing tension. These edge protectors will be rejected at all loading points of UPM reels!

A list of recommended edge protectors is attached 2. This list has been compiled by UPM drawing upon the knowledge built up over many years of cargo securing and does not constitute a complete list of all edge protection available. UPM reserves the right to remove or add further products.



Picture 18. Examples of accepted edge protectors.

Cargo securing with cardboard or without edge protectors is strictly prohibited! By doing this edge damage will occur which will lead most probably to reel rejection.



4. Transports

Lashing belts

Sling belts with tension winches should be used for tightening vertically loaded reels together. Hook end belts with tension ratchets should be used for down lashing. The lashing belt classification or rating must be in accordance with the weight of the cargo or load. Different types of hooks can be used depending on the lashing point types of transportation units.

Belts and ratchets should have the following properties

- long –lever (arm) ratchet / EN 12195
- standard tension force (STF) = 500 daN
- lashing capacity LC) ≥ 2500 daN / 5000 daN
- elongation $\leq 7\%$

Belts must be inspected every time before use. Torn, partly broken or oily belts or belts unable to meet the rated strength must be rejected!



Long-lever (arm) ratchet

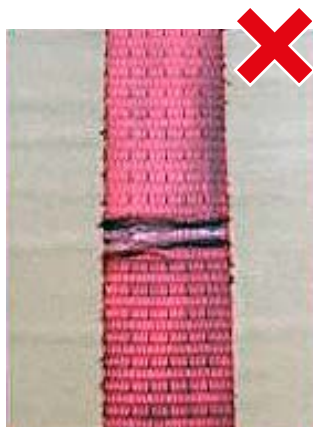


Short-lever (arm) ratchet

The following photos show material which can no longer be used for load securing.

Every belt and ratchet must have a label with technical specifications and product features. These labels must be undamaged and readable.

Otherwise the belt or ratchet can no longer be used for cargo securing.



4. Transports

Antislip material

Various types of anti-slip material can be used under the reels or pallets to increase the friction between the products and the floor of transportation unit, so that they remain in position during transportation.

Friction mats should have the following properties

A certified sliding friction coefficient $\geq 0,6 \mu$

Dimensions

- Length = adapted to the reel diameter
- Width ≥ 150 mm
- Height = 3 mm

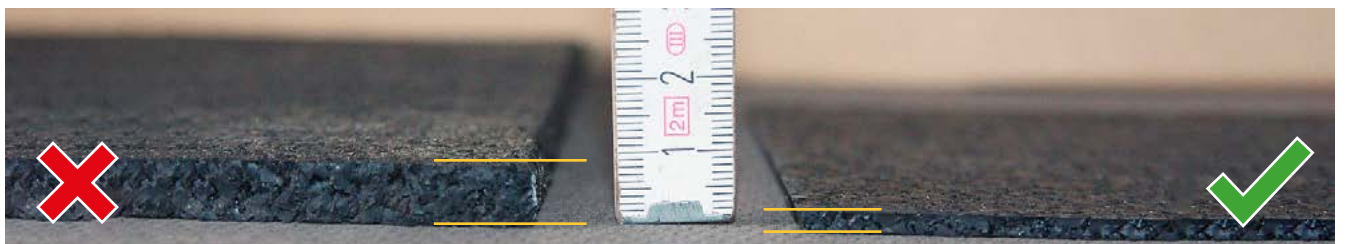
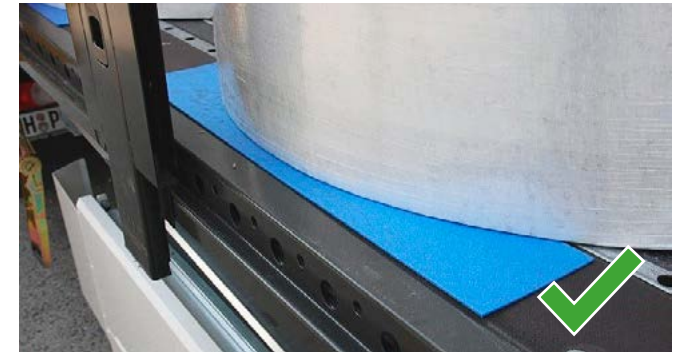
undamaged and clean

The multiple use of non-slip materials must be certified by the manufacturer.

Wedges

In case of reels are transported in rolling position usage of metal wedges is strongly recommended. Otherwise wooden wedges are acceptable but must be fixed.

Wedges must be at least $1/6$ height of reel diameter not less than 15 centimeters (six inches) to keep reels in position and not to damage the reels. The width of wedges should be min. 12 centimeters (five inches) as smaller wedges tend to make marks.



4.2.2. Paper reel loading and securing

Paper products can be loaded in multiple way and below some typical loading patterns are introduced. Cargo securing examples are following VDI2700 instructions. Please note national laws and instructions must be always followed. Please note following pictures are not in scale so intake etc parameters must be always confirmed case by case.

Prior starting loading operations always ensure condition and cleanliness of cargo space. During loading same handling instructions are valid as introduced earlier in this manual.

Important safety notice, never handle or turn the reel against/close humans as there is high risk of injuries/death in case of reel suddenly drops



4. Transports

Case 1. Reels standing one row



Friction mats under and between the reels, securing with belts and edge protectors. Note, first and last reel stack secured with double cross belts.

4. Transports

Case 2. Reels standing two rows



Friction mats under and between the reels, securing with belts and edge protectors. Note, first reel stack secured with double cross belts.

Case 3. Reels standing nested



Friction mats under and between the reels, securing with belts and edge protectors.

4. Transports

Case 4. Reels standing on pallets



In case of empty space remaining the pallets, double cross securing with edge protectors and three pcs of friction mats under the pallets must be used.

4. Transports

Case 5. Reels rolling



Friction mats under the steel wedges and securing with belts and edge protectors.

4. Transports

Case 6. Reels rolling in cannon



Friction mats under the steel wedges + two in middle. Friction mats also between the reels and wedges. Note, its recommended to use piece of friction mat between the reel and ratchets to avoid damages.

4. Transports

Case 7. Reels rolling on pallets



Friction mats under the pallets and between the reels and wedges. First and last pallet with double belts.

4. Transports

Case 8. Paper pallets lengthwise



Friction mats under the pallets + each row secured with belts and edge protectors.

Case 9. Paper pallets crosswise



Friction mats under the pallets + each row secured with belts and edge protectors.

4.3. Railroad transportation

4.3.1. Loading

Persons undertaking load planning for UPM should ensure that the legal maximum weight per transportation unit and axle weights are not exceeded. Basic guideline is that the cargo should be loaded always as low as possible.

Empty space should be left in the middle of the wagon. Wagons must be loaded so that it is possible to discharge them from both sides of wagon.

Protective paper should be placed under the reels in moist weather conditions if there is a risk of getting wet. Anti-slip material and protective paper should not be used at the same time. If it is necessary to load reels in horizontal position but only longitudinally with the wagon, reels must be secured and lashed with chocks, anti-slip material and belts.

4.3.2. Securing and lashing

The person in charge of loading operations must check that the cargo is properly secured and lashed. Usually wagon belts are used for securing vertical and horizontal reels, bales and packages. Each service provider and country lashing instructions must be always followed.

As general principle

- the load should be as low as possible.
- The weight of the load must be evenly distributed in gross- and lengthwise.
- Possible remaining empty space must be left in the middle

In the lashing and securing of horizontal reels chocks should be used to prevent lower reels in the middle of the wagon from moving. National laws and cargo securing rules must be always followed.

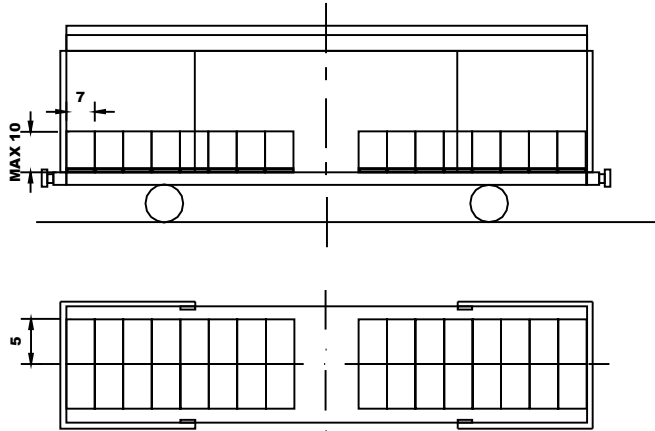
In following example cases (source VR Transpoint) some typical load patterns are introduced, each case specific ratio tables can be founded in **attachment 1**.

4. Transports

Case 1. Paper pallets on one layer

In case the load longitudinal width/height ratio is at least 7/10 and the gross wide ratio at least 5/10 there is no need for additional cargo securing.

Otherwise, the load must be tied with wagon straps or otherwise blocked that pallets cannot collapse.

