

## VOITH STANDARD (VS)



# Preservation and storage

## Part 2: Preservation and storage of rolls

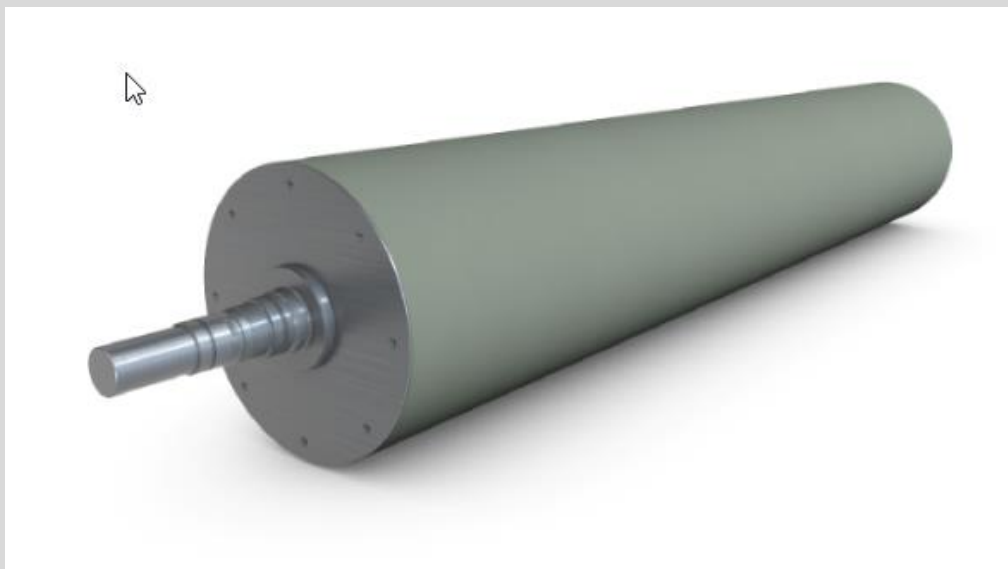
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### Abstract:

This standard describes the preservation and storage of rolls.

| Name        |                                 | Signature / Date                |
|-------------|---------------------------------|---------------------------------|
| Created by  | Schuetzte, Andreas – VPH – p4dr | Schuetzte, Andreas / 2022-10-07 |
| Checked by  | Müller, Thomas – VPH – zqsh     | Müller, Thomas / 2022-10-07     |
| Released by | Straub, Markus – VPH – zqs      | Straub, Markus / 2022-10-07     |

## Revisions

Compared to VN 1576-2: 2018-07, the following alterations were made:

- a) Complete transfer of VN 1576-2 to VS 1576-2
- b) Editorial revision, adaptation to new chapter structure and layout
- c) Chapter 1 Scope expanded to other companies
- d) Chapter 3 Regulatory amendments due to different conditions at the locations
- e) Chapter 5 Closing of holes and threaded holes if components are not packed further
- f) Chapter 6 Use of corrosion inhibitors expanded
- g) Chapter 7 Preservation matrix dropped and replaced by Figure - Preservation composition of rolls
- h) Chapter 7.1 Design of rolls added
- i) Table 3 Preservation measures added
- j) Chapter 9 Removal of preserving agent added

## Earlier editions

VN 1576-2: 2008-01

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# 1 Scope

*This standard applies for the Paper Division of the Voith Group. 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 applies in particular to the preservation and storage of rolls for paper machines, coating machines, calenders and also winders.

# 3 Purpose

*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.*

*This VS recommends measures for preserving and storing rolls in order to prevent corrosive influences causing damage during transport and storage.*

## 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 abbreviations

Table 1: Terms and abbreviations

|           |                       |
|-----------|-----------------------|
| VN        | Voith Norm            |
| <b>VS</b> | <b>Voith Standard</b> |
| GK        | Goods classes         |

## 5 General

For all preserved parts, a waterproof barrier layer must be used as separating layer from the wooden support. Paper or board must **not** be used because of possible moisture.

