

STUDY REPORT

nr° 17.0827/1 EN

SUBJECT: Flushability Tests

SAMPLE(S)

Designation(s):

- WEPA liquify Toilet Paper Recycling 2ply
- WEPA liquify Toilet Paper Recycling 3ply

The above samples designation, also mentioned in this report, comes from information provided by the customer. It is not the responsibility of the CTP.
Samples have been taken and dispatched by the customer.
The remains of samples are kept during 3 months at least.

ORDER

V/ Re : Your purchase order n° 21696982 dated on 17/07/2017

Customer : Mr Sönke HUBNER

Company : WEPA HygieneProdukte GmbH
Gassner Allee 45-47
55120 MAINZ
GERMANY

TESTS

Business Unit : Materials Performance - Flushability

Responsible for the tests: Laurence LEROY

Visa

Timetable : Tests performed on week 33, 2017

The copy of this report is authorised in the uncut version only.
This report is made of 9 pages (including cover) and 4 appendices.

Results are valid only for the samples considered.

Contents

1	INTRODUCTION	3
2	MATERIAL REFERENCE	3
3	TESTING METHODS	3
4	RESULTS AND COMMENTS	4
4.1	PRODUCT WEPA LIQUIFY TOILET PAPER RECYCLING 2PLY	4
4.1.1	<i>FG501: TOILET AND DRAINLINE CLEARANCE TEST</i>	4
4.1.2	<i>FG502: SLOSH BOX DISINTEGRATION TEST</i>	5
4.2	PRODUCT WEPA LIQUIFY TOILET PAPER RECYCLING 3PLY	6
4.2.1	<i>FG501: TOILET AND DRAINLINE CLEARANCE TEST</i>	6
4.2.2	<i>FG502: SLOSH BOX DISINTEGRATION TEST</i>	7
5	CONCLUSION	8
	APPENDICES	9

1 **INTRODUCTION**

The objective of this study is to test 2 products according to test methods FG501 and FG502 described in the Guidelines for Assessing the Flushability of Disposable Nonwoven Products, Third Edition, June 2013. This document is published by the nonwovens and related industries associations, INDA in the US and EDANA in Europe, as an industry testing protocol for assessing the flushability of disposable nonwoven products.

2 **MATERIAL REFERENCE**

The following products have been tested:

- WEPA liquify Toilet Paper Recycling 2ply
- WEPA liquify Toilet Paper Recycling 3ply

3 **TESTING METHODS**

A summary description of the test is given below.
Additional technical information is reported on the summary sheet result.

- **FG501: TOILET AND DRAINLINE CLEARANCE TEST**

The purpose of the test is to determine the likelihood that a product will successfully clear toilet and drainage pipe systems.

The proposed test system consists of toilets and drainlines representative of those found in Western Europe (wash-down type, flush volume 4.5 L, pipe diameter 100 mm, pipe slope 2%).

Each test consists of 35 toilet flushes using a specified loading sequence of product based on the habits and practices of a family of four using moist toilet tissue. This sequence includes empty flushes, product with dry toilet tissue, and product with simulated fecal matter and dry toilet tissue.

- **FG 502: SLOSH BOX DISINTEGRATION TEST**

The purpose of the test is to assess the potential for a product to disintegrate when it is subjected to mechanical agitation in water or wastewater.

The product is placed in an oscillating box containing 2.0 liters of tap water. After 3 hours of oscillation, the contents of the box are passed through a 12.5 mm perforated plate sieve, recovered and analyzed gravimetrically.

6 replicates are performed.

4 RESULTS AND COMMENTS

Sheets results corresponding are given in Appendix.
Additional comments are given hereafter.