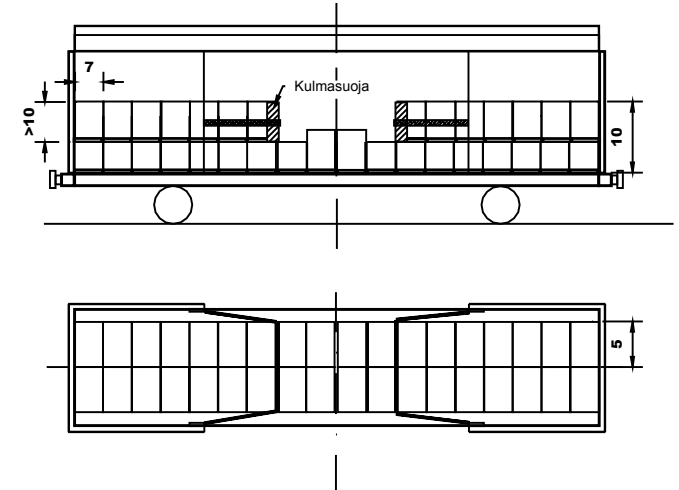
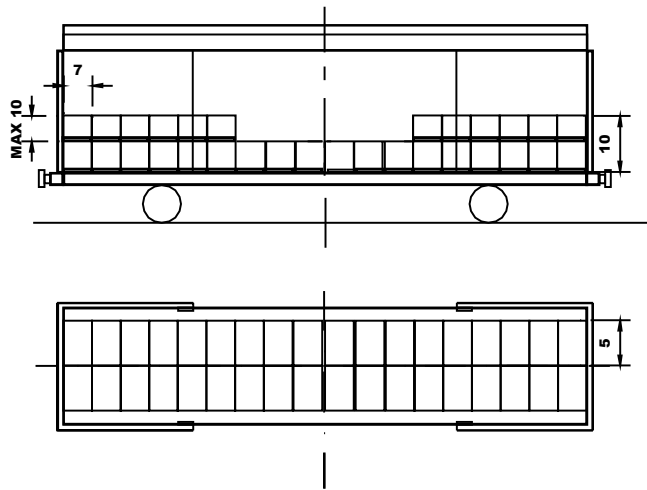


Case 2. Paper pallets on 2 layers

The bottom layer must be full and complete without empty space. If the upper layer remains uncomplete and the upper layer pallet width/height ratio is min 7/10 the load must be secured with belts. Cargo securing is also required if in a single stack the gross wide width/height ratio is less than 5/10.

Use the corner protectors to avoid product damages.

In case of paper pallet loading the use of railcars with movable walls is highly recommended.



Case 3. Paper reels on 1 layer with more than 50 cm empty space remaining.

If the reel diameter/height ratio is min 7/10 there is no need for additional cargo securing. Otherwise load securing is compulsory to avoid collapsing.

Case 4. Paper reels on 1 layer, without empty space.

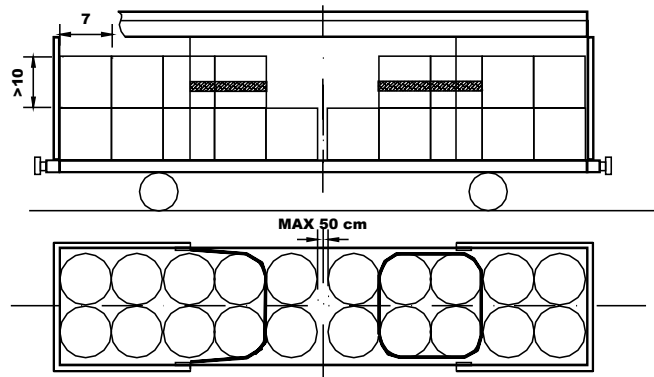
If the load is lengthwise without cap (less than 50 cm) and the reel dia/height ratio in min 5/10 there is no need for additional cargo securing. Otherwise load securing is compulsory to avoid collapsing.

4. Transports

Case 5. Paper reels on multiple layers, over 50 cm empty space in upper layer.

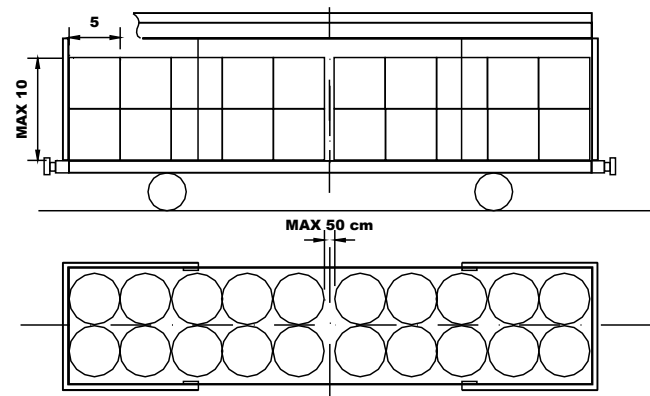
Reels should be stacked with same diameter reels. Upper layer reels should never be higher than in lower layers. Lower layer reels should be loaded without empty space in the middle.

If upper reels empty space in the middle is more than 50 cm, upper reels diameter/height ratio should be 7/10 that reels can be without load securing.



Case 6. Paper reels on multiple layers, without empty space.

In case of reel stacks are supported by each other's on length- and gross wise and individual reels stack diameter/ total height ratio is min 5/10 there is no need for cargo securing.



Case 7. Paper reels loaded in horizontally/ cannon

This instruction is concerning over 3800 mm width jumbo/superjumbo reels loading in laying position. The reels must be loaded max two side by side and always in cannon position.

Special steel wedges (two pairs) must be used with pair of reels and the wedges must be attached to each other's under the reels by lashing belts. The belts must be tightened on top min 100 Nm. The recommended distance from the wedge and the reel edge is 20–50 cm (max).



Picture 19. Superjumbo reels loaded in railway wagon

4.4. Sea transportation

4.4.1. General requirements for vessel

The vessel holds must be inspected and accepted by UPM representative before commencement first UPM product loading operation. Following general inspection criteria can be used for ro-ro and lo-lo vessel holds as well.

- max. loading capacity (tons/square metre) of each cargo deck
- dimensions (width, height) of holds
- decks must be smooth without dents or protruding objects
- welding joints must be smooth (max. height difference 2 millimetres)
- bolts etc. of manhole hatches must be below deck level
- boards and timber used for wall ceilings of the cargo spaces must be intact and sound for sto-ro loading (surface must be smooth and without protrusion)
- cargo space must be dry and clean and suitable for loading without residues of previous cargoes and other unsuitable substances
- hold ventilation and air-drying units must be in good working order
- lightning of holds must be proper



- also ro-ro vessel cargo handling equipment must be inspected, lifts, ramps, cranes and lifting frames.
- additionally, with lo-lo vessels hatch covers and rubber sealing must be inspected and verified prior loading

Cargo spaces and hatch covers must be fully weather tight. Weather tightness defined by ICLL 1966: "Weather

tight means that in any sea conditions water will not penetrate into the ship". Until first shipment lo-lo vessel hatch cover tightness certificate or other inspection document is required. Also hatch cover tightness test is recommended. Recommended methods for hatch cover water tightness testing are ultrasound test water and hose test.

4.4.2. Paper reel sto-ro loading

Safety first. Unnecessary human stay must be avoided in cargo holds during the loading operations. When entering cargo holds always report to vessel crew and stevedore's supervisor. Never go in blind spots of forklift drivers and always ensure visual contact.

StoRo (Stowable Roro) meaning that the cargo arrives to vessel hold on roll trailer etc. being stowed to vessel hold by using forklifts. Stevedoring company carries out loading in accordance with the loading plan under the supervision of the vessel's personnel. The maximum load capacity, tonnes per square metre, of the cargo decks should not be exceeded.

Handling points to concern:

Usually paper reel stowage planning is based on weight, tons per square meter. With this method vessel crew informs required weight per one square meter and stevedores will follow this. Also reel stack max height should take in consider avoiding contact to hold structures.

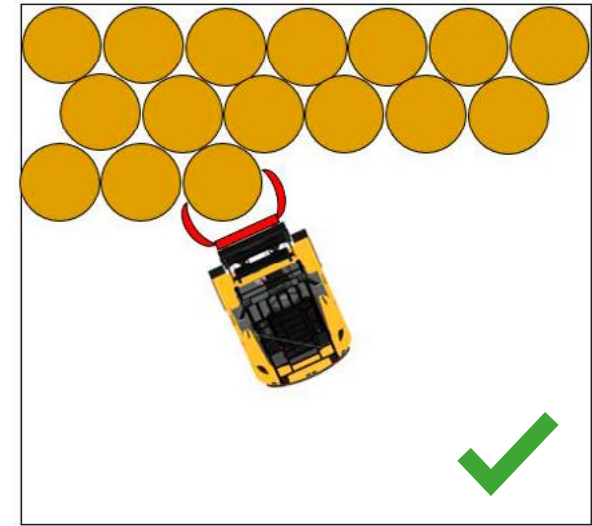
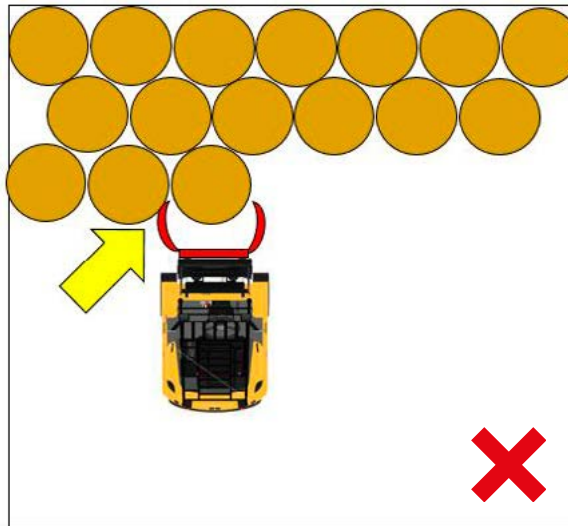
Reel overlapping must be avoided due to high risk of edge damage during loading and unloading. **If there are reels with different diameters in the same pile or tower, the larger diameter reels must be loaded on the top to prevent smaller diameter reels moving.** When loading different reel widths together it is recommended to mix different widths as per below example to prevent edge damages.

- Approach angle to storo reels, avoid straight driving to the reels to avoid damages to the next reel in stow. Certain angle must be applied as illustrated in picture 11.
- When using so called RA clamps (each arm equipped with own hydraulic cylinder) also length differences in clamp arms should be noted during stowage to prevent damages during stowage (picture 20.). Secondly unloading operations should be started in easiest access point in other words never violently in middle of tight stow (picture 21).

