JYSK STANDARD

Packaging

Scope

This standard describes JYSK packaging requirements.

Change-log

Section	Changes
6	Updated the additional requirements to outdoor packaging

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1 General information

The aim of this standard is to clarify the requirements for the packaging and protection of JYSK goods. The packaging is necessary to protect the goods during transport, and in som cases to be the sales packing and information carrier for the product as well, and to promote the product inside. The packaging is considered as a part of the product and must be included in all prices during negotiations.

The packaging should be fit for purpose, and designed to exacting standards that fulfils the following criteria:

1. Provide adequate protection, preservation and containment of the product.
2. Provide convenience when handling by both our Distribution Staff and Customers alike.
3. Comply with *EU 94/62/ec*.
4. Comply with REACH requirements in *General Requirements*.
5. Be economical commensurate with meeting all the required functions of packaging.
6. Must meet the aesthetic requirements.
7. Vacuum lifting requirement.
8. Boxes must be stackable.
9. Size of packaging must be fitted to the size of the product inside.
10. Packaging materials must be separatable to mono materials and easily be able to be recycled.

Products supplied for JYSK must comply with relevant JYSK standards.

It is the responsibility of the supplier to ensure conformity. If divergent or conflicting requirements are found the supplier must immediately inform *JYSK C&Q*.

Note: The material specifications in this standard are minimum requirements, it is always the responsibility of the supplier to ensure that the packaging and product in combination can withstand the handling in the entire supply chain.

2 Approved packaging materials

Packaging materials and tape containing PVC or phthalates may not be used according to Directive *94/62/EC*.

The following requirements for packaging materials concerning heavy metals must be fulfilled:

- Must not contain intentionally added lead, mercury, cadmium, or hexavalent chromium, including their compounds.
- The concentration sum of incidental (contaminant) lead, mercury, cadmium, and hexavalent chromium must be less than 100 mg/kg.

Packaging materials must comply with *Table 1*. Other materials are not allowed.

Approved packaging materials	Additional requirements	UN/EU material code	Abbreviation	Material Symbol
Plastic-based materials	Plastic materials must consist of minimum 30% recycled materials and must be recyclable. PVC and EPS are not allowed.			
Polyethylene terephthalate (PET)		01	PET	
High-density polyethylene (PE-HD)		02	PE-HD	
Low-density polyethylene (PE-LD)		04	PE-LD	
Foamed polyethylene (PE)	No use of HCFC or CFC in foam-blowing.	04	PE-LD	
Polypropylene (PP)		05	PP	

Expanded polypropylene (EPP)	No use of HCFC or CFC in foam-blowing.	05	PP	
Polyester, Polyamide (PA), Polylactic acid (PLA)		07	O	
Paper based materials	Paper must not contain any kind of Bisphenols. Paper must be FSC certified valid from: 01.01.2022 New products 01.01.2025 Existing products			
Corrugated fibreboard (corrugated cardboard)	Totally Chlorine Free (TCF) paper or Elementary Chlorine Free (ECF).	20	PAP	
Non-corrugated fiber board (paperboard)	Totally Chlorine Free (TCF) paper or Elementary Chlorine Free (ECF). (>200g/m^2)	21	PAP	
Paper	Totally Chlorine Free (TCF) paper or Elementary Chlorine Free (ECF). (<200g/m^2)	22	PAP	
Metal/Sheet metals				
Carbon steel		40	FE	
Aluminium		41	ALU	
Wood-based materials				
Dry process fibreboard (MDF/HDF/LDF)		50	FOR	
Hardboard		50	FOR	
OSB		50	FOR	
Particleboard		50	FOR	
Solid wood	Requirement according to *ISPM 15*	50	FOR	
Adhesives				
Hot-melt adhesive				
PVA glue				
Starch-based glue				
Inks				
Printing inks	Ink must not contain mercury or lead. Solvent based inks are not allowed.			

Table 1 - Approved packaging materials

2.1 Marking with material symbols

Packaging materials must be marked with material symbol according to *Table 1* and Directive *97/129/ec*. The symbol indicates the material type used for the packaging parts and components. Material symbol must comply with *Table 2*.

Criteria	Requirements
Type of material	All packaging parts and components used in a consumer and brown box packaging except for tapes and materials used for strapping.
Symbols	According to *Table 1* The symbols are available as download from *JYSK 60010*.
Symbol height	Minimum size = 6 mm Maximum size = 20 mm **Note:** Material symbol and TRIMAN must have the same height, see symbol height requirements in *JYSK 6101*.
Color	Black
Location	The symbol must be clearly visible on all parts of the packaging.
Application	Marking must be applied by printing, embossing, stamping, or similar techniques. **Note:** If marking applied with stickers, the stickers must be of the same material as the packaging material.
Number of symbols	Every part of the sales packaging must have minimum one whole symbol. For plastic film and filler materials, it is allowed to print the symbol intermittent, due to manufacturing processes. Preferable minimum distance of 200 mm between the symbols.

Table 2 - Marking standard for materials

3 Quality requirements

Packaging materials must comply with the quality requirements described in this chapter.

3.1 General corrugated cardboard requirements

The supplier must ensure the cardboard meets the requirements in *Table 1* and minimum quality requirements in *3.1.1* and the requirements in *8* if not otherwise specified. The surface of the material must be even and without visible washboard effect.

3.1.1 Minimum requirements for corrugated cardboard

Corrugated cardboard quality is defined as the below specifications:

- Bending stiffness: Measures the bending stiffness of the board.
- Edgewise crush test (ECT): Measures the strength of the board sample as it is compressed at the edge.
- Bursting strength test (BST): Measures the puncture resistance of the board material.
- Flat crush test (FCT): If the FCT value are lower than any JYSK CB code, the cardboard will be very soft and not provide stability on the flat side of the cardboard.
- Cobb 60 test: If the value is not a part of the specification or above the specified range, the part gets very sensitive to moisture and does not have the specified strength after a short while.
- Flute: Defines the wave height.
- Thickness: Defined by the FLUTE type and paper thickness.

The JYSK codes must be met to ensure that the quality is acceptable.