4.1 PRODUCT WEPA LIQUIFY TOILET PAPER RECYCLING 2PLY

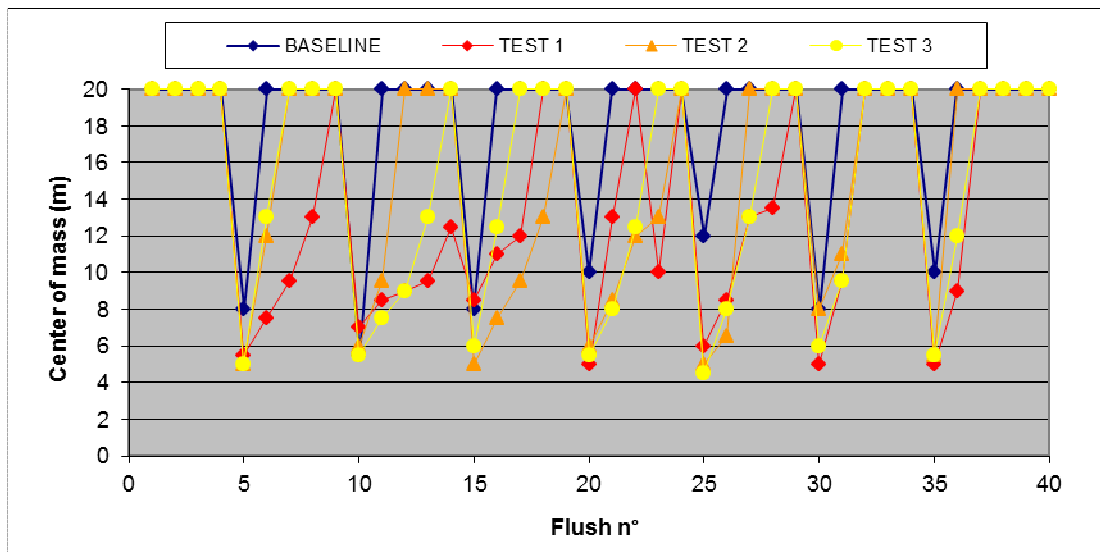
4.1.1 FG501: TOILET AND DRAINLINE CLEARANCE TEST

Flush volume used for the test: 4.5 litres

Use of SFM and dry toilet tissue in the loading sequence.

Results:

- Evacuation from the toilet bowl: no product remaining in the toilet bowl or trap after none of the 105 flushes.
- Distance of the centre of mass of the flushed material from the toilet:
Base line: flush sequence run without product (only dry toilet tissue and SFM)



Acceptance criteria (*):

• No more than 5% of the flushes containing product (3 flushes for hygienic wipes) should be associated with clogs that require use of a plunger to clear product and excess water from the bowl and trap	PASSED
• The travel distance of the centre of mass of the flushed material in the drain-line does not consistently decrease over the course of 5 consecutive flushes.	PASSED

(*) Guidelines for Assessing the Flushability of Disposable Nonwoven Products, Third Edition, June 2013

Comments:

The product fulfils the acceptance criteria for this test. It is evacuated properly from the toilet bowl and it clears the drainline without accumulation or blockage of material in the drainline.

4.1.2 **FG502: SLOSH BOX DISINTEGRATION TEST**

Test duration was reduced to 10 minutes as product disintegrates in the slosh-box in less than 10 minutes.

Results:

Percentage of material passing through the 12.5 mm sieve after 10 minutes:

After 3 hours	REPL 1	REPL 2	REPL 3	REPL 4	REPL 5	REPL 6
RETAINED						
<i>Dry mass (g)</i>	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
% mass	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
PASSED THROUGH						
% mass	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

No material is retained on the 12.5 mm sieve after 3 hours of agitation in water.

The percentage of the replicate articles tested for which the percentage of the article's initial dry mass passes through the 12.5 mm sieve after 3 hours is greater than 25% is 100%.



Product after 3 hours of agitation in slosh box

Acceptance criteria (*):

- The percent of the starting dry mass passing through the 12.5mm perforated sieve after 3 hours must be greater than 25% for at least 80% of the individual replicates tested.

PASSED

(*) Guidelines for Assessing the Flushability of Disposable Nonwoven Products, Third Edition, June 2013

Comments:

The product completely disintegrates into fibres after 3 hours of agitation. The disintegration is even achieved in less than 10 minutes.

