



Report number : RPT/TTF/24/009
Issue date : 2nd February 2024
Customer reference : Bumboo - 004
Samples received : 1st February 2024
Samples tested : 1st February 2024

Customer: **Huw James**
Address: **Root 7 Ltd. Unit 14 Bessemer Park, 250 Milkwood Road. London. SE24 0HG. UK**

Furnish Analysis Report

1. Request

To quantify the furnish ratio and identify the wood genus / (species) in a sample of Toilet Tissue Paper labelled - **Bumboo – 004**

2. Sample

Upon receipt at Test-Tech Fibre Services Ltd, the supplied sample was assigned the following internal reference number:

<i>Test-Tech Sample Reference Number</i>	<i>Sample Description</i>
F24037	Bumboo - 004

3. Test Protocol

The Furnish analysis was conducted according to the following Analytical Protocol. Approximately 0.05 grammes of the paper sample supplied was dispersed in de-ionised water at room temperature using a standard laboratory disintegrator aimed at achieving a final consistency of 0.05%. (The disintegrator is specifically designed not to damage any fibres).

Aliquots of the dispersed fibre in water were transferred onto heated microscope slides achieving a homogeneous spread over the slide.

After all water had been evaporated, Graf – C stain was added onto the fibres and a microscope cover slip applied. A total of 3 slides were prepared.

Each microscope slide was inspected under a microscope during which **any**:

- Mechanical and chemical fibres were identified (due to the colour change resulting from the use of Graf-C stain).
- Hardwood vessels were counted and for each, wood genus / species was identified.
- Softwood tracheid's were identified for wood genus / species.
- Other tracheid's were identified originating from other fibrous plant species i.e. Cotton / annual plants such as grass / cereal crops etc.

The analysis quantifies the content of hardwood species prepared under Chemical pulping processes. However, the procedure does not quantify the content of hardwood species prepared under Mechanical pulping processes due to the fact that the process fragments hardwood vessels making quantification impossible.

This protocol is based upon the International Standard for furnish analysis **TAPPI T401 om-08**.

4. Delivery Details

UPS1Z44R8R66891428227

Delivered to Test-Tech on 1st February 2024.

TEST-TECH FIBRE SERVICES LTD

Registered Office, Settlers, Foundry Lane, Loosley Row.
Buckinghamshire, HP27 0PA United Kingdom.
Company Registered in England Number, 10936562
Tel. +44 (0)7786 136601



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5. Sample micrographs

Micrographs of the sample supplied appears in Appendix 1.

6. Worldwide Commercial fibre supply

Comments on the origins of wood genus grown in managed plantations worldwide appear in Appendix 2.

7. Micrographs.

Microscopy micrographs of vessel elements / tracheids appear in Appendix 3.

8. Analysis Results

The sample was constructed from THREE plied tissue layers.
 The fibre had been chemically bleached.

Sample description: **Bumboo - 004**
Test-Tech Sample Reference Number: **F24037**
Sample Receipt Date: **1st February 2024**
Sample Analysis Date: **1st February 2024**

Sample	Fibre type	Tappi				Bleaching	Pulping process	Genus of species (Number of hardwood vessels in brackets)
		Raw count	Weight factor	Final count	% by weight			
F24037	Annual	215	0.45	97	100	Bleached	Sulphate	Graminea, Dendrocalamus
Root 7 Sample Bamboo -004								

The following furnish ratio was calculated:

Annual Fibre: 100% annual fibre

Wood Genus / Species

Annual Fibre.

Gramineae (grasses) was detected specifically the species Dendrocalamus (Bamboo).
 This was the dominant and only genus detected.

Comments.

- Profuse amount of small round parenchyma cells present.
- Large number of Bamboo vessels identified.
- Large amount of long thin fibres present as well as non pitted thicker fibres indicating bamboo.
- Low quantity of slightly larger parenchyma cells present, but did not have the size or pitting of Bagasse cells which are similar to Bamboo.
- A low number of tracheids found that could bear resemblance to Bagasse, but no forked fibre ends detected thus not Bagasse.
- Sample identified as 100% Bamboo.

