

Document title	Wooden packaging - Quality and requirements – Definition of approved Pallets, Frames and Bearers		
Document no	GS 280A0018	Valid from	08-08-2019
Author	GOEFLN	Approver	GOEMICS
		Doc. type	Group Standard
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1.0 Purpose

The purpose of this standard is to describe the requirements for quality, strength and marking and of all wooden packaging materials.

Requirements in regards to stacking when returning wooden packing materials are also described in this standard.

2.0 Scope

This Group Instruction applies to all wooden packaging materials - such as European flat pallets (EUR pallets), Frames, and bearers as well as crates and boxes supplied to Grundfos and circulating between factories and companies in the Grundfos Group.

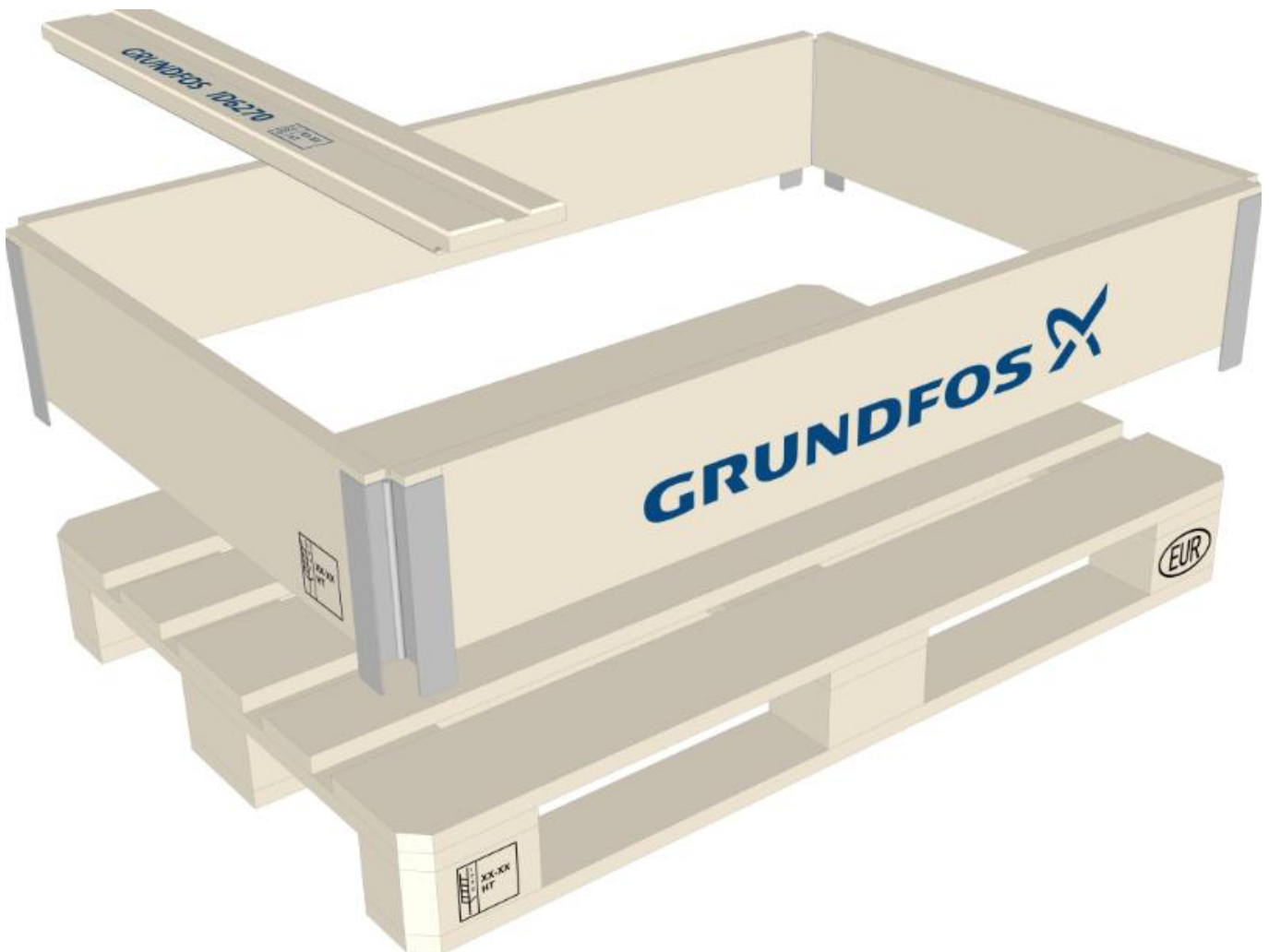


Figure 1

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3.0 Responsibilities

3.1 Managers of departments receiving goods, shipping departments, and distribution centres

Shall ensure that wooden packaging material that is received and sent on complies with the requirements of this Group Instruction.

3.2 Local purchase departments

Shall ensure that local Grundfos' suppliers know and obey the requirements of this Group Instruction.

The departments must also make agreements with the local suppliers that extra costs in connection with non-compliance with this Group Instruction will be entered to the suppliers' accounts.

3.3 The Group Purchase department

Shall ensure that Grundfos' group suppliers know and obey the requirements of this Group Instruction.

The department must also make agreements with the group suppliers that extra costs in connection with non-compliance with this Group Instruction will be entered to the suppliers' accounts.

Maintains the pool of pallet, frames, and bearers.

Only Group Purchase has permission to search for a possible supplier to the Grundfos Group.

4.0 Instructions

4.1 General

It is **not allowed** to pack or transport goods in pallets, frames, bearers, and other wooden packaging which do not comply with the requirements of this Group Instruction.

Returned pallets, frames, and bearers which do not comply with this Group Instruction will not be credited.

4.2 Requirements for the construction of pallets, frames, bearers, and other wooden packaging

The wood shall be **unpreserved**.

All wooden packaging materials must be heat-treated and HT marked in accordance with **ISPM 15**.

As a minimum the mark should include the symbol, the IPPC abbreviations 1. **DB HT** for debarking and heat treatment or 2. **HT** for heat treatment only (newer packaging material) and a two letter country

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code in accordance with **ISO 3166-1-alpha-2 code elements** followed by a unique number assigned by the NPPO to the pallet manufacturer.

See example of marking in Figure 1.



Figure 2a and 2b.