Rapid temperature changes lead to damage or destruction of the roll cover.

*If components are not packed further, the holes and tapped holes must be closed with, for example, plastic plugs (also on parts clad with stainless steel)*

## 6 Use of corrosion inhibitors

The corrosion inhibitors to be used are classified into two groups based on properties and use. defined in VN 1576-1.

In addition, flexible lamella protective mats and insulating foam mats are used to preserve rolls.

### 6.1 Corrosion-inhibitor paper with oil/fat-based coating

*Wrap roll shell with corrosion-inhibitor paper (e.g. oiled paper or paraffin paper) overlapping and wrinkle-free*

### 6.2 Corrosion-inhibitor paper with VCI coating

*Wrap the roll shell with corrosion-inhibitor paper (e.g. BRANOröst) overlapping and wrinkle-free*

### 6.3 Paper or carton

*Wrap the roll shell with paper or carton overlapping and wrinkle-free.*

### 6.4 Insulating foam mat

The cold/heat insulating mat must rest snugly *on the roll shell* and be bonded tightly at the joints (adhesive tape).

### 6.5 Reinforced paper

*Wrap the roll shell with reinforced paper, make paper webs overlap.*

*The radial and axial joints must be completely (tightly) bonded with adhesive tape. Press end-face excess length onto roll end face and completely (tightly) bond with adhesive tape.*

### 6.6 Flexible lamella, protective mat

Lay the lamella protective mat (impact protection) *on the roll shell* and fasten with tightening strap. Never attach directly to the coating. Tension the tension band only lightly.

### 6.7 Plastic foil

*Once the preserving agent has been applied, wrap the journals with plastic foil (e.g. flexible stretch foil).*

## **6.8 Drying agent**

Apply drying agent (bags) to the top half of the roll shell (tension band). Approx. 10 bags of drying agent (unit 8 acc. DIN 55473) are required per m<sup>3</sup>. Apply 10 bags of drying agent on both the drive-side and the front-side bearing assemblies (tension band).

## **6.9 Aluminum composite foil**

Shrink-wrap roll completely with aluminum composite foil (200°C – 40N/cm<sup>2</sup> - 2s) and/or exhaust the air

## **6.10 VCI foil**

Wrap roll completely with VCI foil. The joints must be tightly bonded with adhesive tape.

## **6.11 Coated rolls – covers from rubber, polyurethane, composite material, stainless steel cover, thermal coating**

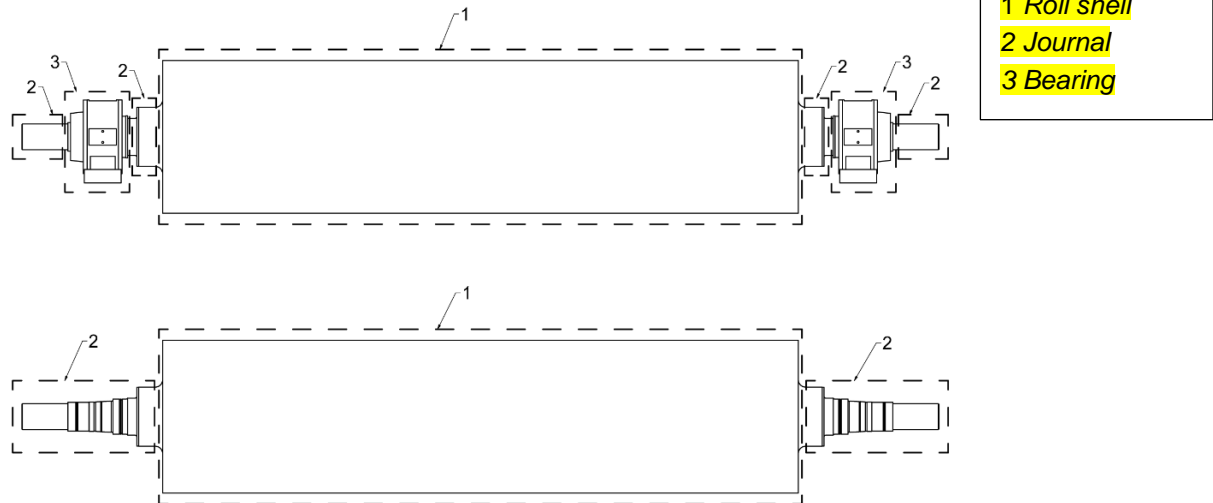
The coating must not come into contact with corrosion inhibitors