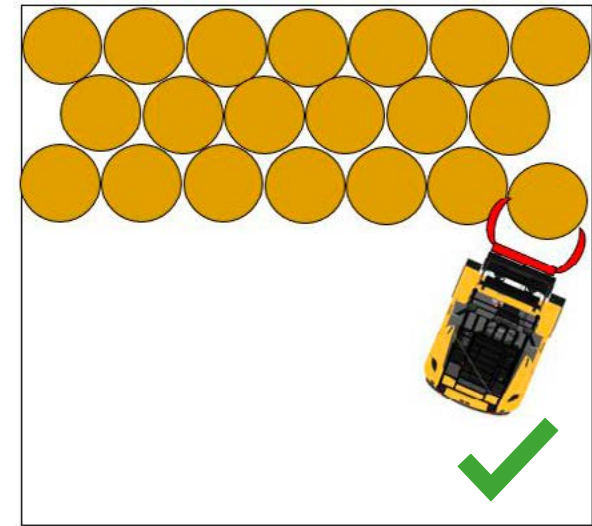
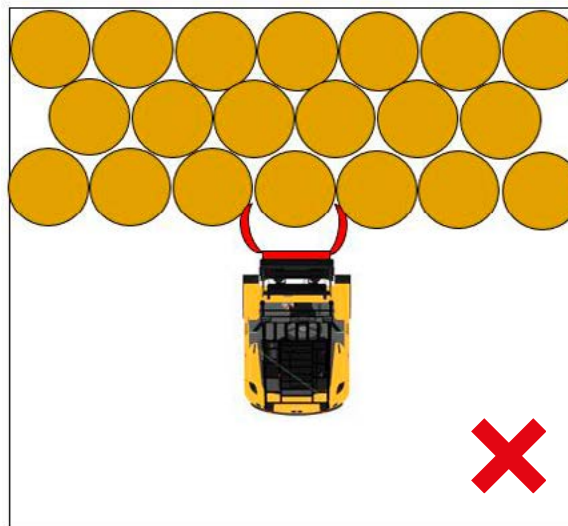
If damages occur during loading UPM general cargo damage reporting instructions should be followed.

4. Transports

In case of utilizing full height of hold cargo cargo contact to hold roof construction must be avoided and ensure proper discharge operations as well.



Picture 20. Correct approach angle to stowage reels in hold.

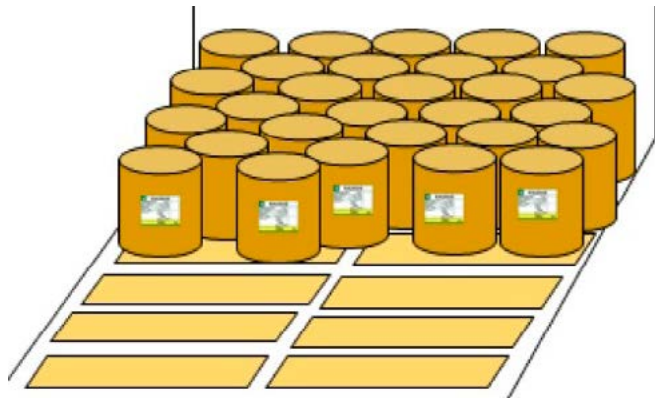


Picture 21. Discharge operation starting point

4. Transports

Special instruction for winter season

During winter season and wet conditions protective paper and/or plywood walking boards must be used under the reels. When using plywood walking boards small max. five centimeters gap should be remaining between the sheets to prevent sheets overlapping. It is recommended to saw edges off from the plywood sheets to avoid sheets overlapping, reel end and edge damages. All sheets must be the same thickness, 18 millimeters is recommended.



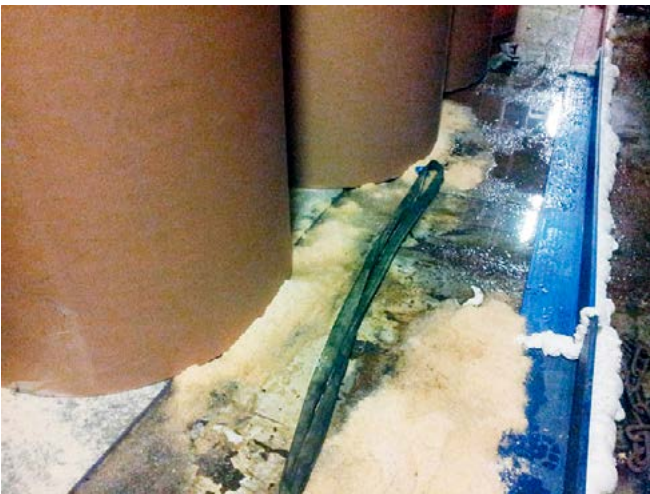
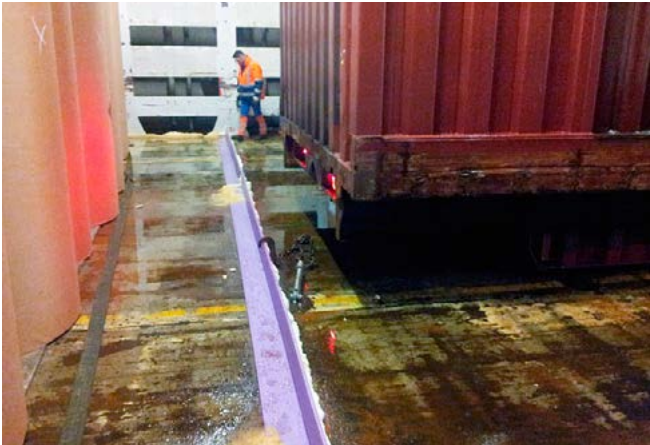
During winter season ro-ro units loading on same deck with paper reels must be avoided. If this cannot be avoided trailers and ro-ro units must be loaded as far (min 2 meters) as possible from the sto-ro reels to avoid melting water spilling on paper cargo from trailer roof. **Anyway, urethane or sawdust barrier against melting water must be always constructed in front of reels.**

Check list for loading operations during winter conditions:

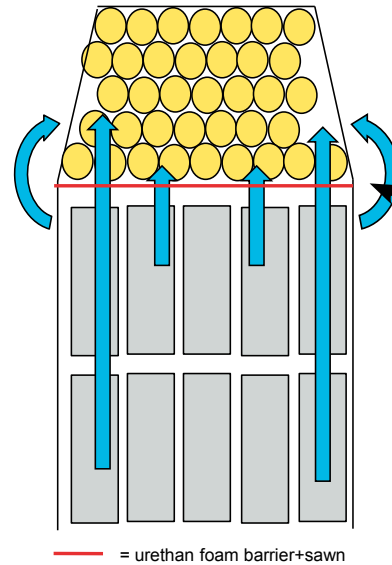
Prior to loading	During storo loading	After loading & during seavoyage	Prior & during discharge
1. Clean snow&ice on top of units/trailers! <input type="checkbox"/>	1. Dry/sweep deck before putting paper <input type="checkbox"/>	1. Leave safe distance between reels and units <input type="checkbox"/>	1. Remove water on top/ between lower hold flap prior to opening it <input type="checkbox"/>
2. Seal side bulkheads lower parts (in order to block each water route) <input type="checkbox"/>	2. Use softboards on stern ramp in order to absorb moisture <input type="checkbox"/>	2. Use urethan barrier (+timber etc) and sawn dust after last storo reels! <input type="checkbox"/>	2. Do not remove urethan barrier until all remaining melting water have been removed from decks <input type="checkbox"/>
3. Empty/dry water from lashing "pot's" on deck <input type="checkbox"/>	3. Use sawn dust/urethan barrier before and after paper reels in storo as timber packages can contain snow also <input type="checkbox"/>	3. Use softboards under the first ro-ro units after the reels in order to absorb melting ice/water <input type="checkbox"/>	3. Load storo reels directly on cassettes/mafis in order to avoid unnecessary landing on deck <input type="checkbox"/>
4. Use protective paper (double) with PE under the reels <input type="checkbox"/>	4. Ensure correct hold ventilation&air drywing <input type="checkbox"/>		
5. Use walking boards under the reels <input type="checkbox"/>	5. Monitor regularly melting situation in holds <input type="checkbox"/>		

4. Transports

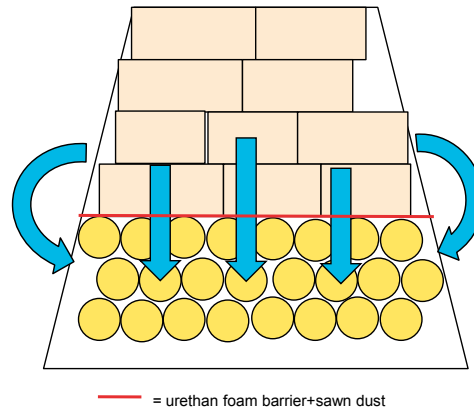
Icy & snowy roro-units/trailer loaded next to paper reels:



Picture 22. Examples of melting water will go directly and/or via side walls open lower part to between unprotected reels.



Picture 23. Icy and/or snowy timber packages loaded next to paper reels:



Observe the weather conditions during loading; do not permit the reels and pallets to remain in the rain, sleet or snow. The cargo to be loaded to the vessel hold is carried

either by rolling units (trailers or mafias) or by clamp trucks direct from the warehouses. Direct supply will reduce the number of handlings and the risk of damages.

4. Transports

4.4.2.1. Sto-ro reels securing and lashing

As a standing order vessel crew is responsible and they should instruct and supervise sto-ro cargo lashing. Proper quantity of airbags, lashing chains, speed lashes, belts etc. must be available on board. Use of cargo securing blocks, good overall stowage and securing of sto-ro cargo are the key things.

Paper pallets should be loaded as low as possible anyway three high is maximum height by using protective plywood between the layers. Also vertical protective plywood sheet must be used between palletized cargo and paper reels.

Airbags should be used if the gaps between pallets are less than 20 centimeters and timber dunnage should be used if the gaps between pallets are bigger than 20 centimeters.

4.4.3. Ro-Ro cargo

Ro-ro (Roll On-Roll Off) meaning cargo will be loaded and lashed on top cassette or roll trailer. The cargo will stay on unit all the way during sea voyage. This method decreases handling as cargo is loaded on unit directly from pre-transportation unit and unloaded directly to delivery transit equipment.