4.2.1 EUR pallets

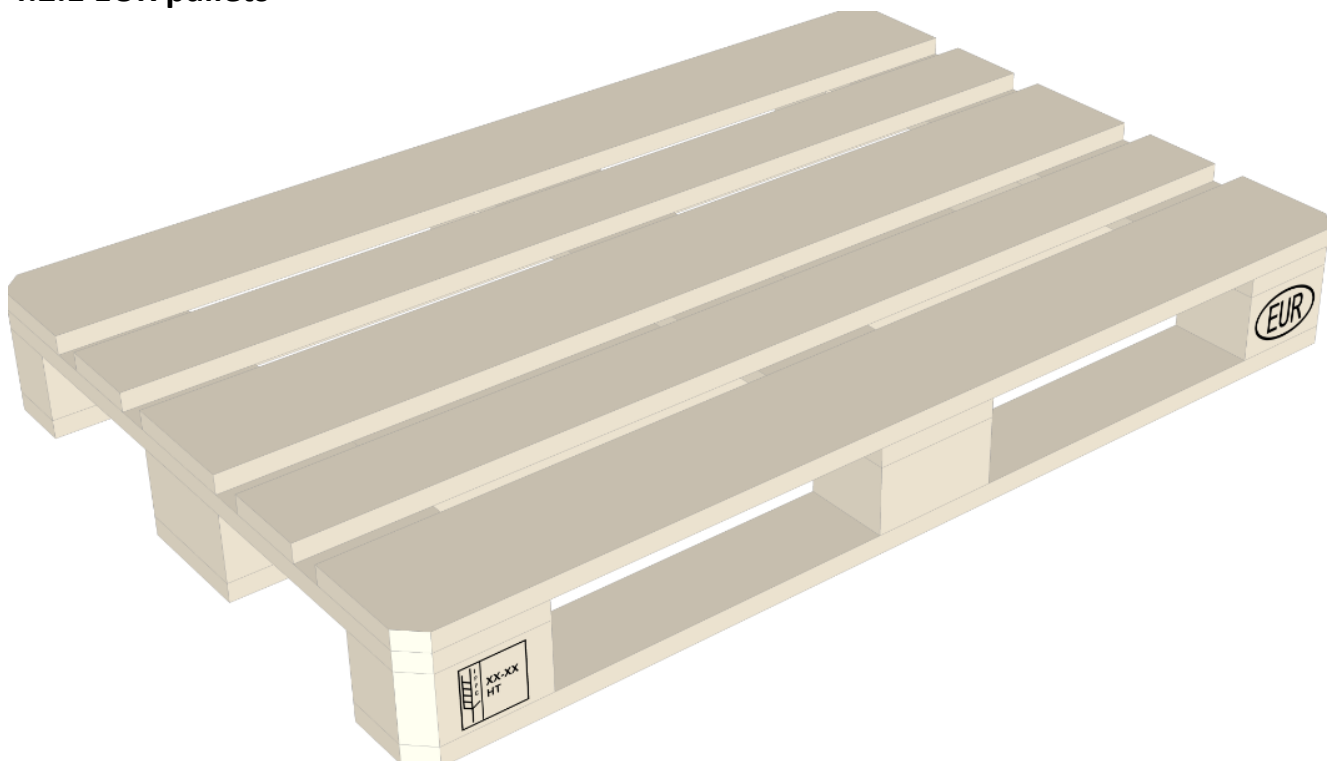


Figure 3

Construction:

Only **EUR pallets** approved according to **UIC Code 435-2** are allowed for use in the Grundfos Group.

The dimensions of the pallets shall be **1200 x 800 x 144 mm** and the pallets consist of three bottom deck boards, nine blocks, and five top deck boards.

OLD Marking:

EUR pallets shall bear the following marks on the **three blocks on both long sides:**

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- The left blocks shall be marked with the logo of the approving railway company that has circulated the pallet.
- The central blocks shall be marked with the manufacturer's code, code for year (and maybe month) of production, and the logo of the certifying body in the homeland of the railway company (e.g. in Denmark, the DS mark).
- The right blocks must be stamped with the EUR mark placed in an oval frame **EUR**.
- The pallets **must** be HT marked in accordance with **ISPM 15**, see example in **section 4.2** and **Figure 1**.

NEW Marking:

Since the 1st August 2013, the Euro Pallets by European Pallet Association e. V. (EPAL) have changed markings.

The trademark of the new EPAL Euro pallets is the "EPAL in oval" logo applied to all four corner blocks. Furthermore, the "EUR in oval" mark and the marks of the national railways have been omitted since the 1st August 2013.

Exchangeability between pallets with OLD and NEW markings:

The new pallets bearing the "EPAL in oval" mark four times over are exchangeable without limitation, in equal measure to all pallets bearing the "EPAL in oval" mark on the left corner block only, the "EPAL/EUR" mark, or the "EUR in oval" mark in combination with other (railway) marks.

Conditions:

It is **not** allowed to apply pallets for transport and handling of goods when:

- a board is missing or broken.
- more than two bottom or top deck boards are so damaged that more than one nail-shank or one screw-shank is visible.
- a block is missing, splintered, or so damaged that more than one nail-shank or screw-shank is visible.
- the top or bottom deck of the pallet is so soiled by oil, grease, or else that it might affect the goods.
- the pallet has other damages or deviations from the stipulated requirements for dimensions, timber quality, or durability to such an extent that it is unfit for use.
- the marking is not legible.

See **Figure 4**.

