

## VOITH STANDARD (VS)



# Packing standard – Part 1: General packing standard

Published by Group Standardization / Formerly published as a Voith Standard (VN)

Version: 2024-04

Protection class: Confidential

Changes to the previous version are marked in *"Italic, highlighted in yellow"*

ICS class: 50.020

Descriptors: Packing, goods class, packaging category



### Abstract:

The purpose of this standard is to provide an overview of the standards applicable to the packing of components and consignments and to define the rules concerned.

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## Revisions

Compared to **VS 1577-1:2023-10**, the following changes have been made:

- a) *Editorial revision, adaptation to new chapter structure and layout*
- b) *Chapter 2: Scope extended to all Voith divisions*
- c) *Chapter 3: Purpose expanded*
- d) *Chapter 4 Terms and definitions added*
- e) *Chapters 5: Overview and special notes added*
- f) *Chapter 6: Description added/detail added*
- g) *Chapter 7: Description added*
- h) *Chapter 8 summarized in the form of a table*
- i) *Chapter 9: Packaging categories (VK) pulled forward, reference to non-standard cardboard packaging removed*
- j) *Chapter 10: Packaging matrix turned into Table 8: Storage codes expanded to include Voith Hydro*
- k) *Chapters 10: Description and tables added*
- l) *Chapter 17: Description added*
- m) *Chapter 18: Description added*
- n) *Chapter – Unpacking of goods – construction site and intermediate storage of components – deleted*

## Earlier editions

**VS 1577-1:2023-10**; VS 1577-1:2022-04.

VN 1577-1:2020-11; 2020-07; 2019-03; 2018-05; 2017-05; 2008-03; 2007-02.

# Contents

1	Scope	5
2	Area of Application	5
3	Purpose	5
<b>3.1</b>	<b><i>National and international standards and regulations</i></b>	5
4	Terms and definitions	5
5	General conditions	6
5.1	Special notes	6
5.2	Corrosion protection	8
5.3	External packing inspections (for direct deliveries)	8
5.4	Guarantee	9
6	Packaging materials	9
6.1	Wood	9
6.2	Foils	9
6.3	Padding and filler materials	9
7	Instructions for shrink-wrapping	10
8	Goods classes (GK)	11
9	Packaging categories (VK)	12
9.1	Packaging category VK 0: Unpacked	12
9.2	Packaging category VK 1: Cardboard box	12
9.3	Packaging category VK 2: Wooden supports with shrink-wrapping	12
9.4	Packaging category VK 3: Pallets/wooden structures with shrink-wrapping	12
9.5	Packaging category VK 4: Sheathing	13
9.5.1	Lamella packaging	13
9.5.2	Wooden laths	13
9.6	Packaging category VK 5: Crate with lining	13
9.6.3	Crate bottoms	14
9.6.4	Side walls, front walls and cover	15
9.6.5	Stack pressure	16
9.6.6	Lining	17
9.7	Packaging category VK 6: Packaging for hazardous goods	17
10	Packaging matrix	18
11	Heavy-lift hardware (suspension plates and crate angles)	20

<b>12</b>	<b>Marking and signing instructions</b>	<b>20</b>
<b>13</b>	<b>Handling markings</b>	<b>21</b>
<b>14</b>	<b>Means of transport</b>	<b>21</b>
<b>15</b>	<b>Repairs to packages</b>	<b>21</b>
<b>16</b>	<b>Reuse and disposal of packaging and/or packaging material</b>	<b>22</b>
<b>17</b>	<b>Other formalities</b>	<b>22</b>
<b>18</b>	<b>Normative references</b>	<b>23</b>
<b>19</b>	<b>List of figures</b>	<b>23</b>
<b>20</b>	<b>List of tables</b>	<b>23</b>
<b>21</b>	<b>Contact</b>	<b>24</b>

# 1 Scope

This standard applies to the Voith Group and if contractually regulated to their subcontractors. Essentially, this standard also applies for companies of the Voith Group unless contractually specified otherwise. Valid for US Group companies only if accepted by their respective board of directors.

# 2 Area of Application

This standard is used in the Shipping Department at the **Voith Group** and by its sub-suppliers. It should also be regarded as a guideline for all departments involved in preparatory activities.

# 3 Purpose

This standard defines the packing standard which must be used at the Voith **Group** and by its subcontractors. The necessary packaging type is determined by goods classes and packaging categories. Conditions for corrosion protection and storage are defined in VN 1576-1 **and have priority**. Defined in VS 1577 et seq. for detailed packing standard and have priority. It is also based on DIN EN 12195-1 **(load securing on road vehicles)** and/or the current versions of this standard.