JYSK Code	Bending Stiffness[1] ISO 5628	Edgewise crush test (ECT) ISO 3037	Bursting strength test (BST)[2] ISO 2759	Flat crush test (FCT) ISO 3035	Cobb 60 test, water absorptiveness[3] ISO 535		Flute	Thickness ISO 3034
	Min. average level	*Min. average level*	*Min. average level*	*Min. average level*	*Min. level*	*Max. level*	*Type*	
	Nm	*kN/m*	*kPa*	*kPa*	*g/m²*	*g/m²*		*mm*
JYSK CB 10	0,65	3,9	600	--	19	40	E	1,0-1,9
JYSK CB 20	0,84	4,5	850	--	19	40	E	1,0-1,9
JYSK CB 30	2,5	3,9	500	250	19	40	B	2,0-3,1
JYSK CB 40	2,8	4,3	700	280	19	40	B	2,0-3,1
JYSK CB 50	3,1	5,0	850	340	19	40	B	2,0-3,1
JYSK CB 60	5,1	4,2	700	200	19	40	C/A	3,2-3,9/4,0-4,8
JYSK CB 70	6,0	5,0	850	340	19	40	C/A	3,2-3,9/4,0-4,8
JYSK CB 80	7,4	5,6	1100	270	19	40	C/A	3,2-3,9/4,0-4,8
JYSK CB 90	8,4	6,5	1350	330	19	40	C/A	3,2-3,9/4,0-4,8
JYSK CB 100	16	7,4	950	--	19	40	Double Wall	--
JYSK CB 110	20	8,8	1250	--	19	40	Double Wall	--
JYSK CB 120	29	11	1600	--	19	40	Double Wall	--

Table 3 - Corrugated cardboard minimum requirements

[1] Bending stiffness = $\sqrt{MD \; x \; CD}$
(MD = Machine direction, CD = Cross direction). Average calculated from 20 measurements (10 on MD/CD).
[2] Bursting strength shall be tested on both in and outside. Average calculated from 20 measurements (10 on inside/outside).
[3] Cobb 60 shall be tested on both in- and outside, average is reported for each side individually.

3.2 Plastic bag requirements

Plastic bags with an opening perimeter ≥360 mm must comply with *JYSK 6101*.

Plastic bags must comply with the minimum requirements in *Table 4*. Special requirements for specific products are specified in the relevant product standards.

Material	Thickness (µm)	Haze (%)*	Colour
Polyethylene, low density (PE-LD) Polyethylene, high density (PE-HD) Polypropylene (PP)	≥40	≤8	No

Table 4 - Plastic bag material qualities

Note: *For master bags, haze is not applicable.

3.3 Inside filler

Inside filler must be used when needed to comply with the tests stated in *7*. Inside filler must comply with *Table 5* and must be tasted according to *3.3.1*.

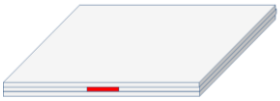
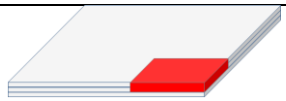
Type	Picture	Function	Compression strength (kN)	Cobb 60 (g/m²) ISO 535
IF 10		Fills an empty space in between parts but does not support any load.	≥ 0,5	≤ 40
IF 20		Shock-absorbing block (edge protection).	≥ 3	≤ 40
IF 30		Fills an empty space and supports eventual (outside or top) load.	≥ 3	≤ 40

Table 5 - Inside filler qualities

Note: The Cobb 60 value is only valid for paper-based materials.

3.3.1 Inside filler compression test

The test is only applicable for inside fillers that are ≥10 mm.

- **Frequency**

The test must be renewed within 12 months but must be carried out whenever there is a change of condition (e.g. change of packaging material supplier, failed test on material), new/changed/updated packaging solution (e.g. material, dimension, construction), or change in process parameters (e.g. new equipment).

- **Equipment**
  1. Five inside filler samples (300x300 mm).
  2. Compression testing machine (sample area min. 300x300 mm)
  3. Load applicator (100x100 mm), e.g. block made of wood.

- **Preparation**

The test samples must be pre-conditioned for 24 hours before testing in the following conditions:

1. Relative humidity: 50% ± 5%.
2. Temperature: 23 °C ± 2 °C.

Note: These conditions shall also prevail during the test.

- **Procedure**

1. Place test sample on a flat, hard, rigid, horizontal surface.
2. Place a rigid load applicator on the middle of the test sample, see *Figure 1*.
3. Apply a uniformly distributed load on the load applicator with a constant speed of 10 mm/min, and measure the maximum force that is reached before the deformation reaches 5 mm. The compression force shall include the weight of applicator.
4. Document the reached compression force for each sample.

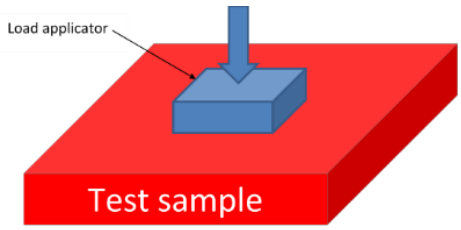


Figure 1 - Compression test setup

- **Assessment**

Asses according to *Table 5*.

3.4 Cut protection

Cut protection is a small piece of cardboard that can be used to protect the product against sharp objects when the box is opened. The cut protection can be reused cardboard.

Cut protection must be used if risk of damaging the product when using a sharp object to open the box i.e. if the box's flaps do not have an overlap.

Figure 2 - Example of cut protection

3.5 Adhesive tape

Adhesive tape must comply with *Table 6* and must be tested according to *3.5.1*.

Backing Material	Thickness (µm)	Width (mm)	Adhesive type	Working temperature	Colour
Polypropylene(PP)	≥ 40	50	Acrylic	-40°C to +80°C	Transparent

Table 6 - Adhesive tape quality

3.5.1 Adhesive tape capacity test

To ensure the quality of the adhesive tape, the tape must be tested according to the following method:

- **Frequency**

Each shipment of packaging must be tested upon receipt of the goods and the result documented.

Further a new test is required whenever there is a change of condition (e.g. change of packaging material supplier, failed test on material), new/changed/updated packaging solution (e.g. material, dimension, construction).

- **Environment**

The test must be fulfilled at the supplier.

- **Equipment**

1. Six pieces of adhesive tape (length min. 200 mm excl. open end piece)
2. Tape dispenser
3. Corrugated cardboard sheet, from the packaging line in actual quality

- **Procedure**

4. Attach six pieces of adhesive tape onto the outside of the corrugated cardboard sheet, leave an open end of the tape over the edge of the sheet
5. Wait 24 hours for the tape and the corrugated to be properly joined together
6. Grasp the open end of the tape and tear off the tape upwards
7. Measure the area of the surface on the tape that was attached on the corrugated where fibers were ripped off
8. Document the result for each tape

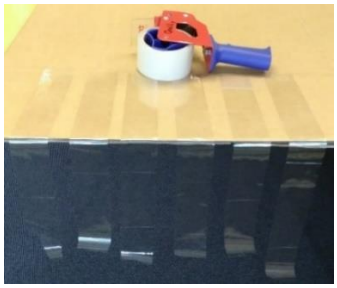


Figure 3 - Adhesive tape test

Figure 4 - Evaluation of tape test

- **Assessment**

The test has passed if more than 50% of the fibers was torn off the corrugated cardboard for each tape.