Picture 24. Proper cargo securing in vessel hold.



4. Transports

4.4.3.1. Equipment's

Cassettes and roll trailers (mafi)

Different sizes of units are available but normally standard 20', 30' and 40' units are mostly used. The capacity and condition of the roll trailers or cassettes must be checked before loading commences. The deck of the roll trailers or cassettes must be clean, dry, free of protruding objects such as bolt heads, smooth, free of oil stains and debris and no holes.

The wheels and axels of the roll trailer must be inspected. The lashing points of the roll trailer or cassette must be in good condition.

During winter and wet conditions protective paper must be used under the cargo on ro-ro units. Max. payload or safe working load should not be never exceeded.

Semitrailers

Also semitrailers must be accepted and inspected for sea transportation meaning that proper number of suitable lashing rings etc. should be available. Never accept any trailers on board without proper lashing possibilities (trailers are not allowed to lash to vessel deck by using hook etc. directly to trailer frame etc.).



Mafi/roll trailer (12x2,5x0,8 meters, tare 8 tons, safe working load 60–100 tons)



Cassette (12x2,6x0,9 meters, tare 5,5 tons, safe working load 60–80 tons)

4. Transports

4.4.3.2. Ro-Ro unit loading

When loading ro-ro units, it is important that the cargo loaded on the units does not overlap the roll trailer or cassette edges. Warning stickers must be used if the load exceeds the trailer width. The payload of the roll trailer or cassette must not be exceeded. The vessel cargo handling equipment (lifts and ramps) capacity must be considered when stowing the roll trailers or cassettes. The maximum kg/square meter limitation of the deck must be considered accordingly.

Unitizing of packages must be done that way lashing equipment (profiles and chains) are not damaging the cargo.

Paper reels

UPM has ro-ro limits for each traffic areas and destinations (if more info needed please contact traffic.operations@upm.com). The height of the vessel's hold must be considered in stowing the roll trailers or cassettes. For stability reasons general limit 3,5 meters height (11,5 foot) of cargo should not be exceeded (exception: Super Jumbo reels). Below some general rules/examples:

- Reels are always stowed in standing position. As general rule reels with a diameter of less than 90 centimeters (35,5 inches) should be unitized on ro-ro or into containers.
- Small reels with diameters of less than 800 millimeters (31,5 inches) are loaded in soldier stack, leaving a gap in the center of the load to enable horizontal lashing in two blocks. Lashings are identical on both sides.

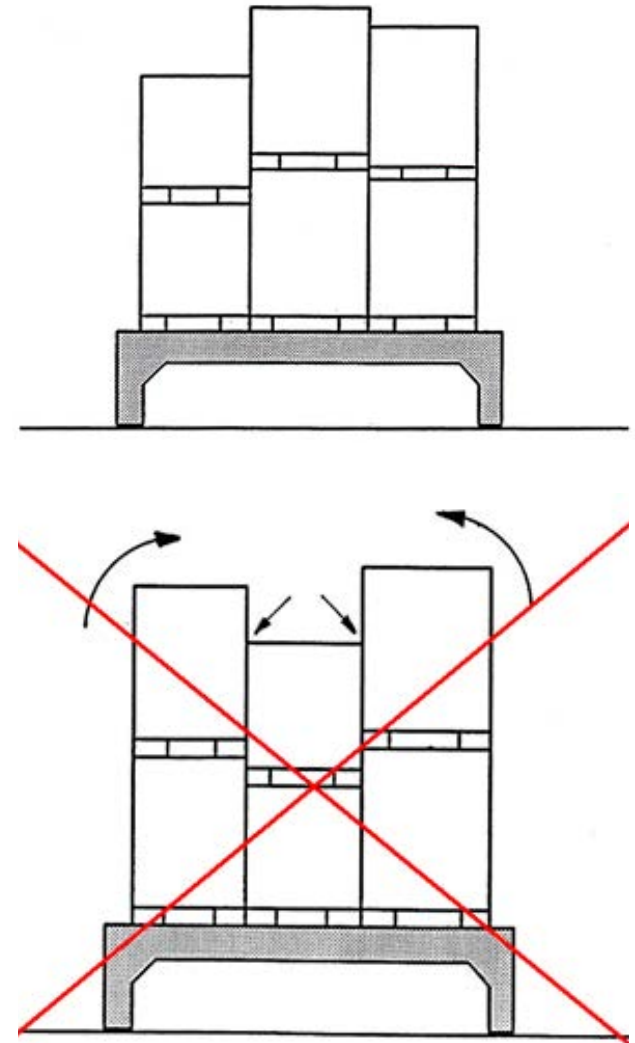
- Reels with diameters of less than 1200 millimeters (47 inches) are loaded soldier stacks in contact with each other. The lashings are identical on both sides.
- Paper reels with diameters greater than 1250 millimeters (49 inches) and less than 1700 millimeters (67 inches) are loaded nesting on the roll trailer or cassette to achieve the best possible payload.
- Paper reels with diameter > 1700 millimeters (67 inches) are loaded in the center of the roll trailer or cassette. Heavy jumbo reels should not be loaded in a row on the center line of the roll trailer or cassette, as they would start swinging when the vessel is rolling.
- In case the lashing chains tighteners are positioned in top the cargo, additional plywood sheets must be used to protect the reel heads.

Paper pallets

Paper pallets must be loaded in two pallets stacks. When loading paper pallets in more than one layer, plywood boards must be used in between the layers to prevent damages and to stabilize the load.

When loading pallets of different sizes, they must always be stowed on the platform, so that the highest pile is along the center of the unit.

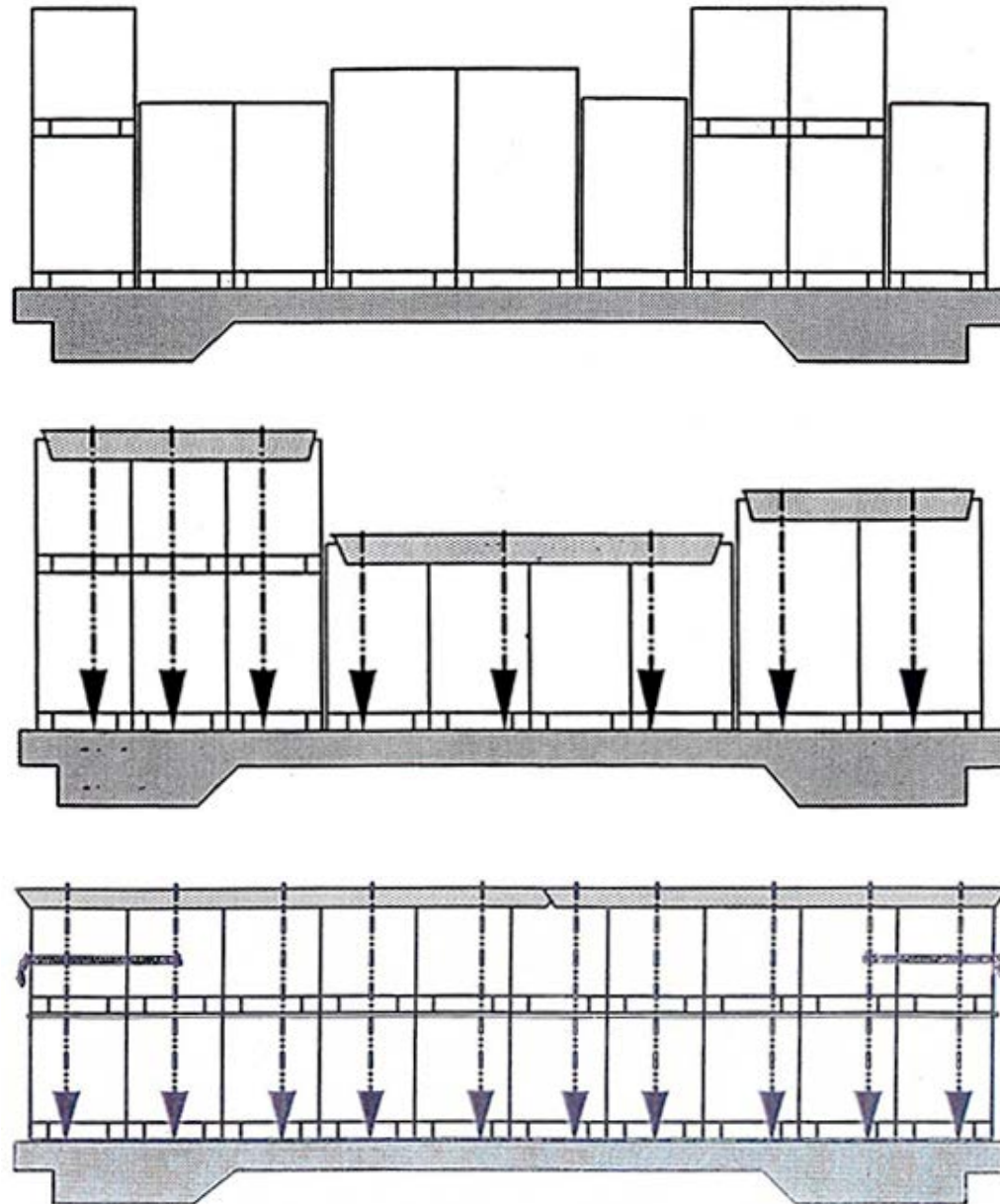
Otherwise the lashings will damage the pallets on the sides, when tightened over the load. Following example are from Transfennica roro lashing instructions.



4. Transports

Different sizes of pallets are difficult to secure properly, if the unitizing is not carried out the right way. Always try to make blocks on the platform to ease the load securing. Also longer corner profiles can be used to achieve better securing.

When lashing copy paper pallets, there should be one chain per pile to achieve appropriated securing.