*Due to differing conditions in the Voith divisions, as well as in the respective locations worldwide, this Voith standard defines the rules that have to be observed as a minimum standard worldwide. Any additional requirements beyond the minimum standard described here that are imposed by country-specific formalities must likewise be satisfied.*

## 3.1 National and international standards and regulations

*The application of standards and regulations declared binding by law is mandatory. For undated rules, the latest version shall apply.*

*The minimum standard for Voith is described in this Standard.*

# 4 Terms and definitions

Table 1: Terms and definitions

VN/VS	Voith Standard
<b>VQS</b>	<b>Voith Quality Standard</b>
<b>GK</b>	<b>Goods Class</b>
<b>VK</b>	<b>Packaging category</b>
<b>VCI</b>	<b>Volatile Corrosion Inhibitor – Corrosion inhibitor for metallic materials</b>
<b>PE</b>	<b>Polyethylene plastic</b>
<b>VH</b>	<b>Voith Hydro</b>
<b>VP</b>	<b>Voith Paper</b>
<b>VT</b>	<b>Voith Turbo</b>

## 5 General conditions

The existence of normative specifications of the VN 1577 series for specific product types must be checked in each case. Specific requirements have priority. Particularly the specifications of DIN ISO EN 12195-1 and/or the current version thereof take priority.

*This document is part 1 of a standard for the packing of various components of the Voith Group.*

Table 2: Parts of the series of standards

Parts of this series of standards		Validity (VH, VP, VT)
Part 1	General packing standard (Group)	VH, VP, VT
Part 2	Packing standard for rolls	VP
Part 3	Dryers	VP
Part 4	Building, process, system climatization technology/hood	VP
Part 5	Web stabilizers (e.g. duo-stabilizers)	VP
Part 6	Doctors	VP
Part ...		VP
Part 19		VP
Parts 20-39		VH
Parts 40-59		VT

### 5.1 Special notes

1. The contractor is responsible for selecting the packaging category, the corrosion protection in accordance with VN 1576-1 and the materials to be used. When pallets, crates, part packaging, etc., are fabricated, the packaging must be reasonably designed for the weight and properties of the goods. *Suitable packaging must be agreed in consultation with Voith for specific, sensitive goods or heavy items (e.g. production of steel transport devices)*

2. *Unless otherwise agreed, the shipper undertakes to pack goods in accordance with the HPE standard. This standard can be obtained for a fee from the Bundesverband Holzpackmittel, Paletten, Exportverpackung HPE (Federal Association of Wooden Packaging, Pallets and Export Packaging). (Packaging specialist group (hpe.de)).*

3. *If the goods class is not specified, this must be determined by the contractor itself. If anything is unclear, consult Voith Paper.*

4. This packing standard should be regarded as the minimum requirement. Should the contractor state that additional measures for protecting the goods are required, these should be taken in consultation with Voith Paper.

5. The contractor is obliged to use economical and space-saving packaging. The option of co-packing should be considered and utilized after prior consultation with Voith Paper.

6. Generally, the packaging has to be designed so that the packed goods and the packaging can be transported and stored without damage. Furthermore, the packaging must be able to withstand several transshipments during transportation. *Voith reserves the right to repair inadequately packed consignments*

during transportation (e.g. container stowage) and to repair any damage. The costs thus incurred will be passed on to the original sender.

7. Small parts (e.g. screws, nuts, washers, etc.) must be packed in plastic bags, and these in turn in small boxes or wooden crates, keeping together components belonging to the same assembly group, in accordance with the order item.

8. Loose parts (machined lots, flanges, pipe sockets, sheet metal parts, etc.) in the form of wooden crates or cardboard boxes are to be packed in such a way that reciprocal damaging of the parts is prevented by adequate padding and fixing.

9. Parts located on machines/tanks that are not yet fixed, such as loose flanges and non-closable flaps, must be secured to prevent slippage (e.g. using belts and straps, ...).

10. Special consideration should be given to the climatic conditions of sea transportation (e.g. contact with salt water, condensation water, salt-laden air, temperature fluctuations, etc.) with regard to corrosion protection and the packaging category selected.

11. Unless specified and labeled otherwise, the packaging must offer protection against all environmental factors at the destination for a pure storage period of at least 6 months. The specified storage and conservation codes as well as the expected transportation time and method must be taken into account accordingly. If the total time between delivery and installation (transport + storage) is more than 9 months for Voith Paper or 12 months for Voith Hydro, separate packing measures must be agreed separately with Voith. This applies, for example, to knowingly prolonged storage or storage under special climate-critical conditions

12. The labeling and description of the contents of the package and/or freight units must completely and exactly match the packing lists. A copy of this packing list must be permanently affixed to the outside of each package and/or freight unit in a position that keeps it easily legible and protected against loss. All barcodes or QR codes must also be readable by electronic devices on wrapped packages. It is important to ensure that no references to the supplier appear on labels and/or codes (neutral paper or packing list provided by Voith Paper).

13. If the packaging is specified for the particular order or product in other documents (e.g. project guidelines, drawing, etc.), compliance with this specification is mandatory. If applicable, these documents can be found in the order records.