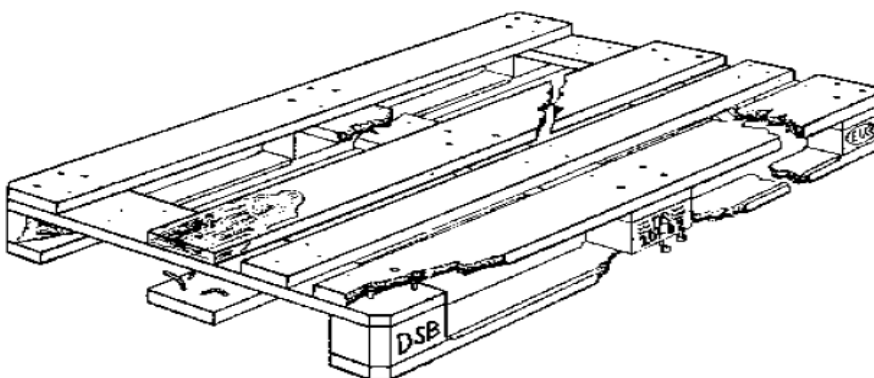


Figure 4.

Pallets shall be repaired in accordance with **UIC Code 435-4**.

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Pallets shall be scrapped when repair is not presumed to make them suitable for transport and handling of goods.

4.2.2 Frames

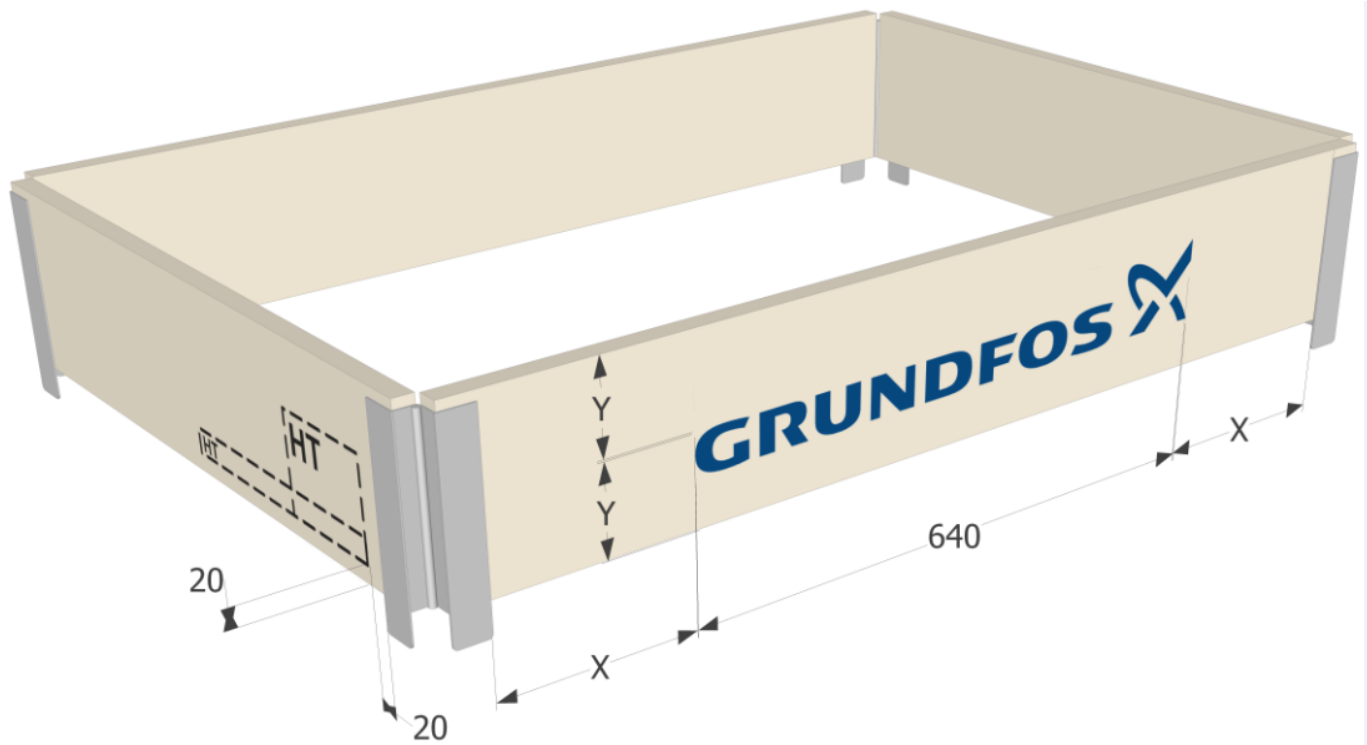


Figure 5

Only frames complying with the requirements of **EN 13545** are to be applied by the Grundfos Group.