## **6.12 Coated rolls – chromium**

The chromium coating must not come into contact with corrosion inhibitors

## 7 Preservation composition

Figure 1: Defined areas for the preservation composition



Reference drawing 1.20-022941

### 7.1 Design of roll types

Table 2: Assignment of roll types to Table 3 Measures for preservation and storage

| Roll cover     | Roll type cover design  | Roll designation  |
|----------------|---|---|
| Uncoated rolls | Undrilled, unalloyed steel  | Dryer fabric roll; paper roll; Nipco roll; FlexiTherm roll  |
|                | Drilled/grooved, unalloyed steel/casting  | DuoStabilizer roll; winder drum; reel drum  |
|                | Stainless steel   | Suction roll  |
| Coated rolls   | Chromium  | Dryer fabric roll;<br>Paper roll; FlexiTherm roll   |
|                | Steel, rubber, polyurethane, composite material, stainless steel cover, thermally sprayed coating | Press roll, wire roll, felt roll; dryer fabric roll, paper roll; Nipco roll; applicator roll; couch roll; winder drum; reel drum, reel spool; FlexiTherm roll |
|                | Drilled – thermally sprayed coating   | DuoStabilizer roll; winder drum; reel drum;   |
|                | Stainless steel or with thermally sprayed coating or with honeycomb lattice/screen fabric         | Suction roll  |
|                | Stainless steel, rubber, polyurethane composite material  | Suction roll  |

Table 3: Measures for preservation and packing

| Part         | Step | Roll types  | Uncoated rolls                          |  |                 | Coated rolls     |   |                                     |   |
|--------------|------|---|---|--|-----------------|------------------|---|-------------------------------------|---|
|              |      |   | Undrilled, <sup>1</sup> unalloyed steel | Drilled/grooved, unalloyed steel/casting | Stainless steel | Chromium         | Steel, rubber, polyurethane, composite material, Stainless steel cover, thermally sprayed coating | Drilled – thermally sprayed coating | Stainless steel, rubber, polyurethane, composite material |
| Roll shell 1 | —    | Storage type  | B                                       | B  | A               | A                | A   | A                                   | A   |
|              | 1    | Coating with a Group 1 and Group 2 corrosion inhibitor  | X                                       | (X) <sup>1</sup>                         |                 | (X) <sup>1</sup> | (X) <sup>3</sup>  |                                     |   |
|              | 2    | Corrosion-inhibitor paper (e.g. oiled paper or paraffin paper)  | X                                       |  |                 |                  | (X) <sup>3</sup>  |                                     |   |
|              | 3    | Corrosion-inhibitor paper with VCI  |   | X  |                 | X                |   |                                     |   |
|              | 4    | Wrapping paper and carton (corrugated board)  |   |  |                 |                  |   | X                                   |   |
|              | 5    | Insulating foam mat   |   |  |                 |                  | X   |                                     | X   |
|              | 6    | Reinforced paper  | X                                       |  | X               | X                |   |                                     |   |
|              | 7    | Flexible lamella protective mat (for transport on pedestals).   | (X)                                     |  | X               | (X)              | X   |                                     | X   |
|              | 8    | Drying agent  |   | X  |                 |                  |   | X                                   |   |
|              | 9    | Aluminum composite foil   |   |  |                 |                  |   | X                                   |   |
|              | 10   | VCI foil  |   | X  |                 |                  |   |                                     |   |
| Journal      | 1    | Machined and non-painted surfaces must be preserved with a Group 1 or Group 2 corrosion inhibitor.    | X                                       | X  | X               | X                | X   | X                                   | X   |
|              | 2    | Corrosion-inhibitor paper (e.g. oiled paper or paraffin paper)  | X                                       | X  | X               | X                | X   | X                                   | X   |
|              | 3    | Plastic foil  | X                                       | X  | X               | X                | X   | X                                   | X   |
| Bearing 3    | 1    | Coating with a Group 1 or Group 2 corrosion inhibitor   | X                                       | X  | X               | X                | X   | X                                   | X   |
|              | 2    | Holes and tapped holes are closed, e.g. with plastic plugs (also on parts clad with stainless steel). | X                                       | X  | X               | X                | X   | X                                   | X   |
|              | 3    | Preserve bearing housing (internal) (e.g. Dinitrol 3654) <sup>2</sup>                                 | X                                       | X  | X               | X                | X   | X                                   | X   |
|              | 4    | Drying agent  |   | X  |                 |                  |   | X                                   |   |