14. When packing, special attention should be paid to keeping together components belonging to the same assembly group.

15. Openings of tanks and piping with high surface requirements are to be sealed watertight, for example by means of plastic protective caps or sealing plugs. Alternatively, openings can be closed by means of blind flanges (wood). Between the blind flange and the component, a barrier layer (foil, for example) is to be applied.

#### 16. Stacking

The individual divisions have to comply with various specifications for dimensioning the packaging to cover the possibility of stacking.

17.

Table 3: Regulations for the divisions

- |                    |  |
|--------------------|--|
| Voith Paper        | • Unless specified otherwise, no stacking. If stacking is possible, the stack height must be specified in m.   |
| <b>Voith Hydro</b> | • <b>Stacking in accordance with HPE guidelines with the aim of using the containers and trucks to optimum effect. Seaworthy wooden crates must be dimensioned with a stacking pressure of 1 t per square meter over the entire surface.</b> |

18. Unless specified otherwise, impacts and accelerations of maximum 1g or 9.81 m/s<sup>2</sup> (in accordance with ISO EN 12195-1) during transport and handling operations must not be exceeded.

19. The maximum loads of 0.8 g must be secured in the horizontal and vertical downward directions. The delta of 0.2 g to the maximum permissible 1 g or 9.81 m/s<sup>2</sup> is absorbed by the frictional force.

20. Humidity indicators must be used if required, e.g. for sensitive electrical and/or electronic components. A separate agreement is required in this respect.

21. The aeration of the packaging shall be designed according to need. Holes must be specified in, e.g. crate floors and/or walls accordingly.

**22.** Fixing and lashing points must remain accessible after packing and must not be concealed by the packaging. The packaging must be protected from destruction.

Table 4: Lashing points

- |                    |  |
|--------------------|--|
| <b>Voith Paper</b> | <b>All components weighing over 10 tons that do not fit into standard containers must be provided with lashing facilities on the component itself. Appropriate access and load points / shackles / threads must be provided for this purpose.</b>  |
| <b>Voith Hydro</b> | <b>Components weighing over 10 tons, which do not fit into standard containers, need to be provided with lashing options on the component itself only if they are intended for RoRo (roll on / roll off) shipping. Appropriate access and load points / shackles / threads must be provided for this purpose. The Voith Hydro logistics department must be consulted in good time.</b> |

**If direct lashing is not possible or does not make sense, e.g. from a structural perspective, the logistics department must be consulted.**

23. Protection against theft and vandalism must be agreed separately under the terms of a contract.

## 5.2 Corrosion protection

Due to the potentially long transportation and storage times, all sensitive equipment must be protected against corrosion in addition to any corrosion protection applied by the manufacturer of the goods. Corrosion protection is applied in accordance with VN 1576-1. The processing instructions for the relevant anti-corrosion agent must be strictly followed.

## 5.3 External packing inspections (for direct deliveries)

1. Voith has the right to inspect the packing at the contractor at any time.
- 2. Packing inspections shall not relieve the contractor of its contractual obligations.**
- 3. Costs for the repair/reinforcement of inadequate packing during transportation (e.g. container stowage) shall be borne by the party responsible for the original inadequate packaging (see Section 7)**



## 5.4 Guarantee

The contractor guarantees contractual design of the packaging according to the state of the art, in particular the best quality and suitability of the packaging material, as well as the suitability of the packaging, taking into account the goods to be packed and the actual stress, for the guarantee periods set forth in the relevant contracts.

# 6 Packaging materials

## 6.1 Wood

All wood used (crates, pallets, dunnage bars, etc.) must be treated in accordance with the IPPC Standard and marked accordingly.

## 6.2 Foils

### *Permissible foils*

1. Aluminum composite foil designed as sealing layer foil
2. Shrink-wrap foil transparent at least 200 µm thick
3. VCI foil (volatile corrosion inhibitor)

*The use of other films must be agreed with Voith.*

## 6.3 Padding and filler materials

Padding paper, air bags, air cushion foils, foam foils and foam mats are to be used as filler material.  
**Attention:** Styrofoam chips must never be used.

## 7 Instructions for shrink-wrapping

### 1. Aluminum composite foil designed as sealing layer foil

Shrink-wrap the goods in aluminum foil. Edges or projecting parts must be sufficiently padded.

When using foils in a crate, a distance between the foil and the crate wall of 30 – 50 mm must be observed.

Direct contact of the aluminum foil with the crate bottom or wooden structure must be avoided (putting-in of air cushion foil, foam, etc.).

After the foil is processed, the trapped air must be drawn off (vacuum approx. 6 mbar).

Place adequate quantities of desiccants (silica gel) inside to absorb the air humidity, or take suitable measures to create a room climate that prevents corrosion. In order to prevent contact corrosion, position the desiccants so that there is no direct contact with the packed goods. The desiccant bags must be guaranteed to be dustproof and sufficiently stable to prevent them from opening if dropped.

### 2. Shrink-wrap foil transparent

The parts must be shrink-wrapped in polymer foil. If possible, this should be attached to the support beams of the pallet/wooden structure or to the crate bottom.