Construction:

- The outside dimensions of frames, exclusive of hinges are **1200 x 800 x 195 mm**.
- The frames consist of **20 mm** planed wood fitted with **four 2 mm steel hinges**.
- The hinges are mounted with 2 x 4 grooved rivets of the dimensions **5 x 27 mm**.
- The hinges shall overlap the next frame by **30 mm**.
- Hinges on all newly purchased frames shall be blue (colour code RAL5010) or alternatively silver-galvanized.
- New Frames are constructed as a 2 board version with groove and nut like shown on the picture/figure (xy) only. Further the 2 boards are fixed with clamps on the backside.
 - Only tested and approved Frames (TVS case no 151214_151841_50178 / Test result on ISTA3E Test no 675640 (Teknologisk Institut, Denmark)) are approved and released as packaging material

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Figure 6

NB: The relevance of the requirement for the corner hinges of frames to be **made of 2 mm steel** has been disputed. The requirement has therefore been tested against **EN 13545**.

The test proved that in order to comply with EN 13545, the hinges must be made of 2 mm steel. So for safety reasons focus must be put on this requirement.

All frames must be checked when they are received and sent on, and **all suppliers** must be informed.

Marking:

Purchased frames must be marked with the GRUNDFOS logo and trademark (Colour Code RAL5010).

The short side shall be HT marked in accordance with **ISPM 15**, see **Section 4.2, Figure 2a, Figure 2b** and **Figures 5**

Conditions:

Frames are **unsuitable** for transport and handling of goods when:

- boards are broken or splintered.
- hinges bend in or out.
- the thickness of the hinges is under 2 mm or they are made of other materials than steel.
- hinges or boards are too damaged for all rivets in the hinges to hold.
- the marking is not legible.

4.2.3 Bearers

Only bearers complying with the below requirements are to be applied.

New Bearers purchased since 2016 will be without steel fittings. Both will be handled with the same product number 00ID6270

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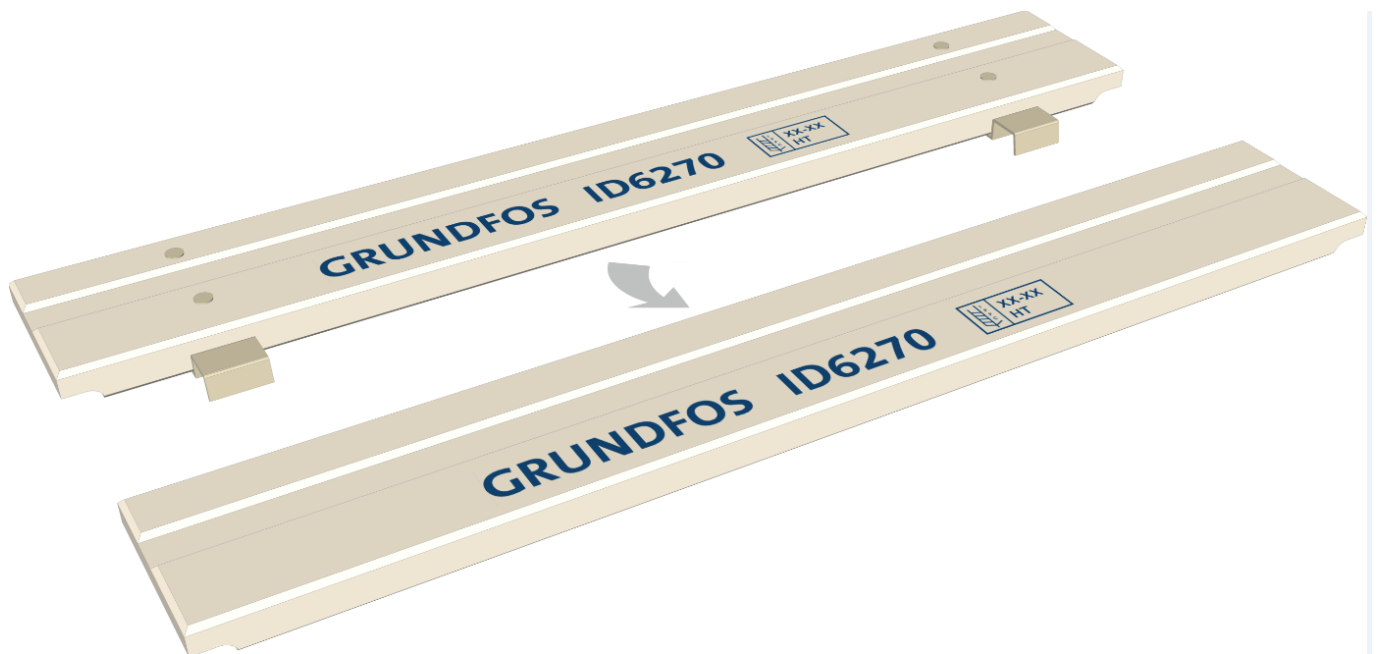