4.2 PRODUCT WEPA LIQUIFY TOILET PAPER RECYCLING 3PLY

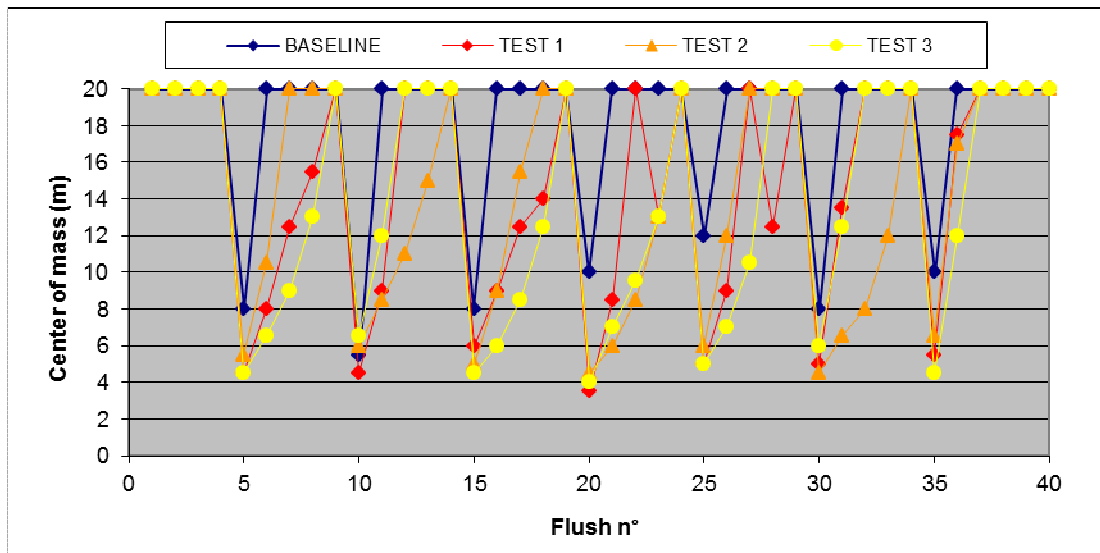
4.2.1 FG501: TOILET AND DRAINLINE CLEARANCE TEST

Flush volume used for the test: 4.5 litres

Use of SFM and dry toilet tissue in the loading sequence.

Results:

- Evacuation from the toilet bowl: no product remaining in the toilet bowl or trap after none of the 105 flushes.
- Distance of the centre of mass of the flushed material from the toilet:
Base line: flush sequence run without product (only dry toilet tissue and SFM)



Acceptance criteria (*):

• No more than 5% of the flushes containing product (3 flushes for hygienic wipes) should be associated with clogs that require use of a plunger to clear product and excess water from the bowl and trap	PASSED
• The travel distance of the centre of mass of the flushed material in the drain-line does not consistently decrease over the course of 5 consecutive flushes.	PASSED

(*) Guidelines for Assessing the Flushability of Disposable Nonwoven Products, Third Edition, June 2013

Comments:

The product fulfils the acceptance criteria for this test. It is evacuated properly from the toilet bowl and it clears the drainline without accumulation or blockage of material in the drainline.

4.2.2 **FG502: SLOSH BOX DISINTEGRATION TEST**

Test duration was reduced to 10 minutes as product disintegrates in the slosh-box in less than 10 minutes.

Results:

Percentage of material passing through the 12.5 mm sieve after 10 minutes:

After 3 hours	REPL 1	REPL 2	REPL 3	REPL 4	REPL 5	REPL 6
RETAINED						
<i>Dry mass (g)</i>	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
% mass	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
PASSED THROUGH						
% mass	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

No material is retained on the 12.5 mm sieve after 3 hours of agitation in water.

The percentage of the replicate articles tested for which the percentage of the article's initial dry mass passes through the 12.5 mm sieve after 3 hours is greater than 25% is 100%.



Product after 3 hours of agitation in slosh box

Acceptance criteria (*):

- The percent of the starting dry mass passing through the 12.5mm perforated sieve after 3 hours must be greater than 25% for at least 80% of the individual replicates tested.

PASSED

(*) Guidelines for Assessing the Flushability of Disposable Nonwoven Products, Third Edition, June 2013

Comments:

The product completely disintegrates into fibres after 3 hours of agitation. The disintegration is even achieved in less than 10 minutes.

5 **CONCLUSION**

Products **WEPA liquify Toilet Paper Recycling 2ply** and **WEPA liquify Toilet Paper Recycling 3ply** have been submitted to flushability tests FG501 and FG502 described in the Guidelines for Assessing the Flushability of Disposable Nonwoven Products, Third Edition, June 2013.

- Results to FG501 (Toilet and Drainline Clearance Test) show that products **WEPA liquify Toilet Paper Recycling 2ply** and **WEPA liquify Toilet Paper Recycling 3ply** clear the toilet and the building's lateral drainline and that it transports through the sewer pipe.
- Results to FG502 (Slosh Box Disintegration Test) show that products **WEPA liquify Toilet Paper Recycling 2ply** and **WEPA liquify Toilet Paper Recycling 3ply** have the potential to disintegrate.

APPENDICES

The following documents are enclosed:

- One summary sheet per test and per product