Make sure that the foil fits snugly. Edges and projecting parts should be padded with foam, for example, to prevent damage to the foil. **Make sure that the foil is tight and that no moisture/wetness can collect in hollows.**

### 3. VCI foil (volatile corrosion inhibitor)

**VCI foil should be used for components with machined, bare surfaces. The parts must be shrink-wrapped in VCI foil.** When packing, make sure the surface of the component is clean. The VCI foil should not be more than 30 cm from the metal surface. For a packing volume of more than one cubic meter, additional VCI dispensers (e.g. VCI powder, VCI paper, etc.) are to be placed in the package. The packing space must be sealed so that the VCI molecules cannot escape. It must be ensured that the foil is not damaged by sharp edges and protruding parts. When using VCI products, the protective effect and compatibility must be agreed with the manufacturer. In addition, VCI products from different manufacturers are often incompatible and should therefore not be combined.

## 8 Goods classes (GK)

As the materials to be packed are of different physical and chemical sensitivities, they are classified in the following goods classes, depending on their properties.

Table 5: Goods classes (GK)

Class	Designation	Examples / products (general or specific to Voith Paper / Hydro / Turbo)
GK 0	Semi-finished products	<ul style="list-style-type: none"> <li>• Sheet metal, pipes, rods; parts to be set in concrete (sole plates)</li> </ul>
GK 1	Shock and corrosion-resistant parts	<ul style="list-style-type: none"> <li>• Piping, supporting structures</li> <li>• Steel structures</li> <li>• Profile bars</li> <li>• Shaped pipes</li> <li>• Scaffolding</li> <li>• Spirals</li> </ul>
GK 2	Heavy, bulky parts (corrosion-resistant)	<ul style="list-style-type: none"> <li>• Framing parts</li> <li>• Walkways</li> <li>• Parts with cooling ribs, robust machines</li> <li>• Thin-walled sheet metal parts, channels, white water pans, vats, spirals, hydropower turbines</li> </ul>
GK 3	Small items (corrosion-resistant)	<ul style="list-style-type: none"> <li>• Plastics</li> <li>• Small painted, coated parts</li> </ul>
GK 4	Materials and goods that are corrosion-sensitive and/or require chemical and physical protection	<ul style="list-style-type: none"> <li>• Machine elements, gearwheels, couplings, axles, shafts</li> <li>• Fasteners (screws, wedges, springs)</li> </ul>
GK 5	Materials and goods that are corrosion-sensitive and/or require chemical and physical protection and/or are shock and vibration-sensitive	<ul style="list-style-type: none"> <li>• Electrical, electromechanical components, electronic materials</li> <li>• Computers, control cabinets, precision mechanical measuring instruments</li> </ul>
GK 6	Hazardous goods	<ul style="list-style-type: none"> <li>• Paints, adhesives, chemicals, acids, solvents, fuels, etc.</li> </ul>

## 9 Packaging categories (VK)

### 9.1 Packaging category VK 0: Unpacked

Components are not packed. However, transportation by means of crane or forklift must be possible **without the component becoming damaged.**

### 9.2 Packaging category VK 1: Cardboard box

Small and spare parts for transportation within Europe or air cargo shipment should, if their dimensions allow, be packed in stable cardboard boxes of standard design.

- From a gross weight of 5 kg, the cardboard boxes must be strapped with steel or polyester bands.
- From 30 to 1000 kg gross weight, disposable or euro pallets must be placed under the cardboard boxes.
- For weights over 1000 kg, special pallets with the required load-bearing capacity must be used.
- As a rule, pallets or special pallets that have undergone treatment as specified in the IPPC standard have to be used.

### 9.3 Packaging category VK 2: Wooden supports with shrink-wrapping

Wooden supports can be used for the packing of, e.g. cylindrical vessels, carriers or similar goods.

- Every opening must be sealed watertight, e.g. by means of plugs, protective caps made of metal or plastic, and larger openings by means of blind flanges made of wood or steel.
- Vessels and apparatus with their own support bearings must be provided with a wooden support of at least 30 mm thick to prevent sliding. The timber bolsters must be fastened by means of plastic strapping.
- Existing branches should, where possible, be turned into dead space to prevent damage.

### 9.4 Packaging category VK 3: Pallets/wooden structures with shrink-wrapping

For goods which, due to their size, cannot be packed in cardboard boxes, pallets or suitable wooden structures must be fabricated to enable handling by forklifts.

- Preferably four-way flat pallets of wood 800 x 1200 mm (Euro pallet) in accordance with EN 13698-1 should be used.
- The pallets or wooden structures must extend at least 20 mm beyond the component on all sides to prevent damage.

Figure 1 Difference between correctly packed and incorrectly packed goods



The recommended minimum number of longitudinal skids based on bottom width for wooden/pallet structures can be found in Table 5.