Figure 7

Construction:

- The dimensions of bearers with fittings are **800 x 150 x 32 mm**.
- The dimensions of the board/**bearer without steel fittings** are **800 x 115 x 26 mm**.
- The top side is grooved to allow straps to be wound around.
- **Two 2 mm steel fittings** are to be fixed by the aid of rivets on the bottom side with a distance of **560 mm**.
- Cut-outs for collars are made at each end of the bearer.
- The weight of a bearer must be no more than 2 kg.

See **Figure 5**.

Marking:

Bearer must be marked with **GRUNDFOS** (Color code RAL5010) and HT marked in accordance with **ISPM 15**, see **Section 4.2, Figure 2a, Figure 2b** and **Figure 7**.

Conditions:

Bearers are **unfit** for transport and handling of goods when:

- boards are broken or splintered.
- fittings are bending up or down.
- fittings or boards are so damaged that the rivets cannot hold.
- the marking is not legible.

4.3 Return of pallets, frames , and bearers

4.3.1 Pallets

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The pallets must be checked in accordance with **section 4.2.1** before being stacked.

Pallets complying with **section 4.2.1** can be sent on.

The stacks are strapped to the pallet with two straps around the long side of the pallet.

Pallets which are to be repaired or scrapped can be put into each other. They must still be strapped, however.

Maximum 16 pallets are allowed in a stack - see Figure 8.