3.6 Wood packaging materials

To reduce the risk of introduction and/or spread of quarantine pests associated with wood packaging material (including dunnage) of coniferous and non- coniferous raw wood, in use in international trade, JYSK recommends to follow the *ISPM 15 guidelines*. The agent/trader must ensure that national rules are followed, and ensure that the packaging material is treated in the best possible way, to avoid quarantine pests associated with wood.

Treatment codes:

- DB: tree is debarked.
- HT: tree is heat treated.
- MB: tree is treated with methyl bromide.

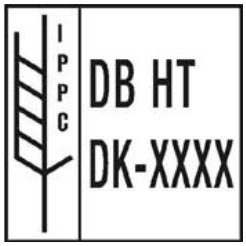


Figure 6 - Example of treatment code layout

Figure 5 - Example of pallet with treatment code

3.7 Combined sales and handling unit requirements

Combined sales and handling units are generally used for articles not presented instore but are handed out to the customer, see *Table 7* for examples. Must comply with combined sales and handling units requirements in *JYSK 6201*.

Table 7 - Examples of combined sales and handling units

3.8 Sales unit requirements

Sales units are the articles with the packaging which is presented in the stores and handed out to the customers, see *Table 8* for examples. Must comply with requirements in *JYSK 6201*. To achieve a uniform impression of the packaging on the shelves, the sales units must comply with requirements in *3.8.1*, *3.8.2*, *3.8.3* and *3.8.4*.

Bellyband:	Headercard:	Clamp/U-card:	Hangtag:
			

Table 8 – Examples of sales units

3.8.1 Color requirements for corrugated material

The color is described with the CIELAB color space and are based on uncoated kraft-liner:

(L* a* b*), ISO 5631-2 (D65/10 DEGREES)	L* 58,5 a* 8 b* 20,5

Three-dimensional, approximately uniform color space, produced by plotting, in rectangular coordinates L*, a*, b*

Note: The quantity, L*, is a measure of the lightness of the test piece, where L* = 0 corresponds to black and L* = 100 is defined by the perfect reflecting diffuser.

Visually, the quantities a* and b* represent respectively the red-green and yellow-blue axes in color space, such that

+a* is a measure of the degree of redness of the test piece,
−a* is a measure of the degree of greenness of the test piece,
+b* is a measure of the degree of yellowness of the test piece, and
−b* is a measure of the degree of blueness of the test piece.
If both a* and b* are equal to zero, the test piece is achromatic.

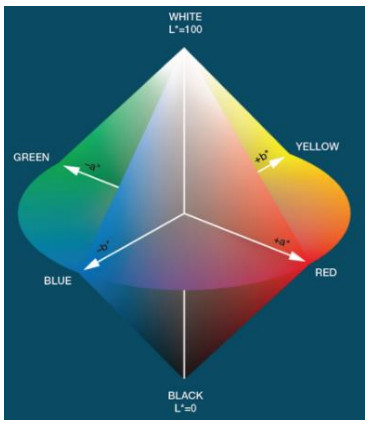


Figure 7 - Cielab color space

Reference material for color: West rock KraftPak solid unbleached board Brown

Figure 8 - Reference sample

3.8.2 Header cards, hangtags, bellybands and u-cards/clamps

Header cards, hangtags, bellybands and u-cards/clamps must comply with the following requirements:

	Minimum value
Grammage g/m^2	250
Bursting (ISO 2758) kPa	1000
SCT (ISO 9895) kN/m	5
Tensile strength kN/m	8

Table 9 - Reference values for cardboard materials for header cards, hangtags, bellybands and u-cards/clamps

The material must be uncoated brown craft paper and the supplier must ensure that it is of a quality that prevents curl and breakage during handling and presentation in store.

Note: Garden hangtags must be able to withstand 2 years of outdoor storage.

3.8.3 Labels (pamphlets and stickers)

Product information labels must comply with *JYSK 6201*.

Product label sticker must contain product information and barcode.

The size and format must be adapted to the product. Placed if possible at the bottom of the product.

Labels must stick to the product but must be easy to remove for the customer after purchase without leaving any glue residue on the product.

3.8.4 Box construction and closing of boxes

To ensure a clean facing of the packaging, the opening must be placed on the backside of the packaging.

The use of adhesive tape must be reduced to a minimum and sticker seals are preferred where possible. Tape and stickers must be applied without wrinkles.

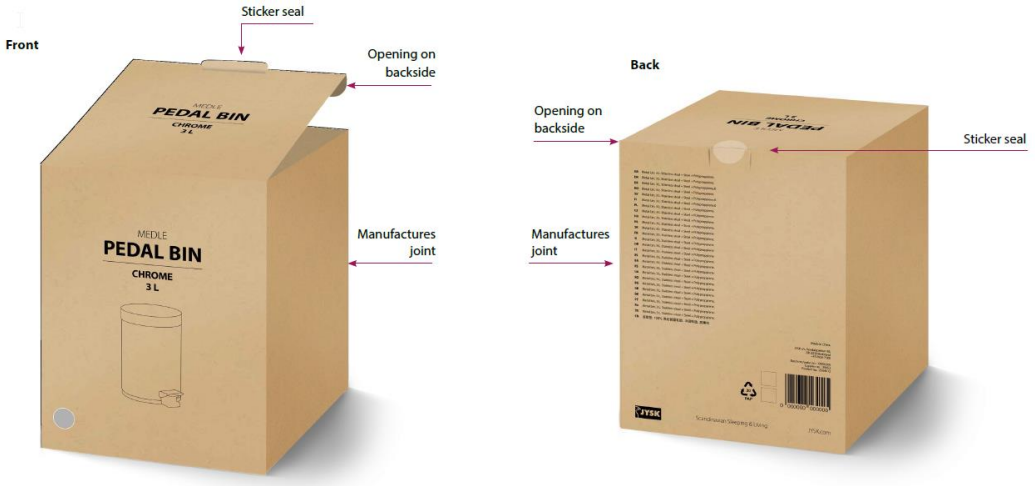


Figure 9 - Example of packaging with clean facing

- Box constructions to reduce the need of adhesive tape.

Where possible the use of adhesive tape must be reduced e.g. by box constructions where adhesive tape is not needed. Sticker seals can be used to secure the opening when closed.