Table 6: Number of longitudinal skids based on bottom width

<b>Bottom width in mm</b>	1000	1200	1700	2100	2400
<b>Number</b>	2	3	4	5	6

The parts are fastened with suitable steel band, plastic band or preferably with screws so that slipping cannot occur. The parts are to be appropriately protected against damage by the fastener. If a screw connection is possible, screw the screws into the longitudinal skids. When using bands, make sure that they are not destroyed by the forks of forklift during handling.

Between the goods and the wooden packaging, a suitable sealing layer should in any case be laid, such as aluminum foil, anti-skid mat or similar material.

### 9.5 Packaging category VK 4: Sheathing

The sheathing can be made with lamella packaging or wooden laths.

#### 9.5.1 Lamella packaging

Lamella packaging must be fixed by means of adhesive tapes.

#### 9.5.2 Wooden laths

If wooden laths are used, care must be taken to ensure that a watertight sealing layer is installed between the wooden laths and the component.

The lath width must be selected according to the respective component diameter, but max. 70 mm.

The wooden laths must be fixed by means of zinc anodized steel band or plastic bands.

### 9.6 Packaging category VK 5: Crate with lining

Basically, the crate design has to be suitable for the total gross weight.

Figure 2: Crate and cover design

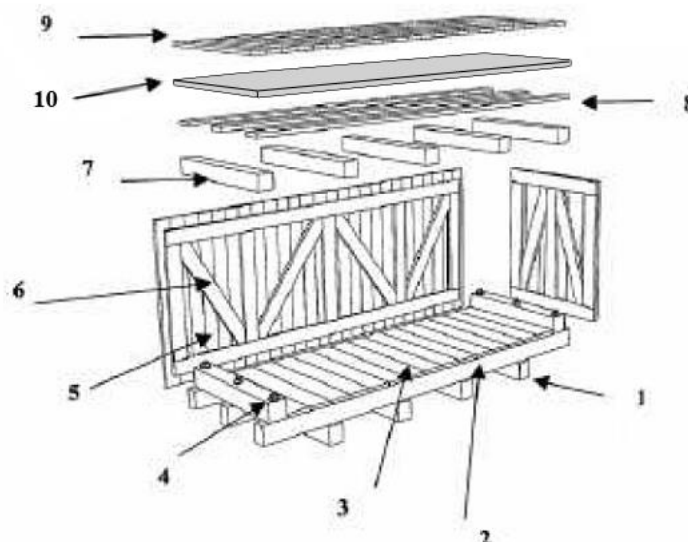


Table 7: Legend for Figure 2

Description of the components in figure			
1	Transverse skids	6	Diagonal/stiffening boards
2	Longitudinal skids	7	Lid compression timber
3	Floorboards	8	Lid laths
4	Front-end beam	9	Lid boards
5	Side wall boards	10	Sealing layer

### 9.6.3 Crate bottoms

Longitudinal skids must be at least 80 mm thick (number according to Table 5), bottom planking at least 24 mm thick.

For crates > 5 t and/or width > 2000 mm: front-end beam bolted to longitudinal skid (through bolt with washer + nut).

Transverse bottom skids up to 5 t, **100 x 100 mm thick**, from 5 t, **100 x 120 mm thick** (mount upright), have to be bolted to the longitudinal skids or securely nailed several times. The arrangement must be carried out according to the center of gravity of the goods, so that lifting with a forklift is possible. If necessary, lifting options depending on the center of gravity for a crane are required.

Special instructions for heavy-lift packing  $\geq 5$  t: For heavy-lift packing, the crates must be provided with special heavy-lift hardware and/or crate angles.