4. Transports

4.4.3.3. Ro-Ro cargo securing

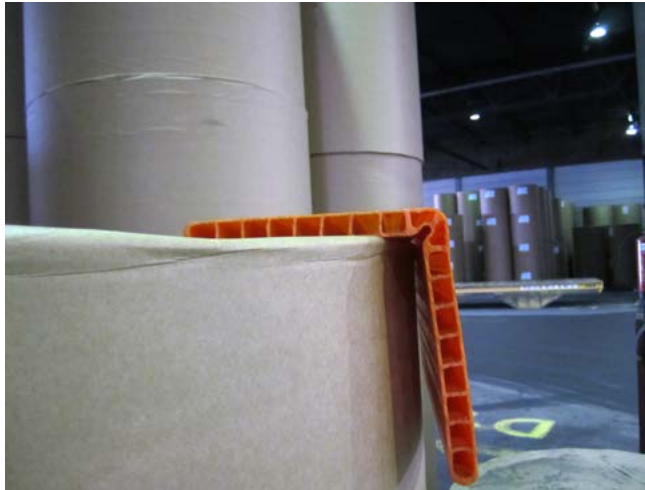
The cargo must be secured and lashed on ro-ro units so that it does not move during the sea voyage. Lashing of units must be done according each shipping line and vessels cargo securing manuals. Corner protectors and plywood boards must be always used to prevent cargo damages. Following type of equipment can use for UPM products lashing:



Allowed hook type



Chain and tension lever



Plastic corner profile, short



Plastic corner profile, long

4. Transports

Also 20' or 40' lashing tarpaulins are suitable mainly for paper reels, also some pallet cargo can be lashed with tarpaulins. When using tarpaulins for paper reels it's important to ensure that reel upper edges won't be damaged during tightening of slings.



Profiles used with paper reels



Profiles used with paper reels

Whenever needed also plywood sheets or pieces must be used for securing the cargo during lashing. For example, piece of plywood must be used between paper reel and the lashings on top reel to prevent top damages.



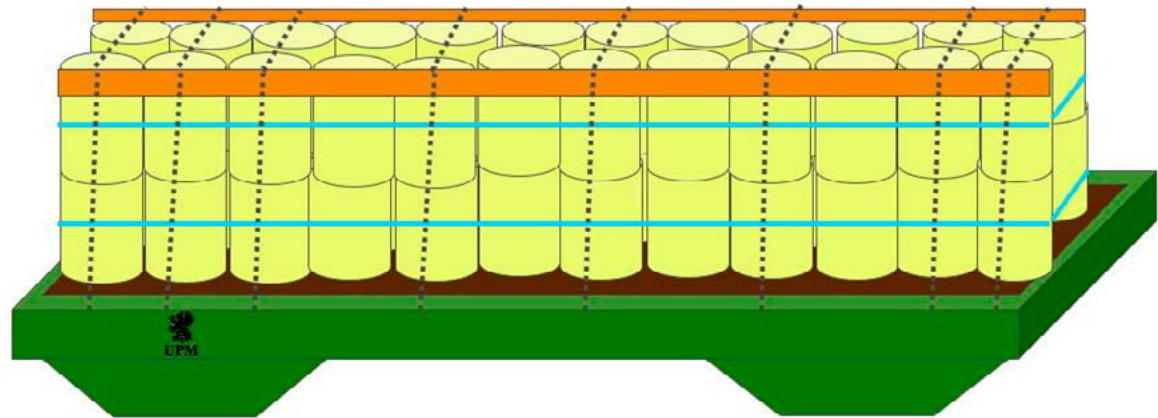
4. Transports

Case Paper reels

Please note following case examples are only recommendations and actual lashing requirements must be always followed by the carrier company and national laws/rules.

Reels max two high, horizontal belts to both layers.

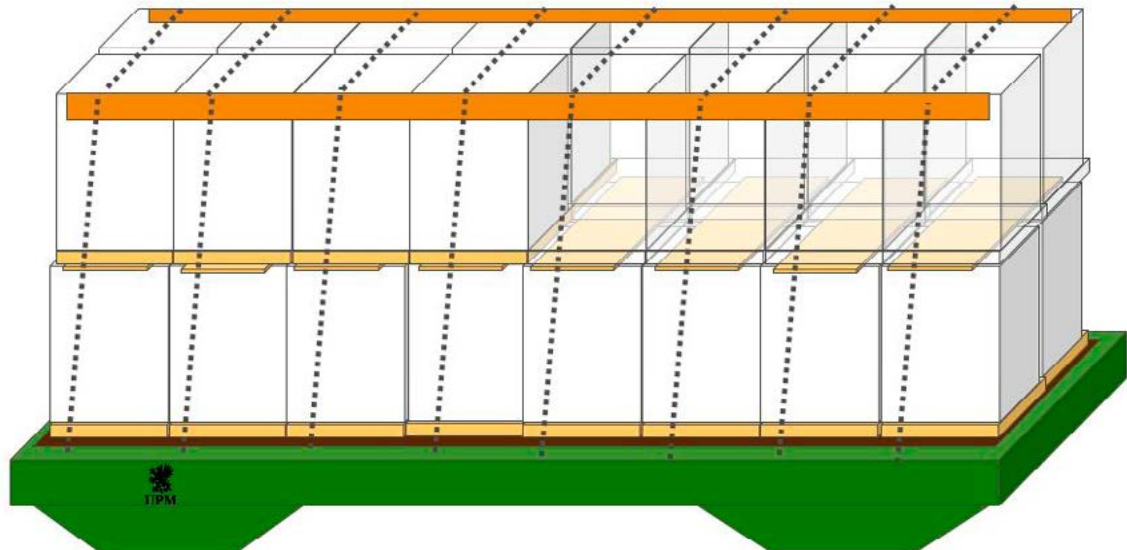
- Friction mat between bottom layer and
- If reel diameter in 0,8 m or below
 - Cargo must be divided in to two blocks and both blocks secured with horizontal belts.
 - Chain on top every second reel tiers, anyway MIN 8 chains per
- If reel diameter is $>0,8$ m, chain must be placed on top every reel tier, anyway min 8 chains/unit



Case Paper pallets

Loading max on two layers

- Lashing with long profiles + one chain per pile
- Use of stabilizing plywood sheets between layers is compulsory



4.5. Containers

To optimize container capacity and minimize lashing and securing costs, the following points should be considered:

Total weight

Maximum weight limitations in the whole delivery chain and the container carrying capacity must not be exceeded. The limitations of the maximum permitted container payload or gross weight, including special customer limitations and requirements in the country or port of destination, must be considered. The containers' own maximum weight limit can be found on the CSC-label on the container door. Persons undertaking load planning for UPM should ensure that the legal maximum weight per transportation unit is not exceeded.

Maximum payload

The maximum number of units that can be loaded in a container depends on the loading pattern. A suitable loading pattern should be used to achieve the maximum payload.

Lashing

The loading of the container should be planned effectively and safely so that the minimum amount of lashing is needed for safe cargo securing.

Weight distribution

The horizontal distribution of weight must be as even as possible. The vertical center of gravity must be in the middle. This can be achieved by placing cargo units symmetrically. Heavy reels must be loaded to both ends of container instead of in the center.

4.5.1. Inspection

Each container must be inspected prior to release and stuffing. UPM requires inspection criteria based on **IICL5 standard** (in case nothing else agreed). Following items must be inspected and if needed container must be rejected and repaired. If container is only partially repaired after the first inspection, it should not be accepted until all requirements are filled.

Below main inspection items listed:

General condition

The container and construction must be strong enough to carry the loaded cargo. The lifting points must be checked and must be in good condition.

Water tightness

The container must be completely watertight. Water tightness is easily checked by going inside the container and closing the door. Even the smallest beam of light indicates that the container is not completely water tight. Moist or water inside is not allowed.

Floor

No nails, bolt heads or similar protruding from the floor. Maximum allowed height difference between floor panels, threshold plate or hat section center spacer is 2 millimeters. The floor must be strong enough to allow driving on with a clamp or a fork lift truck.

Cleanliness

The floor and corrugations must be clean and free of any transferrable stains (oil), dirt, dust etc. which might contaminate product. The container must be clean and free of debris and dust which can damage the cargo.

Walls and corrugations

Sharp, cutting edges and deformation such as bend, dent, or bow is not acceptable if it reduces the internal dimensions in any direction, or the shape of the deformation increases the risk of cargo damage.

Doors and closing mechanism

The doors of the container should be in good condition and able to be closed and locked easily. The opening and closing mechanism must be in good working order. The door seals must be in good condition to prevent leaking.

Odor

The container should be odorless. Sometimes previous loads leave a strong odor in the container which can easily adhere to paper.

Authorized Economic Operator (AEO) requirements

- understand the importance of physical inspection of containers and trucks
 - inspection includes hidden locker and compartment check
- understand monitoring of goods in warehouse and in mill transport.
- seal procedures
 - working instructions of sealing procedures (must exist)
 - storage of seals
 - reliable sealing
 - correct seal processing (seal number correlates with container or truck)
 - correct documentation of seals

4. Transports

4.5.2. Stuffing

Different type of protection materials can be used during containerization. The use of materials depends of container type, market and customer needs. Typically, container has front bottom rail and sometimes also side rails which are not in level with floor panels. In this case these rails must be protected with hardboard slides to prevent paper reel edge damages.

Max 6,5 millimeters thick **hardboard** slices can be used for protection. Protection is placed on all sides as shown in the picture. On the bottom it is placed parallel with the wall. The same protection can be used in front and around the sides when needed.

Disposable rising blocks or **pallet feet's** can be used to prevent edge damages in front bottom rail. These blocks are suitable also for "step down" securing purposes. Securing is done by lifting the adjacent reel or pallet higher by placing these blocks underneath it. The adjacent reel or pallet secures the top layer. Step-down securing can take place in both ends of the container or every other reel or pallet can be lifted. The container must always maintain balance. At least three blocks should be used under the reel to remain stability.