Figure 10 - Example of box construction without adhesive tape

FEFCO codes examples for box construction without adhesive tape:

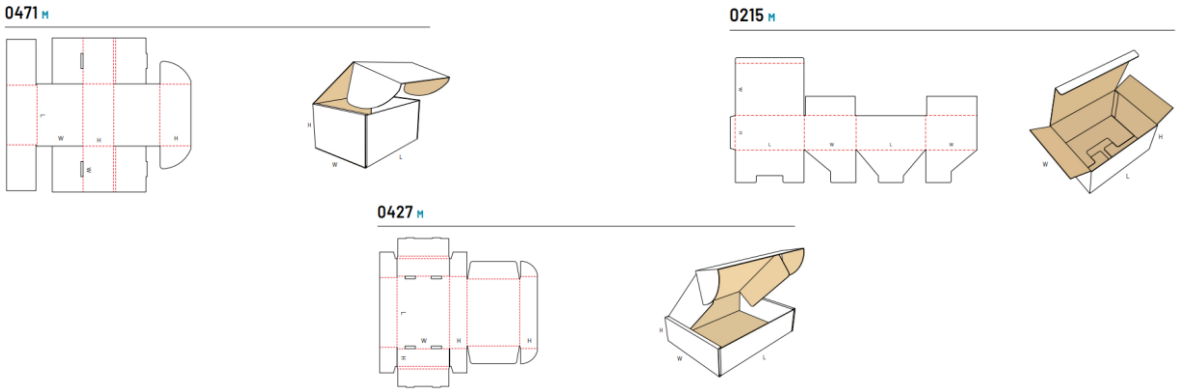


Figure 11 – Examples for box construction without adhesive tape

4 Labelling

Labelling must comply with *JYSK 6101*.

Required markings on a packaging part or component must be of the same size and applied with a good workmanship, e.g. even printing, aligned, and readable. The proportion of height and width of the markings must not be manipulated.

5 Load carriers requirements

Load carriers are used to ease unloading and handling of unit loads at distribution centers.
There are different types of load carriers with different requirements.

- Euro pallets, see *5.1*
- Slip-sheets, see *5.2*
- One-way pallets, see *0*
- Special pallets, see *5.3.1*

5.1 Euro pallets

Euro pallets are the standard pallet used for transportation in Europe and can be used for pallet exchange.

Exchangeable EUR pallets must be manufactured according to UIC 412-2 and must be minimum quality grade A.