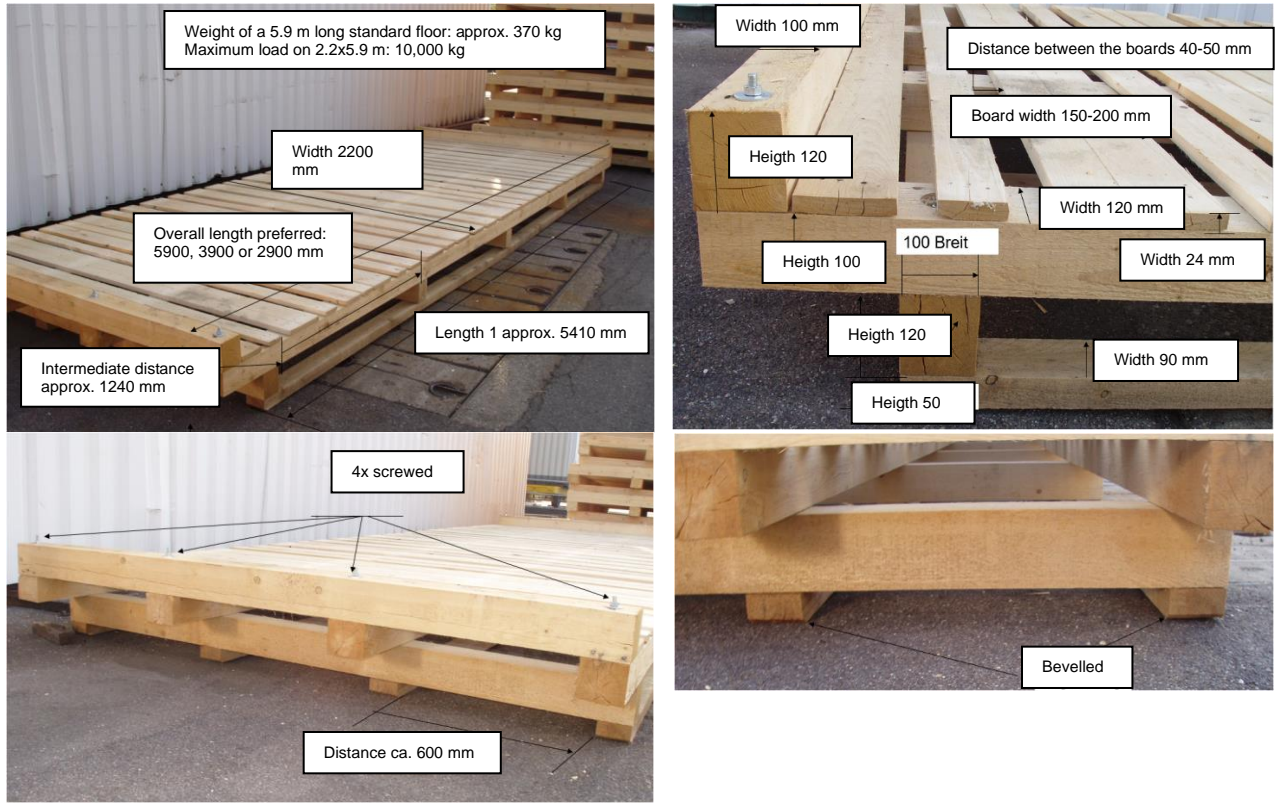
The parts should preferably be secured to the crate bottom with screws fastened into the longitudinal skids. If there is no possibility of attaching screws, tie down the part with tension bands. In addition, squared timbers must be installed to prevent slipping.

The bottom can be created as a pure bottom in an "open design" or in a "closed design" for a closed crate, depending on the requirement. The design must be agreed for assignment.

Figure 3: Bottom in open design



Figure 4: Dimensions and design of open bottoms



### 9.6.4 Side walls, front walls and cover

The distance of the vertical laths of the side and front walls should not exceed 1 m. The front wall should have one vertical lath per longitudinal skid.

The distance between the component and the side wall must not be less than 50 mm.

For crates > 2 t and/or length > 3000 mm and/or crate height > 1500 mm truss-type stiffening is required. The cover and the corresponding design of the support for the lid compression timbers must be made according to the requirements of the stack pressure. Between the lid laths and lid boards, a sealing layer composed of a hardboard and PE foil must be fitted.

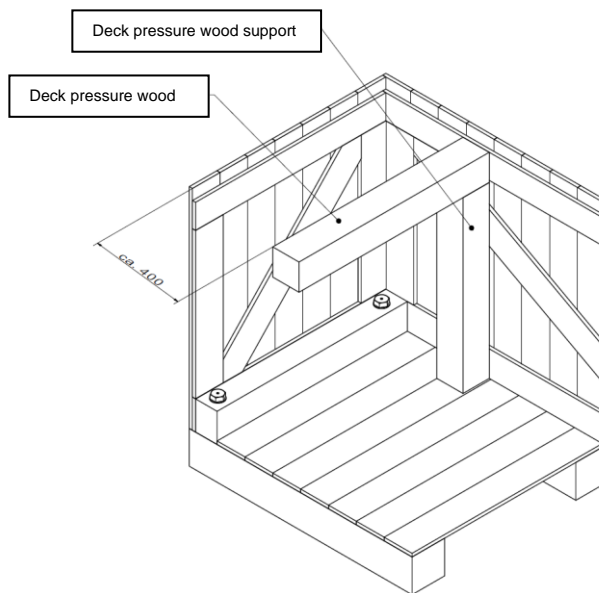
### 9.6.5 Stack pressure

Unless agreed otherwise, strap frames, diagonals and lid supports must be designed for a stack pressure of at least 1 t/m<sup>2</sup>. The lid compression timbers, including lid compression timber supports, must be installed at distances of **600 – 700 mm** and nailed to the side walls. The distance of the lid supports to the front walls should be approx. 400 mm in each case.

Figure 5: Crate design for stack pressure



Figure 6: Lid compression timber and lid compressed timber supports





### 9.6.6 Lining

The inside walls and the cover of the crate must be lined with an overlapping waterproof specialty paper or equivalent material. The lining must not be pierced or damaged.

## 9.7 Packaging category VK 6: Packaging for hazardous goods

Only goods in suitable and approved packaging are allowed to be transported.