The stepping (reel height difference) should be minimum 15 centimeters. Step-down securing only is not sufficient, and belts must be used to keep the cargo in place.

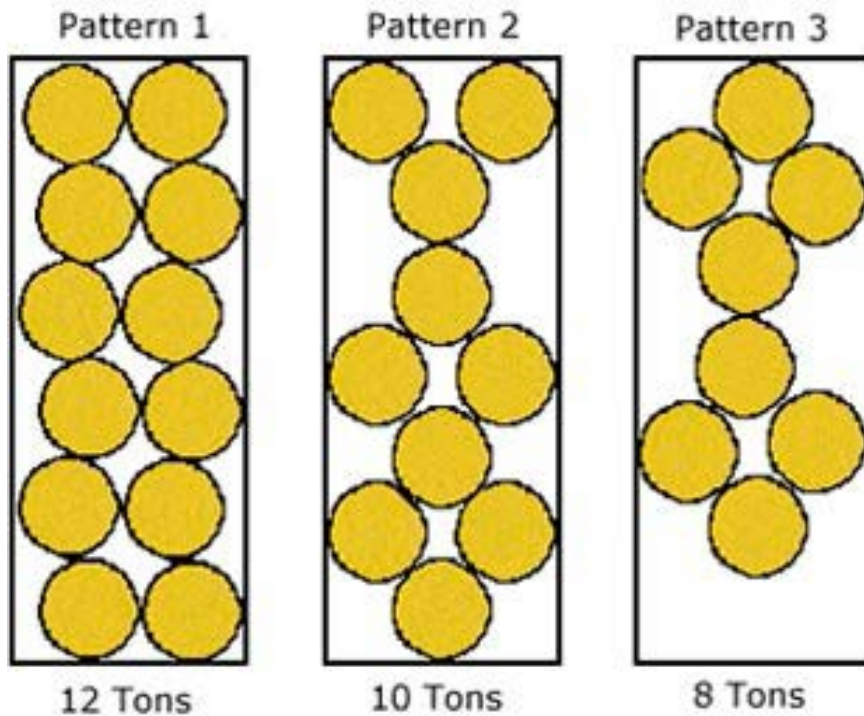
Also, **timber** can be used for securing inside container but **ISPM-15** standard requirements per destination country must be confirmed. Timber used underneath the lifted reel or pallet should be at least 100 millimeters in width, and at least three planks should be used to avoid reel end damages. The timber must not overlap the reel diameter otherwise damage is caused to the adjacent reels.



Hardboard used as a protection material in containers

Basic loading patterns for paper reels

The effect of the loading pattern to the container payload is shown in the following diagrams. Reels in picture are with a diameter of 100 centimeters, weight of 1000 kilograms each, loaded in a single layer in a 20' container.



If the receiver does not have a clamp truck, the reels may have to be loaded horizontally. Unloading takes place by rolling the reels out, and this should be considered when the container is loaded. The width of the horizontally loaded reels must be smaller than the width of the container doorway. A reasonable space must be left in between the reel end and the container wall/doorway. Some calculated examples of container intake per reel dimensions can be found in Downloads section: **Paper reel container capacities** (NOTE, intakes are only indicative).

Loading patterns for paper pallets

Minimize the empty space between pallets and container side walls. If a void space is left, it is preferable to split the space so that it is equal on both sides of the container. Some examples of typical intake can be seen in table below (NOTE, intake is only indicative).

If the space is less than 15 centimeters and either not required or cannot be filled, it should be equalized on both sides.

If a gap greater than 15 centimeters is left, the pallets must be loaded alongside the container walls. The empty space is then in the middle allowing access for securing. It is recommended to use airbags to fill the gap between pallets.

Size	Box layers	20'	40'
70 x 87	5	21	44
77 x 95	4	36	50
77 x 95	5	18	37
80 x 120	4	22	41
80 x 120	5	11	23
95 x 120	4	20	31
95 x 120	5	10	22

4.5.3. Securing and lashing

Securing can be done by lifting the adjacent reel or pallet higher by placing the "rising blocks" (see Stuffing section) underneath it. The adjacent reel or pallet secures the top layer. Step-down securing can take place in both ends of the container or every other reel or pallet can be lifted. The container must always maintain balance. At least three blocks should be used under the reel to remain stability.

Standing reels

Vertical belts are first attached to the cargo securing loops, after which a sufficient number of horizontal belts are used to keep the cargo in place. At least one horizontal belt for each layer of cargo must be used.

As example horizontal belts can be used as follows:

- one layer of reels => one belt
- two layer of reels => one belt around the top layer
- three layers of reels => two belts, around second and third layer.

Alternatively, if the reels are loaded tightly together, they can be secured with a horizontal loop belt. The belt is prevented from slipping down by a binding over the load or by taping the belt to the reels or by using a belt holder. The horizontal belt mainly prevents the reels from falling and sliding of the load must usually be prevented by securing the load to the side of the container.

When using lashing belts for a cargo of reels and the last 5–6 reels remain to be loaded, the belts should be placed in between the reels. To prevent the belts from falling, they should be taped to the reels and container walls. When reels are secured to the lashing points in a container, the belts should be fastened diagonally, across the doorway.

When tightening a disposable belt in the securing of a complete load, the buckle should be placed so that there are 30–40 centimeters of free belt remaining. This end should be bound around the locking device to prevent it from opening during transport.

Lashing belts must be prepared and lashed to the container's lashing points before loading the last reels.

Rolling reels

The risk that reels loaded in rolling position can move during transport is relatively high. The main principle of securing is to use chocks in every third row on top of which belts are extended over the load. The height of the chocks used must be at least 1/8 of the reel diameter.

A plank across the container, nailed on the floor, must be used to prevent the chock from moving during transport. If nailing is impossible, a wooden frame supported by the doorway corners, can be used.

The horizontal reels should be placed so that the empty space is left to both sides in turn. If the empty space in a row is more than a half of the reel width, the row must be secured.

Paper pallets

Horizontal belts are fastened to the container's fastening loops and every pallet layer is kept in place with horizontal belts. Corner profiles should be used between the belts and pallet edges.

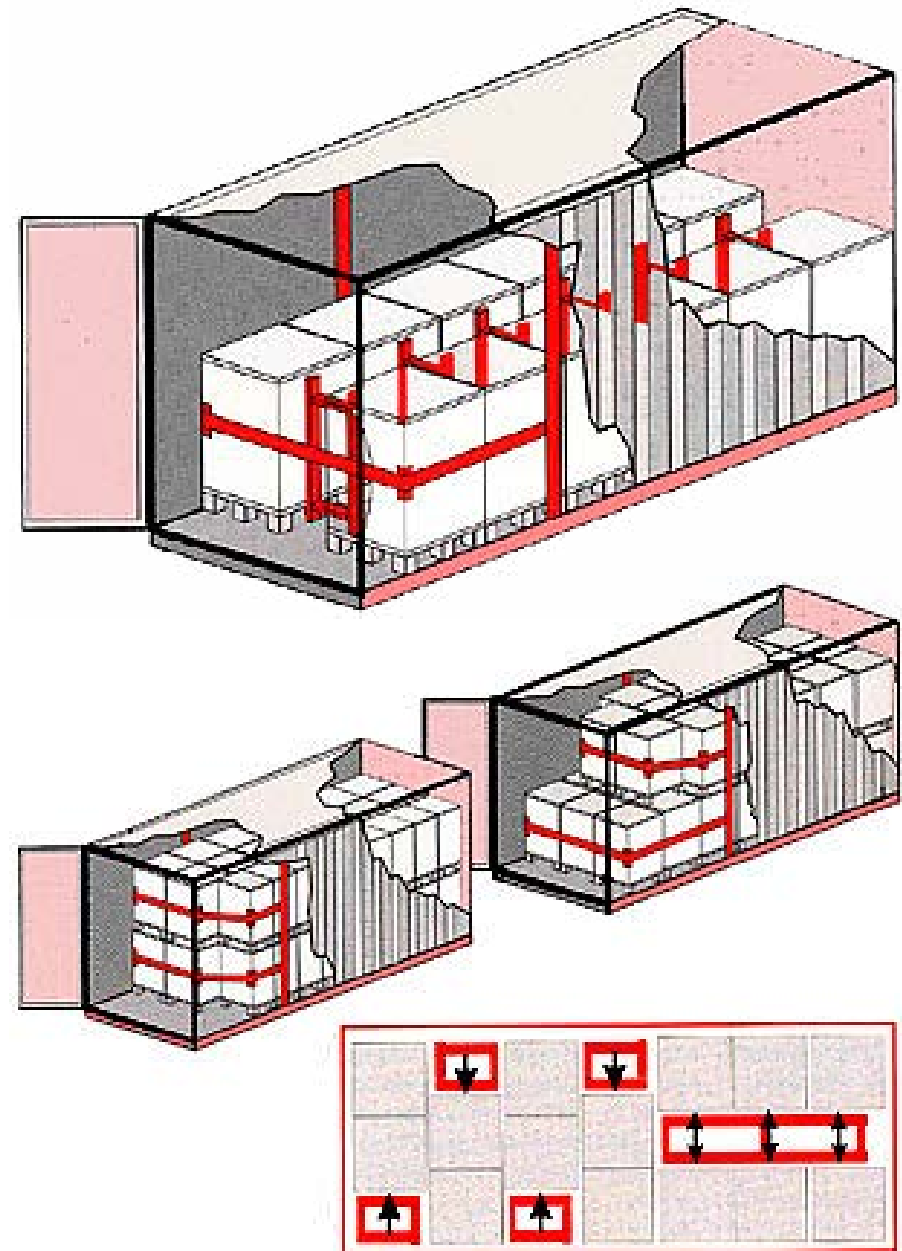
If the container has no securing loops, the load can be secured by binding the pallets at the rear end of the container in a large block. If there is a large empty space in the container, timber can also be used for securing the pallets. The empty space should be left in the middle of the container.