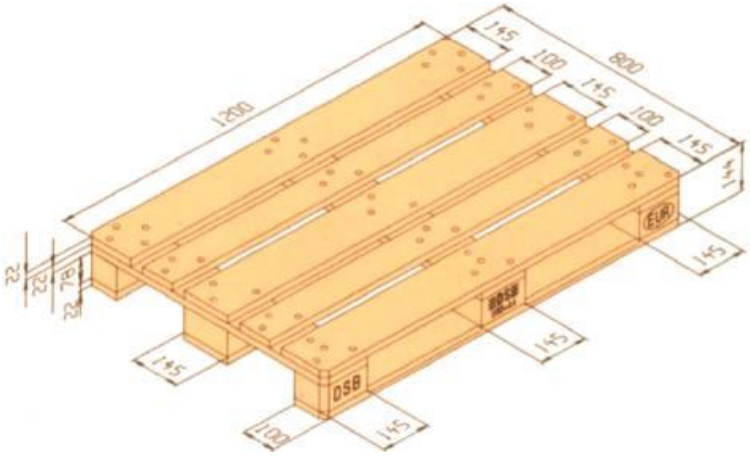


Figure 12 – Euro pallet

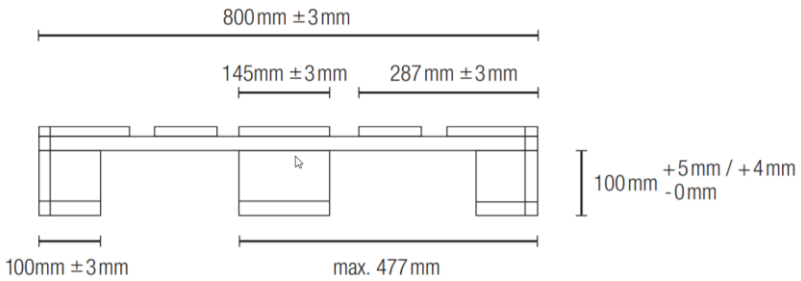


Figure 13 - Dimensions and tolerances EUR pallet from 800 mm side

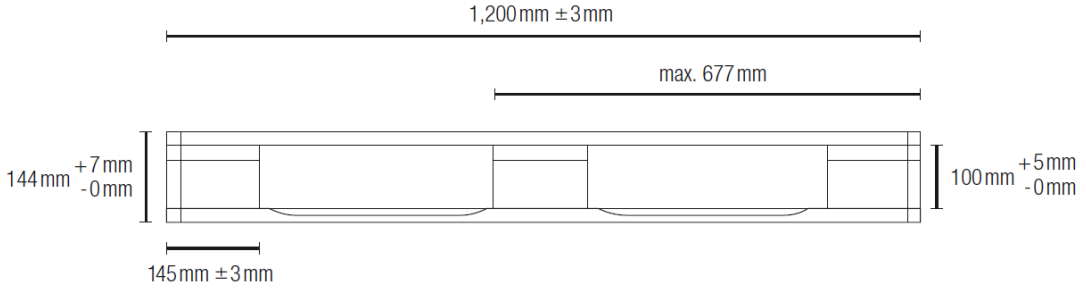


Figure 14 - Dimensions and tolerances EUR pallet from 1200 mm side

5.1.1 Allowed flaws of EUR and EPAL pallets

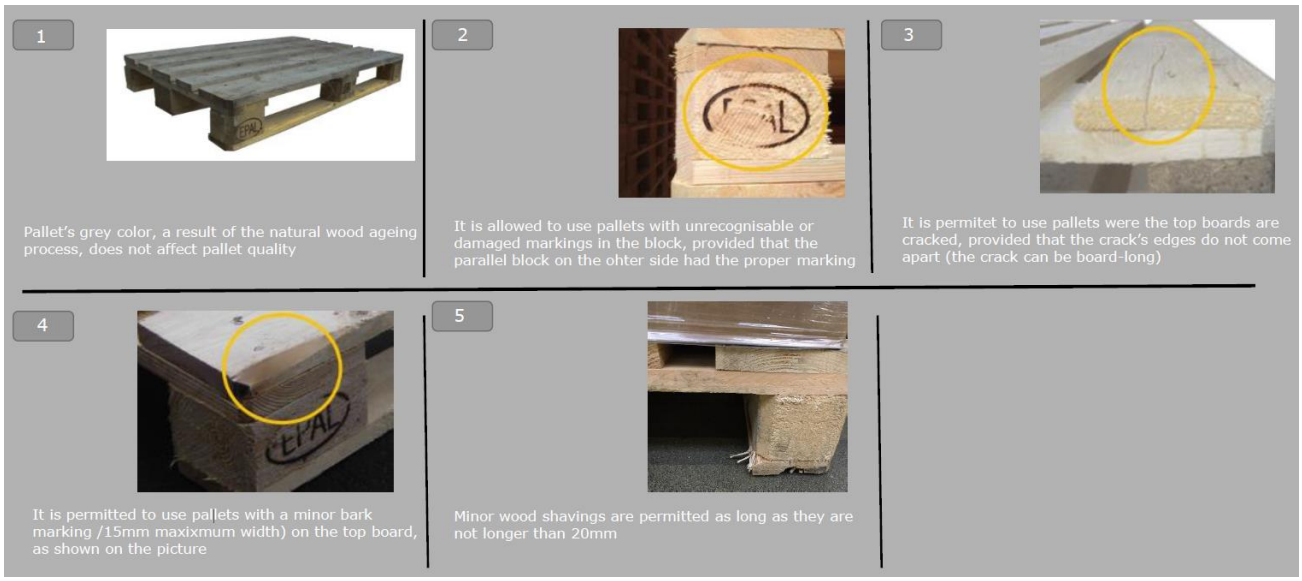


Figure 15 – Allowed flaws of EUR and EPAL pallets

5.2 Slip-sheets

Slip sheets are used to ease handling and optimize utilization of volume in containers.

Slip-sheets and pallet-sized sheets must be made of laminated kraft paperboard or plastic, according to standard ***ISO 12776-2008***.

The size of the slip-sheet must be adjusted to the size of the unit load.

Figure 16 - Slip-sheets with score lines and 7 cm flaps on 2 sides

Slip-sheets must comply with *Table 10*.

Materials	Paper laminated kraftliner or plastic
Flaps	Minimum on 2 sides
Length of flaps	7 cm
Estimated min weight	710 g/m^2 for both paperboard and plastic

Table 10 - Slip-sheets requirements

The tensile strength of each score line portion must be tested after bending the score line 15 times according to ***EN ISO 1924-2*** and must comply with *Table 11*.

Maximum authorized freight mass Kg	**Minimum tensile strength** kN/m
500	10
1000	20
1500	30
2000	40

Table 11 - Tensile strength requirements

5.3 One-way pallets

One-way pallets are used where slip-sheets or returnable pallets are not applicable. One-way pallet must be able to carry the load and have quality that can withstand normal warehouse handling.

One-way pallets must comply with *Figure 17* and *Figure 18*.

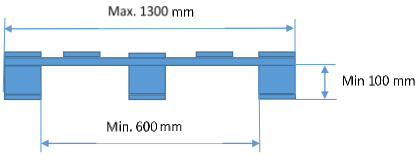


Figure 17 - One-way pallets measurement requirements

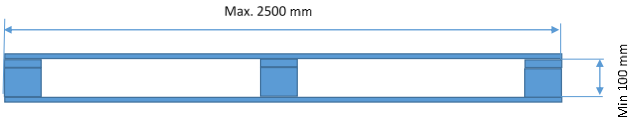


Figure 18 - One-way pallets measurement requirements

5.3.1 Special pallets

Special pallets are designed to specific products such as chairs delivered in stacks.
Special pallets must comply with below requirements:

- Pallet minimum weight 6 kg.
- Steel pallets must be protected against corrosion.
- Special pallets must have 6 legs, middle legs placed in the center of the pallet of the longest dimension.
- Minimum distance between legs 600 mm.
- Minimum clearance under pallet 100 mm.
- Special pallets must be sent to JYSK Uldum for approval.
- Comply with *JYSK 6501* regarding loading height.

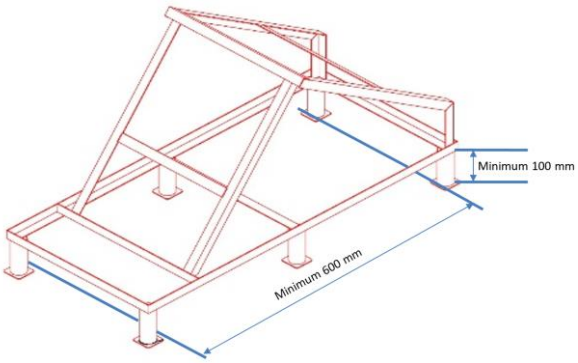


Figure 19 - One-way special pallet for stacking chairs

6 Outdoor storage packaging requirements

Packaging for outdoor storage must in addition to normal packaging requirements, protect the product from weather and wind, ensuring that products do not get wet, rusty or dirty.

Additional requirements to outdoor packaging:

- Outdoor packaging materials must be UV protected for minimum 2 years of outdoor storage, without degeneration of materials.
  - Expected UV exposure during storage: 240 kLy (≈2 years in Spain).
    Note: Supplier must provide documentation that the packaging materials is manufactured to resist 240 kLy without damage.
- The handling unit must be covered with a plastic film minimum thickness 80 my.
- The packing materials must be secured adequately tight around the unit load to avoid damages due to wind, see *Figure 21*.
- The packaging must be designed in a way that water is drained away both from the outside and the inside of the handling unit, see *Figure 22*.

Figure 20 - Cover on top of unit load to direct water away

Figure 21 - Plastic film tight wrapped around unit load

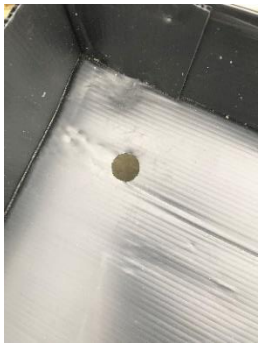


Figure 22 - Drain hole, to lead water out of the unit load

7 Tests

Tests must be renewed within 12 months as a minimum.

'*Sales units'* and '*combined sales and handling units'* must pass following tests:

- Drop test, see *7.1*
- Unit load stacking capacity test, see *7.2.1*
- Unit load stability test with/without fixation, see *7.2.2*
- Sales units test, see *7.3*

7.1 Drop test

Drop tests is made to simulate shock impacts during distribution.

The test must be carried out whenever there is a change of condition (e.g. change of packaging material supplier, failed test on material), new/changed/updated packaging solution (e.g. material, dimension, construction), or change in process parameters (e.g. new equipment).