For selecting suitable and approved packaging and ensuring marking and labeling in accordance with the specifications, the following regulations must be observed:

- UN number (or national system)
- Hazardous goods class
- Packaging group
- Released quantity
- and other factors, such as the national laws and regulations, as well as the relevant international regulations must be applied. Examples include:
  - ADR (road)
  - RID (rail)
  - ADN (inland waterways)
  - IMDG (sea)
  - IATA (air)

## 10 Packaging matrix

Should several carriers be deployed for shipment of the goods, the packaging must be in accordance with the highest packaging category/transport class.

If the order does not specify the transport type, road or sea transport via truck, rail or and/or container ship must be assumed. The method of stowage of goods on ships (containers or flat) depends on the package size. This must be taken into account when selecting the packaging.

If the packaging for catalog parts does not meet the requirements defined in this standard, the goods concerned must be suitably repacked.

**Voith Paper and Hydro have different storage codes!**

**Table 8: Storage codes**

<b>Voith Paper Storage code letter</b>		<b>Voith Hydro Storage code letter</b>	
A	<i>Internal storage area – temperature-controlled building (+10 °C to +35 °C)</i>	S0	<i>Internal storage area – temperature-controlled building (+3 °C to +10 °C)</i>
B	<i>Internal storage area – unheated, dry building</i>	S1	<i>Internal storage area – temperature-controlled building (+5 °C to +25 °C)</i>
C	<i>Open-air storage area – covered or protected with a tarpaulin and consolidated foundation</i>	S2	<i>Internal storage area – temperature-controlled building (+5 °C frost-free)</i>
D	<i>Open air-storage area with consolidated foundation (permitted only if damage to the packaging and to the component by the influence of weather can be ruled out)</i>	S3	<i>Open-air storage area, consolidated foundation</i>
		S4	<i>Open-air storage area covered with foil, set down on wooden beams. No direct contact between component and floor</i>
		S5	<i>Open air-storage area with consolidated foundation (permitted only if damage to the packaging and to the component by the influence of weather can be ruled out)</i>

Table 9: Overview of goods class, packaging category, storage code

GK	Transport route				Voith Paper Storage in accordance with VN 1576-1 (VP)	Voith Hydro storage area identifier
	Road/Air		Sea			
	VK	Shrink-wrapping	VK	Shrink-wrapping		
0	0	-	0	-	C, D <sup>1)</sup>	S4 <sup>1)</sup> , S5 <sup>1)</sup>
1	1	-	1	PE foil	C, D <sup>1)</sup>	S4 <sup>1)</sup>
	2	PE foil	2			
	3		3			
	5	-	5			
2	2	PE foil	2	PE foil	C, D <sup>1)</sup>	S3
	3		3			
	4	-	4	-		
	5	-	5	PE foil		
3	1	-	1	PE foil	B	S2
	5		5			
4	1	VCI foil	4	-	A, B	S2, S3
	3					
	4	-	5	VCI foil/ aluminum foil		
	5	VCI foil				
5	Catalog parts: Packaging according to manufacturer		Catalog parts: Packaging according to manufacturer		A <sup>2)</sup>	S1/S2
6	6	-	6	-	A <sup>2)</sup>	S0, S1 <sup>2)</sup>
<sup>1)</sup> Storage according to the letter D / S4-S5 may only take place if the packaging and the component are not damaged by the influence of weather.						
<sup>2)</sup> If necessary, reference must also be made to air-conditioning.						

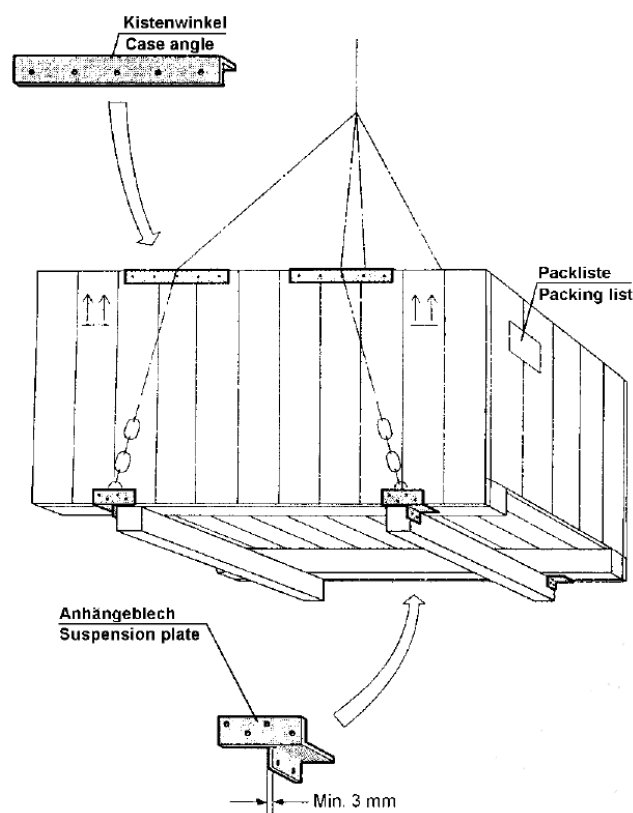
## 11 Heavy-lift hardware (suspension plates and crate angles)

Crates with a gross weight of more than **5 t** shall have hardware of steel on the bottom and top edges in cable position (sheet metal thickness depending on weight, but minimum of 3 mm).