When pallets are loaded partly in one and partly in two layers, the uppermost layer should be lashed, if not with belts, then with timber or boards. Where the space between the pallets and container side walls is greater than 15 centimeters, the pallets must be secured.

When copy paper pallets are loaded two high, a board must be used in between the layers. The boards must be of the correct size i.e. slightly smaller than the pallets. Corner profiles must be used. The end of second layer must be independently secured by a horizontal belt. Loading patterns must be designed so that the load supports itself as much as possible.

When copy or **cut sized pallets are loaded into the containers always** fastened belts to the container's fastening loops and every pallet layer is kept in place with horizontal belts. Corner profiles should be used between the belts and pallet edges.

- Airbags should be used between pallets always if there is even a change to fit the airbags.
- 4 moistures absorb bags per 20' container, try to place bags on both sides.
- Corner profiles are compulsory to use to prevent damages



4. Transports



4. Transports



5. Damages

5.1. Damage types

Edge damage (code 01)



- A cut, imprint or tear in the edge of the reel
- Crimped edge, causing shockwaves in the reel
- **ACTION =>**
Send to evaluation

Wrapper damage (code 04)



- Typically, like side damage but only the wrapper is damaged
- If the damage area smaller than 2 hands wide
- **ACTION =>**
Patch with tapers ID

Side (belly) damage (code 02)



- Both the wrapper and the product are damaged on the side of the reel
- **ACTION =>**
Send to evaluation

Core damage (code 05)



- Crushed core or out of round
- **ACTION =>**
Sent to evaluation

End damage (code 03)



- A loose end cap or impact and tear or cut at the end of the reel
- **ACTION =>**
Send to evaluation

Water Damage (code 06)



- visible or hidden water damage
- **ACTION =>** reel must be opened and inspected

5.2. Reporting

Principle 1:

Each and every damaged (totally or partly) package is reported.

Principle 2:

Minimum data content of damage report is defined as follows. More detailed data exchange can be used for internal and external use as agreed with the parties.

Principle 3:

Data content is harmonized, and standardized codes are used as much as possible. Evaluation means that the products are taken to a separate place for further inspection and actions.

Notice of damage

Notice sent to UPM (contact person from mill, logistics or sales) and case by case basis to sea carrier, mill or loading port immediately after damage is detected.

Damage report

After the damage has been surveyed and/or refurbished a damage report is to be sent in the form of written report, text-file, data-file (excel sheet etc.) or EDI message containing detailed information about the damage.

Damage coding

Following damage coding must be used to harmonize damage handling process.

Notification Point	Type
Mill	Damage
Customer	
Logistics Planning	
Inland Warehouse	
Port of Discharging	
Port of Loading	
Cause	Type of damage
Foreign Item	01 Edge damage
Handling	02 Side (belly) damage
Lashing/Securing	03 End / top damage
Traffic Accident	04 Wrapper damage
Insufficient Wrapping	05 Core damage
Equipment	06 Deformation
Warehouse Facilities	07 Water damage
Fire	08 Dirt or contamination
Weather Conditions	09 Shortage or non-delivery
General Average	00 Spoiling, molding, rust or oxidation
Warehousing	

5.3. Rejection and reconditioning limits

UPM zero-defect principles and procedures for paper products are:

Damage	Action
Wrapper damaged, less than 2 hands wide	Taping
Wrapper damaged, more than 2 hands wide	Rewrapping
Reel damaged, less than 10 millimeters	Taping
Reel damaged, 10–40 millimeters	Refurbishment
Reel damaged, more than 40 millimeters	Rejection
Pallet damaged, less than 10 %	Refurbishment
Pallet damaged, more than 10 %	Rejection

Only official reel repairing tape sheets must be used and it must be equipped with taping company ID. Please note mentioned limits may be more rigid for certain agreed customers.

5.4. Cargo insurance

UPM cargo insurer is IF Ltd. Via below links can be found all useful information concerning insurance:

Delivery terms and insurance

Insurance form

Global surveyor contacts

General information

International transports

In international transports the notice of loss and the formal claim to the carrier should be made within the below time limits.

Applicable rules	Visible damage	Concealed damage	Claim will be time barred
1. Carriage by road CMR Convention	upon receipt of goods	7 days	1 year
2. Carriage by rail CMR Convention	upon receipt of goods	7 days	1 year
3. Carriage by sea Hague rules Hague - Visby rules US COGSA	upon receipt of goods	3 days	1 year
4. Carriage by air The Warsaw or Montreal Convention	upon receipt of goods	7 or 14 days	2 years

For national time limits, please contact the regional logistics organisation.

Additional information

Contacts

Logistics Cargo Care

UPM Logistics Cargo Care team is the expert in technical issues of logistics operations. Issues concerning damage prevention, claim handling and cargo care are main responsibilities of the team. The Team is specialized in planning and controlling of ship's stowage and organizing transportation safely and smoothly for the customer.


In addition, the team is regularly conducting on-site supervision in the harbours. This includes supervision and evaluation of the vessels and policies in the harbour, ensuring the high-level of transportation services.


Attachement 1.

Case 1. paper pallets on one layer with empty space remaining between and

Case 2. Paper pallets in two layers

L	W	H	ratio L/H	ratio W/H
70	87	130	0,54	0,67
77	95	130	0,59	0,73
80	120	130	0,62	0,92
95	120	130	0,73	0,92

 = Cargo securing compulsory


 = Cargo securing optional

Case 3. Paper reels in one layer with > 50 cm empty space remaining between.

dia min 0,7

dia	60	70	80	90	100	110	120	125	130	135	140	150	155	160	165	170	175	180	185	190	195	200	250	300	350	400
60	1,00	0,86	0,75	0,67	0,60	0,55	0,50	0,48	0,46	0,44	0,43	0,40	0,39	0,38	0,36	0,35	0,34	0,33	0,32	0,32	0,31	0,30	0,24	0,20	0,17	0,15
70	1,17	1,00	0,88	0,78	0,70	0,64	0,58	0,56	0,54	0,52	0,50	0,47	0,45	0,44	0,42	0,41	0,40	0,39	0,38	0,37	0,36	0,35	0,28	0,23	0,20	0,18
80	1,33	1,14	1,00	0,89	0,80	0,73	0,67	0,64	0,62	0,59	0,57	0,53	0,52	0,50	0,48	0,47	0,46	0,44	0,43	0,42	0,41	0,40	0,32	0,27	0,23	0,20
90	1,50	1,29	1,13	1,00	0,90	0,82	0,75	0,72	0,69	0,67	0,64	0,60	0,58	0,56	0,55	0,53	0,51	0,50	0,49	0,47	0,46	0,45	0,36	0,30	0,26	0,23
100	1,67	1,43	1,25	1,11	1,00	0,91	0,83	0,80	0,77	0,74	0,71	0,67	0,65	0,63	0,61	0,59	0,57	0,56	0,54	0,53	0,51	0,50	0,40	0,33	0,29	0,25
110	1,83	1,57	1,38	1,22	1,10	1,00	0,92	0,88	0,85	0,81	0,79	0,73	0,71	0,69	0,67	0,65	0,63	0,61	0,59	0,58	0,56	0,55	0,44	0,37	0,31	0,28
125	2,08	1,79	1,56	1,39	1,25	1,14	1,04	1,00	0,96	0,93	0,89	0,83	0,81	0,78	0,76	0,74	0,71	0,69	0,68	0,66	0,64	0,63	0,50	0,42	0,36	0,31
130	2,17	1,86	1,63	1,44	1,30	1,18	1,08	1,04	1,00	0,96	0,93	0,87	0,84	0,81	0,79	0,76	0,74	0,72	0,70	0,68	0,67	0,65	0,52	0,43	0,37	0,33
140	2,33	2,00	1,75	1,56	1,40	1,27	1,17	1,12	1,08	1,04	1,00	0,93	0,90	0,88	0,85	0,82	0,80	0,78	0,76	0,74	0,72	0,70	0,56	0,47	0,40	0,35
lev	60	70	80	90	100	110	120	125	130	135	140	150	155	160	165	170	175	180	185	190	195	200	250	300	350	400

 = Cargo securing compulsory

 = Cargo securing optional

Case 4. Paper reels in one layer without empty space remaining.

dia	min 0,5																											
60	1,00	0,86	0,75	0,67	0,60	0,55	0,50	0,48	0,46	0,44	0,43	0,40	0,39	0,38	0,36	0,35	0,34	0,33	0,32	0,32	0,31	0,30	0,24	0,20	0,17	0,15		
70	1,17	1,00	0,88	0,78	0,70	0,64	0,58	0,56	0,54	0,52	0,50	0,47	0,45	0,44	0,42	0,41	0,40	0,39	0,38	0,37	0,36	0,35	0,28	0,23	0,20	0,18		
80	1,33	1,14	1,00	0,89	0,80	0,73	0,67	0,64	0,62	0,59	0,57	0,53	0,52	0,50	0,48	0,47	0,46	0,44	0,43	0,42	0,41	0,40	0,32	0,27	0,23	0,20		
90	1,50	1,29	1,13	1,00	0,90	0,82	0,75	0,72	0,69	0,67	0,64	0,60	0,58	0,56	0,55	0,53	0,51	0,50	0,49	0,47	0,46	0,45	0,36	0,30	0,26	0,23		
100	1,67	1,43	1,25	1,11	1,00	0,91	0,83	0,80	0,77	0,74	0,71	0,67	0,65	0,63	0,61	0,59	0,57	0,56	0,54	0,53	0,51	0,50	0,40	0,33	0,29	0,25		
110	1,83	1,57	1,38	1,22	1,10	1,00	0,92	0,88	0,85	0,81	0,79	0,73	0,71	0,69	0,67	0,65	0,63	0,61	0,59	0,58	0,56	0,55	0,44	0,37	0,31	0,28		
125	2,08	1,79	1,56	1,39	1,25	1,14	1,04	1,00	0,96	0,93	0,89	0,83	0,81	0,78	0,76	0,74	0,71	0,69	0,68	0,66	0,64	0,63	0,50	0,42	0,36	0,31		
130	2,17	1,86	1,63	1,44	1,30	1,18	1,08	1,04	1,00	0,96	0,93	0,87	0,84	0,81	0,79	0,76	0,74	0,72	0,70	0,68	0,67	0,65	0,52	0,43	0,37	0,33		
140	2,33	2,00	1,75	1,56	1,40	1,27	1,17	1,12	1,08	1,04	1,00	0,93	0,90	0,88	0,85	0,82	0,80	0,78	0,76	0,74	0,72	0,70	0,56	0,47	0,40	0,35		
lev	60	70	80	90	100	110	120	125	130	135	140	150	155	160	165	170	175	180	185	190	195	200	250	300	350	400		