7.1.1 Identify faces, edges and corners

Visualization on how to identify faces, edges and corners, see *Figure 23*.

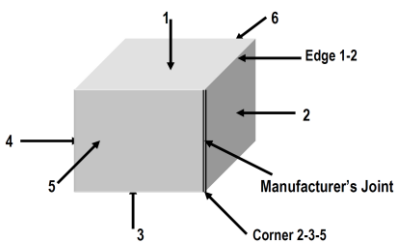


Figure 23 - Identify faces, edges and corners

7.1.2 Drop chart

The height of the drop varies for packaged-products see *Table 12*.
The drop order must comply with *Table 13*.
The drop test must be performed on a concrete floor.
Note: If flat packed product, follow drop test for flat packed-products in *0*.

Packaged-product Weight	Drop Heights	Impact Velocity
<45 kg	300 mm	2,5 m/s
>45 kg	200 mm	2,0 m/s

Table 12 - Drop chart for not flat packaged-products

Drop Number	Face, egde or corner
1	Face 1
2	Face 2
3	Face 6
4	Corner 2-3-5
5	Edge 3-4
6	Face 3
7	Edge 2-3

Table 13 - Drop order

- **Assessment**

The test has passed when the following criteria are fulfilled:

- All the product parts/components included in the package is undamaged.

7.1.3 Drop chart flat packaged-product

A flat packaged-product where the longest (C) dimension is ≥900 mm
and
The next longest dimension (B) is four (4) times larger than the shortest dimension (A)
and
The volume is ≥13.000 cm^3

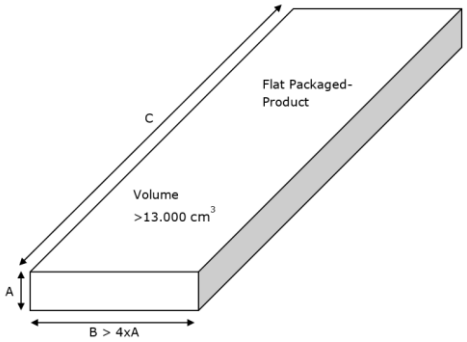


Figure 24 – Flat packaged-product dimensions

The height of the drop varies for Flat packaged-products see *Table 14*.

Drop test to be performed on a concrete floor.

Packaged-product weight	Drop Heights	Impact Velocity
<45 kg	300 mm	2,5 m/s
> 45 kg	200 mm	2,0 m/s

Table 14 - Drop chart for flat packaged-products

Visualization on how to identify faces, edges and corners, see *Figure 25*.

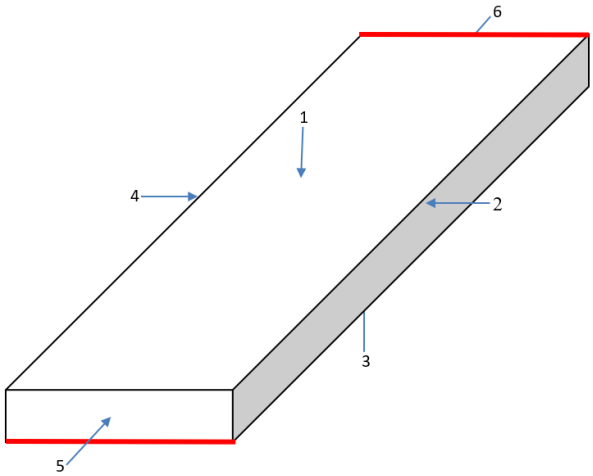


Figure 25 - Identify faces, egdes or corners

Flat packaged-products must be tested according to *Table 15*.

Drop Number	Face, egde or corner
1	Face 1
2	Face 2
3	Face 6
4	Edge 3-5
5	Edge 1-6
6	Face 3

Table 15 - Drop order

- **Assessment**

The test has passed when the following criteria are fulfilled:

- All the product parts/components included in the package is undamaged.

7.2 Unit load testing methods

The load test must be performed on the same loads in the following sequence:

1. Unit load stacking capacity test
2. Unit load stability test with/without fixation

Note: After the unit load testing, the '*sales units test*' see *7.3*, must be performed on consumer packages picked from the bottom of the tested unit load.

7.2.1 Unit load stacking capacity test

- **Frequency**

The test must be carried out whenever there is a change of condition (e.g. change of packaging material supplier, failed test on material), new/changed/updated packaging solution (e.g. material, dimension, construction), or change in process parameters (e.g. new equipment).

- **Environment**

Test at JYSK Supplier.

- **Equipment**
  - One unit load.
  - One handling material (with the same construction as used for the unit load).
  - Solid board covering the complete top surface of the unit load.
  - Weights according *Table 16*.
  - Standard handling equipment (forklift).

Note: The unit load must be compliant to all given requirements before testing.

Stackging capacity (kg)	Required weight for the test(kg)
Stacking capacity = Defined max. weight (kg) on top of the unit load. The weight of product stacked to 2610 mm	1,5 x Weight at max stacking height

Table 16 - Stacking capacity test weight

- **Procedure**
  1. Place the load as unit load as decribed below or according to loading plan in container.
  2. Place it in warehouse enviroment on a solid floor for 72 hours.
  3. After 72 hours evaluate the unitload/packaging against the requirements.

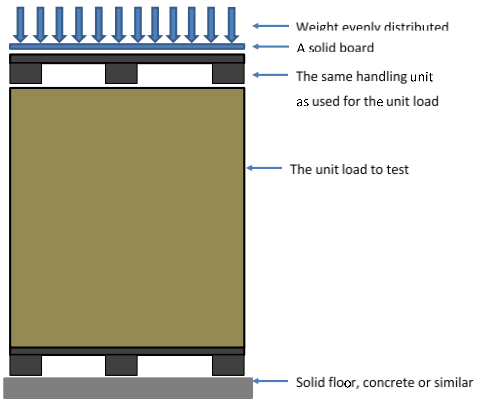


Figure 26 - Procedure for Stacking capacity test

- **Assessment**

There must not be:
- Damage to the product.
- Damage to any part of the packaging solution (unitload or consumer packaging). Minor damages to the packaging are allowed as long as the Neat and Clean packaging requirements, see *8*, are fulfilled.
- Shifting of the product and packaging content in the consumer packaging.
- Ant effects that can result in non-compliance with any other packaging requirement.

7.2.2 **Unit load stability test with/without fixation**

Stability requirements for a unit load with and without goods fixation must comply with *Table 1*.
The load must be tested from all sides.