Suspension plates appropriate for the total weight of the loaded crate are to be selected and attached.

The crate angles serve to protect the crate from damage during slinging with ropes, chains, etc., on a crane.

Figure 7: Fitting of heavy-lift hardware



## 12 Marking and signing instructions

Necessary labeling and marking is specified according to order.

For **driven** components, the front side and drive side must be identified and clearly visible on the packaging. The storage code must be affixed on the outside of the handling unit package in a readily visible position.

## 13 Handling markings

The symbol corresponding to the required storage instructions must be attached to the package in accordance with the packing list.

The symbols are made known for the specific order.

The "center of gravity" symbol must be put on at least two adjacent sides of the package as soon as the weight of the package exceeds **1 t** or the center of gravity is decentralized/off-center.

The corresponding symbols for the handling and storage of packages must be designed in accordance with ISO 780.

Handling markings must be affixed to the handling unit using spray paint. If this is not possible, it must be ensured that the markings are securely affixed and cannot work loose or become lost during transportation.

## 14 Means of transport

This instruction and the interpretations thereof shall be applied with respect to the various requirements for the different means of transport. As a rule, the products are transported by truck, train, ship or by air freight in an aircraft. Various transport methods for the same means of transport, e.g. by train as special transport or by train as standard freight, must be considered. The handling of the components and the associated loads occurring as a result can vary significantly. For example, acceleration (G forces) when maneuvering.

## 15 Repairs to packages

The following repairs must be carried out by the shipping company employee as required.

- Damage to the foil (up to approx. 30 cm in size)
- Loose planks on crates if these can be repaired simply using a hammer (and nails).

Generally, all damage must be reported to the appointed contact at Voith, and documented with a picture, immediately on occurrence and before a repair is carried out.

## 16 Reuse and disposal of packaging and/or packaging material

Basically, reusable and/or recyclable materials are used.

Packaging materials (e.g. pallets, transportation rack) are taken back wherever possible.

If taking back is possible, this shall be agreed separately.

If packaging materials are disposed of, they must be correctly sorted in accordance with the relevant instructions.

Packaging that has to be disposed of as special waste should be avoided and proof of proper disposal must be furnished.

Basically, it is important to ensure that the packaging is designed in the most environmentally and resource friendly manner possible.

## 17 Other formalities

International and national provisions specific to hazardous goods must be observed.

Any other specific packing requirements for components and products shall be set out in **other works standards (VS) (see Table 2: Parts of the series of standards) or covered by the Voith Quality Standards (VQS)** for the project.

In the absence of any specific requirements, the general **Voith Standard (VS)** packing instructions shall apply. If anything is unclear, the relevant contact (e.g. in Purchasing) at Voith must be approached.

## 18 Normative references

*The following documents are referenced in the text in such a way that some parts thereof or their entire contents constitute requirements of this document. For dated references, only the edition mentioned shall apply. For undated references, the last edition of the referenced document (including all modifications) shall apply.*

Table 10: Normative references

Document	Title
VN 1576-1	Voith; Preservation and Storage; Part 1: General preservation and storage
VS 1577 et seq.	Voith Paper; Packing standard; Part 1: General packing standard
EN 13698-1	Pallet production specification - Part 1: Construction specification for 800 mm x 1200 mm flat wooden pallets.
ISO 780	Packaging - Distribution packaging - Graphical symbols for handling and storage of packages.
EN 12195-1	Load restraining on road vehicles - Safety - Part 1: Calculation of securing forces.

## 19 List of figures

Figure 1 Difference between correctly packed and incorrectly packed goods .....	12
Figure 2: Crate and cover design .....	13
Figure 3: Bottom in open design .....	14
Figure 4: Dimensions and design of open bottoms .....	15
Figure 5: Crate design for stack pressure .....	16
Figure 6: Lid compression timber and lid compressed timber supports .....	16
Figure 7: Fitting of heavy-lift hardware .....	20

## 20 List of tables

Table 1: Terms and definitions .....	5
Table 2: Parts of the series of standards .....	6
Table 3: Regulations for the divisions .....	8
<b>Table 4: Lashing points</b> .....	8
Table 5: Goods classes (GK) .....	11
Table 6: Number of longitudinal skids based on bottom width .....	13
Table 7: Legend for Abbildung 2 .....	14
<b>Table 8: Storage codes</b> .....	18
Table 9: Overview of goods class, packaging category, storage code .....	19
Table 10: Normative references .....	23

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