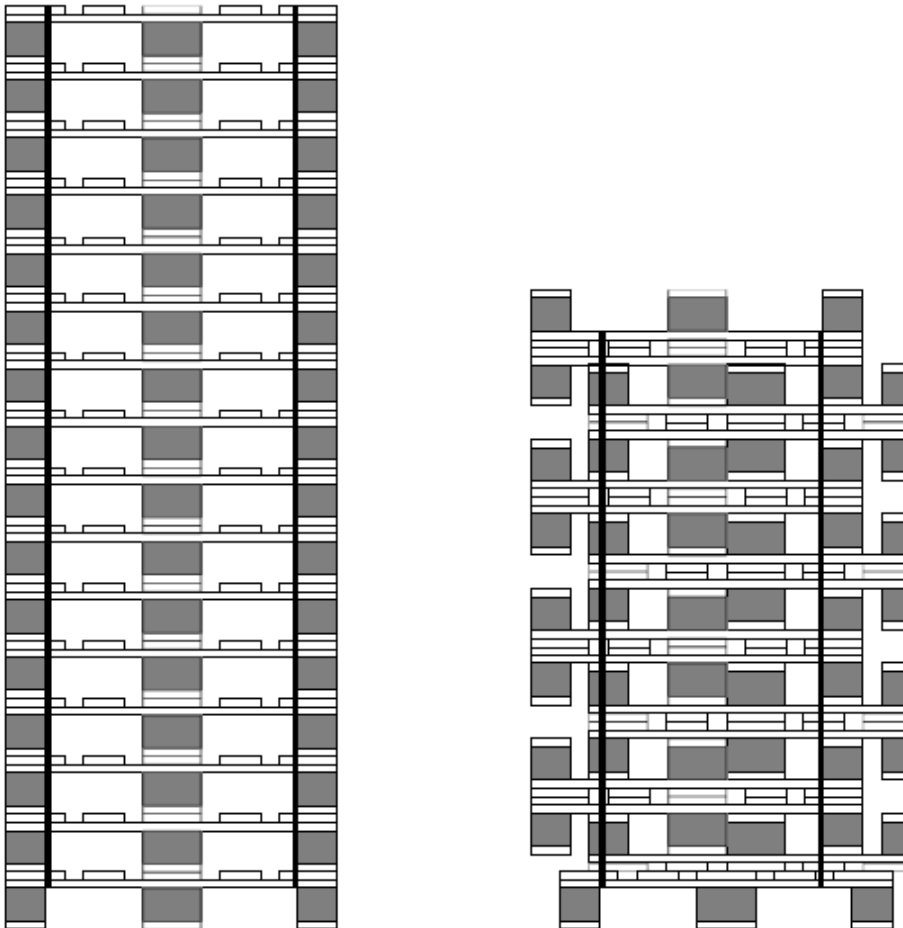


Figure 8.

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4.3.2 Frames

The frames must be inspected in accordance with **section 4.2.2** before being stacked.

Frames complying with **section 4.2.2** can be sent on.

The stacks shall be kept together on the pallet by four plastic straps across the long side of the collars.

Maximum **five rows of twenty collars each are allowed - i.e. a total of 100 frames per pallet.**

Two wooden strips shall be placed across the rows for every five layers to stabilize the rows. See **Figure 9.**



Figure 9.

4.3.3 Bearers

The bearers must be inspected in accordance with **section 4.2.3** before being stacked.

Bearers complying with **section 4.2.3** can be sent on.

Bearers complying with **section 4.2.3** can be sent on.

The bearer has to be stacked in a EUR pallet with 5 Frames. For an easy way of reusing in the production the bearer should be packed in horizontal position to the pallet as shown in Figure 10

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Figure 10.

5.0 Definitions

DB	Debarking
EN	European Standard
EUR pallet	European flat pallet complying with European Standard UIC 435-2.
HT	Heat treated
IPPC	International Plant Protection Convention
ISO	International Standards Organisation
ISPM	International Standards for Phytosanitary Measures
TP	Transfer price
UIC	Union Internationale des Chemins de fer

6.0 Records

No specific requirements for records.

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7.0 Changes from last revision

Amendments compared to version 12:

Following have been added:

Section 4.2.2:

- New Frames are constructed as a 2 board version with groove and nut like shown on the picture/figure (xy) only. Further the 2 boards are fixed with clamps on the backside.
 - Only tested and approved Frames (TVS case no 151214_151841_50178 / Test result on ISTA3E Test no 675640 (Teknologisk Institut, Denmark)) are approved and released as packaging material

Section 4.2.3

New Bearers purchased since 2016 will be without steel fittings. Both will be handled with the same product number 00ID6270

Section 8

GS420P0001	Packaging - Test schedule – loaded pallets/single packages
TVS report	151214_151841_50178
Technology Institut DK	Test Result -> Report 675640 Compression test

Figure 1+3+5+6+7

Following have been removed:

Figure 3+4+5

8.0 References

UIC Code 435-2	Standard of quality for an European flat pallet, with four entries, and measuring 800 mm x 1200 mm
UIC Code 435-4	Repair of EUR flat pallets and EUR "Y" box pallets
ISPM 15	International Standards for Phytosanitary Measures - Guidelines for regulating wood packaging material in international trade
EN 13545	Pallet superstructures - Pallet collars - Test methods and performance requirements
GS 280A0011	Packaging - Transport levels - Definition of transport levels
ISO 3166-1	Codes for the representation of names of countries and their subdivisions - Part 1: Country codes
GS420P0001	Packaging - Test schedule – loaded pallets/single packages
TVS report	151214_151841_50178
Technology Institut DK	Test Result -> Report 675640 Compression test

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