<sup>1</sup> In VPC/VPCY, a thin coating of Group 1 or Group 2 corrosion inhibitor is applied instead of corrosion inhibitor paper with VCI".<sup>2</sup> Preservation must be compatible with the bearing lubrication (oil / grease)<sup>3</sup> Thermally sprayed layer on calender and guide roll for sea transport



## 8 Storage

The storage conditions are marked by a single-digit, separate identification letter.

Table 4: Storage conditions

| Code letters | Storage  | Roll type                            |
|--------------|--|--------------------------------------|
| A            | Storage in temperate buildings<br>(+10°C to +35°C) | Coated rolls                         |
| B            | Storage in dry, unheated buildings.                | Uncoated rolls, if A is not possible |

The storage of rolls outdoors is essentially forbidden.

Recommended storage time in relation to the preservation group:

- Up to 12 months storage time with a group 2 anti-corrosion agent.
- Up to 6 months storage time with a group 1 anti-corrosion agent.

If the recommended storage time is exceeded, the preservation must be checked and renewed if necessary.

## 9 Removing preserving agent

### 9.1 Journal

Remove the applied corrosion protection by carefully rubbing with a blade from a synthetic material (such as plastic, textile fibers).

Remove the residual corrosion protection grease or wax using a rag soaked in solvent (spirit, petroleum ether, etc.).

### 9.2 Roll shell

Cleaning can be accelerated by applying light solvents to the surface (spirit, petroleum ether, etc.). Rags soaked in solvent can be useful for removing the residual protective layer.

Please note that only approved chemicals are used. Protective clothing must be worn. Avoid damage and corrosion on the surface of the dryer roll.

## 10 Normative references

The following documents are referred to in the text in such a way that some parts of them or their entire content constitute requirements of this document. In the case of dated references, only the referred edition applies. In the case of undated references, the last edition of the referenced document (including any amendments) shall apply.

Table 5: Normative references

| Document  | Title  |
|---|--|
| VN 1576-1   | Preservation and storage<br>Part 1: General preservation and storage |
| DIN 55473   | Auxiliary means of packaging – Desiccant in bag                      |
| – Unless stated otherwise, the most recent version of this standard shall apply – |  |

## 11 List of figures

Figure 1: Defined areas for the preservation composition ..... Fehler! Textmarke nicht definiert.

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## 13 Contact

Voith Group | Paper Division  
St. Pöltener Straße 43  
89522 Heidenheim, Germany

Tel. 49 7321 37-7060

**GroupStandardization@voith.com**  
[www.voith.com](http://www.voith.com)



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