

Comment Number	Initials ²	Line number (e.g. 17)	Clause/ Subclause (e.g. 3.1)	Paragraph/ Figure/Table (e.g. Table 1)	Type of comment ³	Comments	Proposed change	Observations of the secretariat
1	KCC		A 3.2		Ed	Calibration implies checking and adjustment, there is no adjustment possible	Delete A3.2	Not Accepted. Calibration is possible, via the arms being loosened and rotated and is desirable to produce uniform results across labs. In round robin testing that was done for GD4 the rock angles were found to be all over the place, sometimes varying more than 4 degrees between sides.
2	KFG				Te	Not understandable why to offer 3 different test where only 1 has to pass.	Agree together with industry on ONE valid disintegration test	Partially Accepted. Agree to reduce this to a single disintegration test in the revised edition of the PAS.
3	KFG				Te	Is there any evidence that shows >95% pass rate with preconditioning with 6.3mm sieve represents the appropriate requirements for slosh box disintegration?	Reconsider Slosh Box setup as used for GD3 Use stronger acceptance criteria (such as reduced time and higher % pass rate)	Not Accepted. The GD3 slosh box will not be considered, however, we will consider reducing the time and using stronger pass criteria in the revised edition of the PAS.
4	NP	Various places throughout document			Ge	The term "standard" is not appropriate as this collection of terms, definitions, and test methodology reflect the consensus of various wastewater organizations globally. However, this work has not been authenticated or sanctioned by any standards body.	Term "standard" should be replaced with "guideline" throughout all relevant documents.	Accepted. Standard will be changed to specification.
5	KCC	All lines where it occurs			Ge	Amend the word standard to guideline throughout to stop any confusion on behalf of the reader that these documents are standards created under the multi stakeholder processes of the International Standards Organization (ISO)	Change the word standard to guideline throughout	Accepted. Standard will be changed to specification.
6	KCC		Forward			Forward should be Foreword https://www.merriam-webster.com/dictionary/foreword	KCC	Accepted.

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7	NP			Test Report	Ge	As commented on in previous PAS commenting templates, there are insufficient details provided on measurements and photographs required for test report.	Please provide more details.	
8	NP	Foreword			Ge	In the foreword 4th paragraph, it states that “the task of the group was to prepare standards reflecting the above purpose.” It does not state that this group accomplished that goal. Did they?	Please clarify.	Not Accepted. No relevance to the PAS.
9	GP				Te	This test delivers significantly more energy to break up the sample than test 3A.	Revise test 3A to increase its energy.	Not Accepted. No relevance to the PAS.
10	PG				Ge	Submitting comments on the International Wastewater Services Flushability Group (IWSFG) Standard in this public comment period in no way represents participation in the development process of the IWSFG Standard or PAS test documents. Nor does commenting imply agreement with any content; where portions of the IWSFG documents have not been commented upon, consent with the content therein is not implied.		Not Accepted. No relevance to the PAS.
11	PG				Ge	The IWSFG Standard and the associated Publicly Available Specification (PAS) documents do not outline an approach for determining compatibility with wastewater infrastructure. The IWSFG documents lack any content or context regarding infrastructure issues currently experienced by wastewater utilities. Further, the IWSFG documents contain no data, examples or details regarding issues that can be attributed to flushable wipes. Therefore, the IWSFG documents provide no justification for the proposed requirements for flushable products, and as such, the IWSFG Standard represent arbitrary performance requirements that are unfounded and unrelated to issues faced by wastewater utilities. The IWSFG documents do not contain sufficient documentation or information to establish why	Provide written justification for the IWSFG Standard, including reference to all data and examples of infrastructure issues attributable to flushable wipes.	Not Accepted. No relevance to the PAS.

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						the IWSFG documents have been developed, or what results the IWSFG documents seek to achieve regarding flushable wipes beyond vague performance concepts.		
12	PG				Ge	Based on the results of field testing and forensics conducted by a range of stakeholders, all available evidence continues to reinforce the fact that flushable wipes are compatible with wastewater infrastructure.	<p>Provide evidence of impact to wastewater infrastructure that has been demonstrated to be the result of flushable wipes.</p> <p>Note to Entry: Recovery of intact wipes from field studies is insufficient evidence. This testing contradicts the premise of the IWSFG Standard, specifically because the testing demonstrates the ability of flushable wipes to move with solids, which is the critical aspect for compatibility with wastewater infrastructure.</p> <p>From Section 19.14 "Flow in Gravity Sewers" in <i>Water-Resources Engineering</i> (4th Edition, McGraw-Hill, pg. 693): "To prevent the settlement of wastewater solids, the velocity in a sewer flowing full should be not less than about 2 ft/sec (0.6 m/sec). Such a sewer flowing one-sixth full will have a velocity of 1 ft/sec (0.3 m/sec), which is reasonably adequate. This is especially important in sanitary sewers, for decomposition of settled wastes results in undesirable conditions."</p>	Not Accepted. No relevance to the PAS.
13	PG				Ge	The IWSFG documents specify that toilet paper was utilized for benchmarking the acceptance criteria of the PASs. No details regarding the processes that were followed in developing the benchmarks have been provided in association with the IWSFG documents. Reference to the historical performance of toilet paper is insufficient justification for establishing benchmark performance, and is particularly	Provide details of all benchmark testing conducted by the IWSFG to allow for independent validation and verification of the reproducibility of laboratory tests and acceptable criteria proposed by the IWSFG.	Not Accepted. No relevance to the PAS.