Goods fixation	Test	Requirements
With goods fixation, see procedure in *7.2.2.1*	*Transport test*	The load must be able to be transported without any damage.
	27° test	The load (or any part of the load) must not start to slide when tilting 27°.
Without goods fixation, see procedure in *7.2.2.2*	10° test	The load (or any part of the load) must not start to slide or fall off when tilting 10°.

Table 17 - Stability test for unit loads

Note: If the unit load test fails see *JYSK 6501* for the use of masterboxes.

7.2.2.1 Stability test unit load with goods fixation

For unit loads delivered on slip sheet, the load must be placed on a pallet or a tilting board.

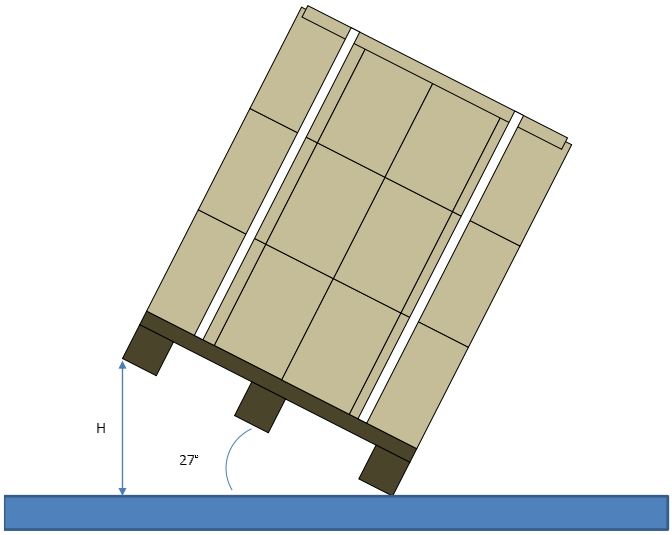


Figure 27 - Unit load in a tilted position, with fixation

- Calculation of the minimum height (H)

Calculation of the minimum height (H) to reach for length and width side when tilting the unit load 27°, must be calculated using the following formula:

H = *length of the side* x 0,454

Examples:
The length of the unit load is 1200 mm. H = 1200 x 0,454 = 545 mm
The length of the unit load is 800 mm. H = 800 x 0,454 = 363 mm

- Procedure:
  1. Use a forklift to tilt the unitload in an angle of 27°
  2. Repeat the test for both length and width sides.

  Note: To avoid high and narrow loads to tip over, the unitload can be supported by hand or mechanially.

7.2.2.2 Stability test unit load without goods fixation

For unit loads delivered on slip sheet, the load must be placed on a pallet or a tilting board.

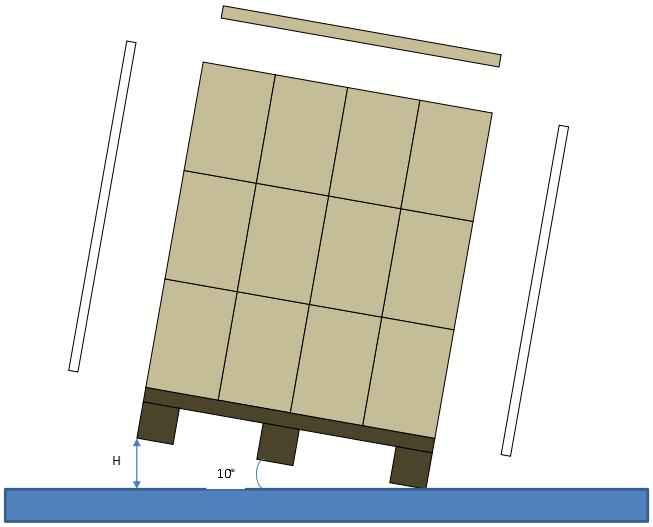


Figure 28 - Unit load in a tilted position, without fixation

- Calculation of the minimum height (H)

Calculation of the minimum height (H) to reach for length and width side when tilting the unit load 10°, must be calculated using the following formula:

H = *length of the side* x 0,173

Examples:

The length of the unit load is 1200 mm. H = 1200 x 0,174 = 209 mm

The length of the unit load is 800 mm. H = 800 x 0,174 = 139 mm

- Procedure:
  1. Use a forklift to tilt the unitload in an angle of 27°.
  2. Repeat the test for both length and width sides.

  Note: To avoid high and narrow loads to tip over, the unitload can be supported by hand or mechanially.

7.3 Sales units test

It must be possible to handle a packed product on all six sides without any damage or movement of the content inside the package.

- **Test sequence**

The test must be performed after the unit load testing, see *7.2*. Must be performed on consumer packages picked from the bottom of the tested unit load.

- **Frequency**

Test must be carried out whenever there is a change of condition (e.g. change of packaging material supplier, failed test on material), new/changed/updated packaging solution (e.g. material, dimension, construction), or change in process parameters (e.g. new equipment).

- **Enviroment**

Test at JYSK supplier.

- **Equipment**
  - Tree consumer packages picked from the bottom of the tested unit load.
  - Measure tape.

Note: The test must be conducted on a hard and solid (concrete) floor.

- **Procedure**
  1. Rotate the package along the length of the package until it gets back to its original position.
  2. After each movement let the end of the package falling down approximately 100 mm height.
  3. Repeat the procedure for the top and side of the package.
  4. Repeat the test for all three samples.

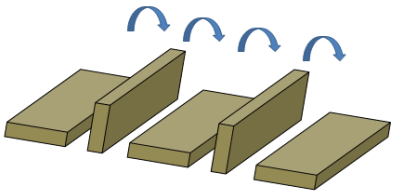


Figure 29 - Rotation along the length of the package

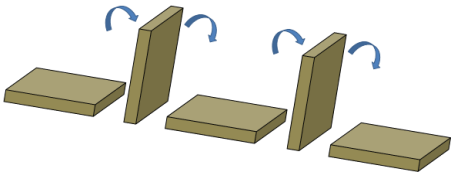


Figure 30 - Rotation along the top of the package

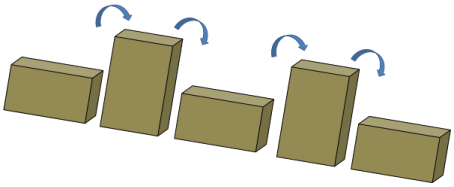


Figure 31 - Rotation along the top of the package

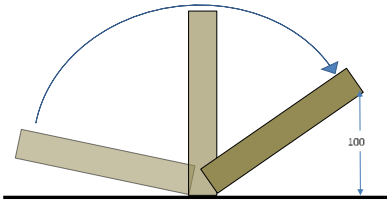


Figure 32 - Release the package from 100 mm height

- **Assessment**

The test has passed when the following criteria are fulfilled:

- All the product parts/components included in the package is undamaged.
- The closing of the packaging is intact.
- All product parts and packaging parts are remaining in the original location.