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Summary

- The wood genus identified were those of common pulp woods known to be grown commercially in many parts of the World.
- The sample was made predominately from chemical bleached Annual Fibre Dendrocalamus (Bamboo).
- The Tissue sample contained no dirt implying that the tissue may have been made predominantly from a virgin wood source with no Post Consumer Waste (PCW).

Appendix 1 – Sample Micrographs

Roll Wrapper



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Appendix 2 - Wood Species – Worldwide Plantations

Annual

Dendrocalamus – (Bamboo)

There are approximately 600 – 700 different species of Bamboos that grow extensively within tropical and sub-tropical regions of the World except Europe.

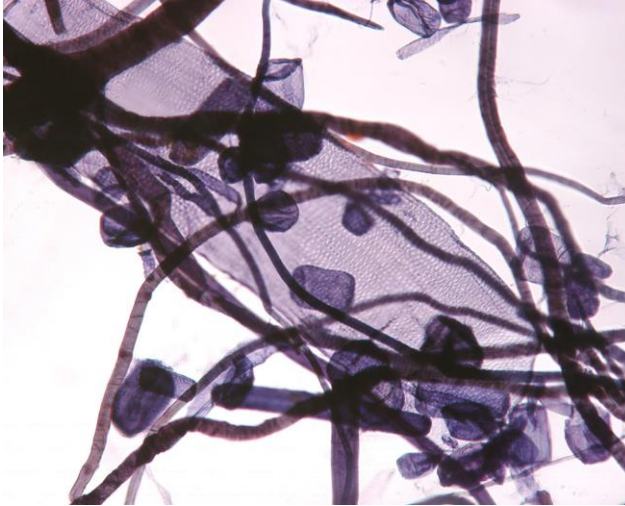
They grow at a fast rate (Up to 1m per day) reaching a full height of between 15 to 30 meters.

These grasses can be coppiced thus are a true annual fibre source.

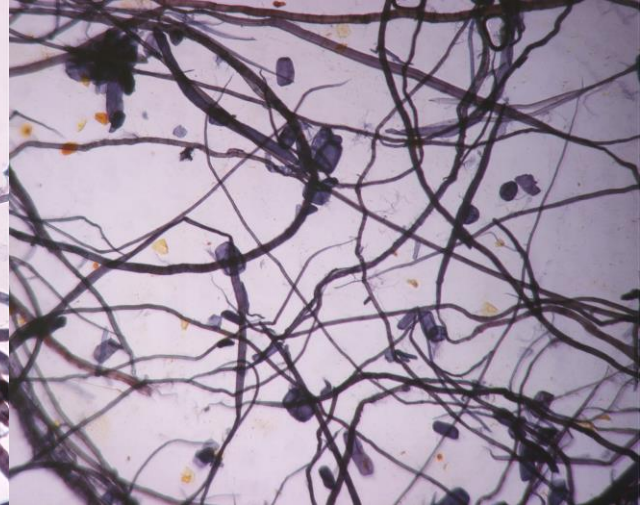
It is an important raw material in many Far Eastern countries and is exploited commercially in plantations in India, Indonesia Myanmar, Thailand and China.

Appendix 3 – Microscopic Micrographs of vessel element

Bamboo Vessel Element



Bamboo Tracheids and Parenchyma Cells



Reported by:

Peter Montague
Fibre and Microscopy Analysis
tel. +44 (0) 7546 994490
peter.montague@test-tech.co.uk

Checked by:

Robert Langley
Managing Director
tel. +44 (0) 7786 136601
robert.langley@test-tech.co.uk

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Results reported herein solely relate to the sample supplied and are not necessarily representative of a larger population.

The test results obtained do not in any way confer approval of the quality of the material.

Samples reported on herein were not sampled by Test-Tech Fibre Services Ltd unless otherwise stated.

END OF REPORT

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