= Cargo securing compulsory

= Cargo securing optional

Case 5. Paper reels on \geq two layers with min 50 cm empty space remaining in upper layer.

dia	min 0,7																											
60	1,00	0,86	0,75	0,67	0,60	0,55	0,50	0,48	0,46	0,44	0,43	0,40	0,39	0,38	0,36	0,35	0,34	0,33	0,32	0,32	0,31	0,30	0,24	0,20	0,17	0,15		
70	1,17	1,00	0,88	0,78	0,70	0,64	0,58	0,56	0,54	0,52	0,50	0,47	0,45	0,44	0,42	0,41	0,40	0,39	0,38	0,37	0,36	0,35	0,28	0,23	0,20	0,18		
80	1,33	1,14	1,00	0,89	0,80	0,73	0,67	0,64	0,62	0,59	0,57	0,53	0,52	0,50	0,48	0,47	0,46	0,44	0,43	0,42	0,41	0,40	0,32	0,27	0,23	0,20		
90	1,50	1,29	1,13	1,00	0,90	0,82	0,75	0,72	0,69	0,67	0,64	0,60	0,58	0,56	0,55	0,53	0,51	0,50	0,49	0,47	0,46	0,45	0,36	0,30	0,26	0,23		
100	1,67	1,43	1,25	1,11	1,00	0,91	0,83	0,80	0,77	0,74	0,71	0,67	0,65	0,63	0,61	0,59	0,57	0,56	0,54	0,53	0,51	0,50	0,40	0,33	0,29	0,25		
110	1,83	1,57	1,38	1,22	1,10	1,00	0,92	0,88	0,85	0,81	0,79	0,73	0,71	0,69	0,67	0,65	0,63	0,61	0,59	0,58	0,56	0,55	0,44	0,37	0,31	0,28		
125	2,08	1,79	1,56	1,39	1,25	1,14	1,04	1,00	0,96	0,93	0,89	0,83	0,81	0,78	0,76	0,74	0,71	0,69	0,68	0,66	0,64	0,63	0,50	0,42	0,36	0,31		
130	2,17	1,86	1,63	1,44	1,30	1,18	1,08	1,04	1,00	0,96	0,93	0,87	0,84	0,81	0,79	0,76	0,74	0,72	0,70	0,68	0,67	0,65	0,52	0,43	0,37	0,33		
140	2,33	2,00	1,75	1,56	1,40	1,27	1,17	1,12	1,08	1,04	1,00	0,93	0,90	0,88	0,85	0,82	0,80	0,78	0,76	0,74	0,72	0,70	0,56	0,47	0,40	0,35		
lev	60	70	80	90	100	110	120	125	130	135	140	150	155	160	165	170	175	180	185	190	195	200	250	300	350	400		

= Cargo securing compulsory


= Cargo securing optional

Case 6. Paper reels \geq two layers without empty space between the layers.

dia min 0,5

60	1,00	0,86	0,75	0,67	0,60	0,55	0,50	0,48	0,46	0,44	0,43	0,40	0,39	0,38	0,36	0,35	0,34	0,33	0,32	0,32	0,31	0,30	0,24	0,20	0,17	0,15
70	1,17	1,00	0,88	0,78	0,70	0,64	0,58	0,56	0,54	0,52	0,50	0,47	0,45	0,44	0,42	0,41	0,40	0,39	0,38	0,37	0,36	0,35	0,28	0,23	0,20	0,18
80	1,33	1,14	1,00	0,89	0,80	0,73	0,67	0,64	0,62	0,59	0,57	0,53	0,52	0,50	0,48	0,47	0,46	0,44	0,43	0,42	0,41	0,40	0,32	0,27	0,23	0,20
90	1,50	1,29	1,13	1,00	0,90	0,82	0,75	0,72	0,69	0,67	0,64	0,60	0,58	0,56	0,55	0,53	0,51	0,50	0,49	0,47	0,46	0,45	0,36	0,30	0,26	0,23
100	1,67	1,43	1,25	1,11	1,00	0,91	0,83	0,80	0,77	0,74	0,71	0,67	0,65	0,63	0,61	0,59	0,57	0,56	0,54	0,53	0,51	0,50	0,40	0,33	0,29	0,25
110	1,83	1,57	1,38	1,22	1,10	1,00	0,92	0,88	0,85	0,81	0,79	0,73	0,71	0,69	0,67	0,65	0,63	0,61	0,59	0,58	0,56	0,55	0,44	0,37	0,31	0,28
125	2,08	1,79	1,56	1,39	1,25	1,14	1,04	1,00	0,96	0,93	0,89	0,83	0,81	0,78	0,76	0,74	0,71	0,69	0,68	0,66	0,64	0,63	0,50	0,42	0,36	0,31
130	2,17	1,86	1,63	1,44	1,30	1,18	1,08	1,04	1,00	0,96	0,93	0,87	0,84	0,81	0,79	0,76	0,74	0,72	0,70	0,68	0,67	0,65	0,52	0,43	0,37	0,33
140	2,33	2,00	1,75	1,56	1,40	1,27	1,17	1,12	1,08	1,04	1,00	0,93	0,90	0,88	0,85	0,82	0,80	0,78	0,76	0,74	0,72	0,70	0,56	0,47	0,40	0,35
lev	60	70	80	90	100	110	120	125	130	135	140	150	155	160	165	170	175	180	185	190	195	200	250	300	350	400

 = Cargo securing compulsory

 = Cargo securing optional

Attachement 2.

Edge protectors

The six different edge protectors below listed are mandatory for all paper reels transports with trailers in Europe. No other edge protectors will be accepted until further notice.

The list has been compiled by UPM drawing upon the knowledge built up over many years of cargo securing and damage prevention

UPM reserves the right to remove or to add further products!

Version 2. valid from
1st of April 2019"

MIKO PLAST AS

Product name:

Miko Edge Protector HD™

Art.no: KB-374-003

Contact details for commercial contacts:

Miko Plast AS

Østre Aker vei 22

N-0581 Oslo, Norway

Email : post@miko-plast.com

Phone : + 47 23 38 47 73

www.miko-plast.com



SPANSET GMBH & Co. KG

Product name: **KaSIPlus**

Art.no: D055985

Contact details for commercial contacts:

SpanSet GmbH & Co. KG

Attn.: Hans-Jürgen Weisbecker

Jülicher Str. 49-51

D-52531 Übach-Palenberg, Germany

Email : jweisbecker@spanset.de

Phone : + 49 (0)2451-4831-133

www.spanset.de



TRANSPORT-TECHNIK GÜNTHER

Product name:

Kantenschützer Papier Spezial 190x150x110 mm

Art.no: KS 1016

Contact details for commercial contacts:

Transport-Technik Günther GmbH & Co. KG

Derchinger Str. 125

86165 Augsburg, Germany

Email : info@transport-technik.de

Phone : + 49 821 543 788 40

www.transport-technik.de



TRANSPORT-TECHNIK GÜNTHER

Product name:

Kantenschützer KS PP 190x150x160 mm

Art.no: KS 1015

Contact details for commercial contacts:

Transport-Technik Günther GmbH & Co. KG

Derchinger Str. 125

86165 Augsburg, Germany

Email : info@transport-technik.de

Phone : + 49 821 543 788 40

www.transport-technik.de



SANUBE

Product name: **PaperMAX**

Art.no: 14216011

Contact details for commercial contacts:

SANUBE GmbH

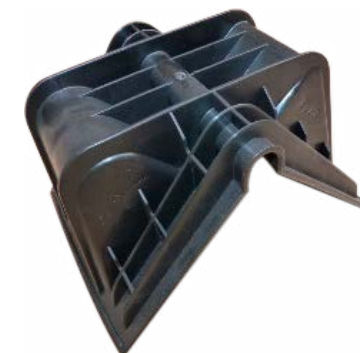
Hartwagen 12

4776 Diersbach, Austria

Email: office@sanube.at

Phone: +43.7766/ 20500

www.sanube.at



VELTKAMP

Product name:

Paper Roll Protector® – CPP60

Art.no: 6.045770

Contact details for commercial contacts:

Veltkamp B.V.

Witte Paal 28-30

1742 NL Schagen

P.O. Box 288

1740 AG Schagen

The Netherlands

Email : sales@veltkamp.pro

Phone : +31224274010

Fax : +31224274020

www.veltkamp.pro



Usage is not accepted anymore – as published by UPM since 04/2019!

TRANSPORT-TECHNIK GÜNTHER

Product name:

Kantenschützer KS ABS/ PC 185x145x150 mm

Art.no: KS 1000

Contact details for commercial contacts:

Transport-Technik Günther GmbH & Co. KG

Derchinger Str. 125

86165 Augsburg, Germany

Email: info@transport-technik.de

Phone: + 49 821 543 788 40

www.transport-technik.de



TRANSPORT-TECHNIK GÜNTHER

Product name:

Kantenschützer KS PP 185x145x150 mm

Art.no: KS 1005

Contact details for commercial contacts:

Transport-Technik Günther GmbH & Co. KG

Derchinger Str. 125

86165 Augsburg, Germany

Email: info@transport-technik.de

Phone: + 49 821 543 788 40

www.transport-technik.de





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