8 Neat and clean requirements

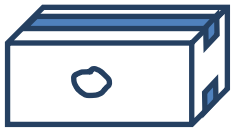
JYSK requires that products and packaging solutions are in perfect condition when leaving the supplier and have no defects of any kind.

Neat & Clean is a common assessment of required conditions of JYSK packages. It must be used from the moment the goods arrive at first receiving point, being forwarded in the JYSK supply chain until the product meets the customer. All types of consumer, multi-pack, and transport packaging are to be assessed according to *Table 18* and *Table 19*. The Neat & Clean assessment is an integral part of JYSK daily operations for evaluating packaging damages. It provides a common ground for each individual decision regarding severity and relevance of a detected packaging deviation.

8.1 Neat and clean requirements for sales units

Consumer packages are in sellable condition if:

- the appearance of the package is not influencing customer's choice when picking the product.
- the package is closed and integrity of the package is not compromised.
- the protective function is not reduced and the ability of package to absorb shocks and impacts is still given.

#	Illustration	Description of compromised packaging condition	Not acceptable (Not acceptable if one or more points are valid)
1		The packaging AND the products are damaged.	• Any kind of damage to the product itself; even very small.
2		The packaging is torn.	• More than one 2 cm long tear per m^2 packaging material. Protective function is compromised.
3		The packaging has holes.	• Holes > 3 mm and if the hole/opening is not a feature of the package construction.
4		The packaging is dented.	• The shock-absorbtion ability at the dented area has been reduced. • The dented area is >2 cm on one of the affected sides of the package.
5		The packaging is scratched.	• Any marks and scratches longer than 5 cm.
6		The packaging is dirty.	• Any kind of dirt on the package.

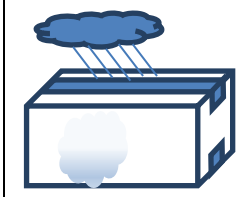
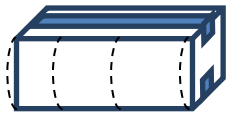
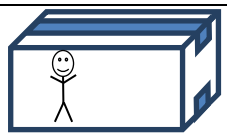
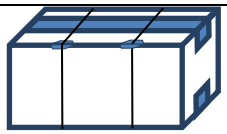
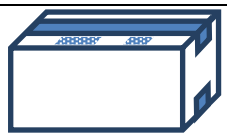
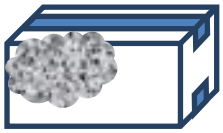
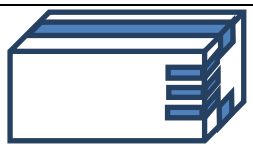
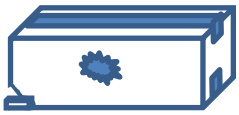
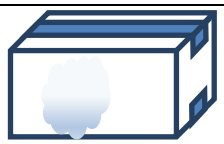
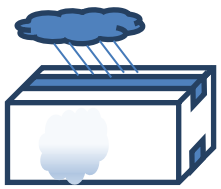
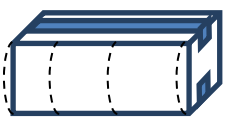
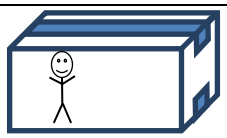
7		The packaging is wet.	• Any extent, even small indication.
8		The packaging is swollen.	• One of the consumer packaging dimensions (height/width/length) have increased with 1,5 cm.
9		The packaging have graffiti on it.	• Graphical elements, markings not authorized by JYSK.
10		The packaging edges are affected by straps or transport belts.	• Any size.
11		The packaging has visible pressure marks.	• The containing product is affected.
12		The packaging closing metod is failing.	• Any kind of open packages.
13		The packaging shows signs of mould/fungus.	• Any size.
14		The package is visibly repaired.	• Any size and any method.

Table 18 - Neat and clean requirements for sales units

8.2 Neat and clean packaging requirements for transport packaging

Transport packages can be forwarded if:

- the transport package is safe to handle under any condition.
- the transport package is closed, and integrity of the unit is not compromised.
- the protective function is not compromised and ability of transport package to absorb shocks and impacts is till given.

#	Illustration	Description of compromised packaging condition	Not acceptable (Not acceptable if one or more points are valid)
1		The packaging AND the products are damaged.	• Any kind of damage to the product itself; even very small.
2		The packaging is torn.	• More than one tear per m^2 packaging material. • Tear longer than 15 cm. • The protective function and/or stability of transport package is compromised.
3		The packaging has holes.	• If consumer packages are affected. • Stability/integrity of transport package is compromised.
4		The packaging is dented.	• The squashed area is larger than 5 cm on each affected side of the package. • The protective function and/or stability of transport package is compromised.
5		The packaging is scratched.	• The protective function and/or stability is compromised.
6		The packaging is dirty.	• Dirty surface or packaging material which affects cleanliness of consumer packages.
7		The packaging is wet.	• Any extent, even small indication.
8		The packaging is swollen.	• One of the consumer packaging dimensions (height/width/length) have increased with 1,5 cm.
9		The packaging has graffiti on it.	• Graphical elements, markings not authorized by JYSK.

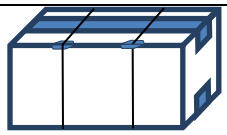
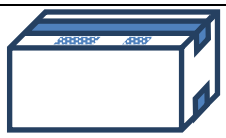
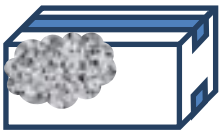
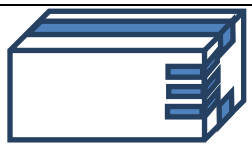
10		The packaging edges are affected by straps or transport belts.	• Any deformation, marks or damage to the containing consumer package. • The protective function is compromised.
11		The packaging has visible pressure marks.	• If pressmark causes deformation, marks or damages to the containing consumer packages or products.
12		The packaging closing method is failing.	• The protective function and/or stability is compromised. • Containing products are accessible or may fall out during transport and handling. • Re-taping/re-sealing not possible.
13		The packaging shows signs of mold/fungus	• Any size, even small indications.
14		The package is visibly repaired.	• Stability of the unit is compromised after repair. • Protective function is compromised.

Table 19 - Neat and clean requirements for transport packaging