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						imprecise given the wide range of types and characteristics of toilet paper found globally.		
14	PG				Ge	The IWSFG documents lack technical details linking the performance of any product (including toilet paper utilized as a benchmark) in any of the IWSFG PAS test methods, and the compatibility of that product with any portions of wastewater infrastructure.	Provide details of all testing (laboratory and field) where the established benchmarks were verified as appropriate and necessary for the protection of infrastructure.	Not Accepted. No relevance to the PAS.
15	PG				Ge	The IWSFG documents contain multiple technical errors that render the documents unfit for publication or use as laboratory test methods without significant revision. For example, IWSFG-PAS-5A-Aerobic-Biodisintegration-Test-2017 contains no laboratory controls for evaluating if the test results are acceptable- this is critical error and omission, and renders the method unusable as written.	Fix contradictions, error and omission of all Publicly Available Specification (PAS) test methods.	Accepted.
16	PG				Ge	Given the extent of the revisions necessary, the IWSFG Standard and associated PASs should be resubmitted for a second public comment period once all errors and omissions have been rectified.	Fix contradictions, error and omission of all Publicly Available Specification (PAS) test methods and resubmit for a second public comment period.	Accepted.
17	PG				Ge	The IWSFG documents contain no details regarding the processes that were followed in developing the IWSFG Standard and Publicly Available Specification (PAS), or the processes that will be followed for inclusion of public comments. Transparency regarding the processes that the IWSFG are following, including how the input of a range of stakeholders will be included, is necessary to understand whether the IWSFG standard has been developed appropriately.	Provide details of all test method and document development and approval processes being followed by the IWSFG.	Not Accepted. No relevance to the PAS.
18	PG				Ge	The International Standards Organization (ISO) provides the following information regarding a Publicly Available Specification: "Publicly	Clarify if the IWSFG documents were developed in accordance with an ISO process, or if not, if they were developed	Not Accepted. No relevance to the PAS.

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						Available Specifications have a maximum life of six years, after which they can be transformed into an International Standard or withdrawn.” (https://www.iso.org/deliverables-all.html#TR).	using an ISO framework. Provide the life cycle of the IWSFG PAS documents, including the maximum life of the IWSFG PASs.	
19	PG				Ge	While the Draft status of the IWSFG Standard and PAS documents is acknowledged, significant editing of both general and scientific content of the documents is required. The lack of editorial and scientific rigor of the documents makes commenting ineffective at this stage of development.	The IWSFG Standard and PAS documents should be recalled, revised then resubmitted for a second public comment period; the documents are not in a condition suitable for public review.	Not Accepted. No relevance to the PAS.
20	PG				Ge	The IWSFG Standard and each of the IWSFG PAS test methods contain numerous errors, as well as inter-method and intra-method contradictions regarding critical technical details, that render the methods incapable of interpretation, let alone use as written. A laboratory, whether they were ISO-accredited or not, would be incapable of conducting the PAS tests as currently written.	Revise all PAS test methods.	Not Accepted.
21	PG				Ge	The PASs contain numerous instances where different and contradictory “Acceptance Criteria” are provided, rendering the PAS unusable as currently written.	Revise PASs to eliminate contradictory procedures and “acceptance criteria”.	Accepted.
22	PG				Ge	Misuse of the word “standard,” and variations thereof, occurs frequently throughout the texts. The documents assembled by the IWSFG are neither a Standard, nor are they Publicly Available Specifications developed, for example, in accordance with the process set forth by the British Standards Institute (BSI). Revise all instances to utilize an appropriate term such as “Guideline” or equivalent. Alternatively, provide details of the national or international standards organization that is accrediting the documents as “standards” or as “Publicly Available Specifications.” This is a	Clarify if the IWSFG has developed Standard 1 and the associated PAS documents in accordance with a standard process in accordance with a third-party certification body (ISO or BSI, as examples). In the interest of transparency, clarify the stakeholders groups and organizations that participated in the development of the IWSFG Standard and PAS documents.	Not Accepted. No relevance to the PAS.

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						<p>critical element for understanding how the standard and associated PASs have been developed.</p> <p>Note to Entry:</p> <p>The first sentence of the British Standards Institute (BSI) definition of a standard requires agreement- not among a single organization or group of common stakeholders- but among “manufacturers, sellers, buyers, customers, trade associations, users or regulators.” The full definition reads (https://www.bsigroup.com/en-GB/standards/Information-about-standards/what-is-a-standard/): “In essence, a standard is an agreed way of doing something. It could be about making a product, managing a process, delivering a service or supplying materials – standards can cover a huge range of activities undertaken by organizations and used by their customers. Standards are the distilled wisdom of people with expertise in their subject matter and who know the needs of the organizations they represent – people such as manufacturers, sellers, buyers, customers, trade associations, users or regulators... They are designed for voluntary use so it’s up to you – you’re not forced to follow a set of rules that make life harder for you, you’re offered ways to do your work better. Standards are knowledge. They are powerful tools that can help drive innovation and increase productivity. They can make organizations more successful and people’s everyday lives easier, safer and healthier.”</p> <p>Note to entry: use of the word, or quotation of the word “Standard” or similar in comments does not imply agreement with the use of the term in the IWSFG Standard 1 or PAS tests.</p>		

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23	PG				Ge	Per the BSI definition of the term “standard” (https://www.bsigroup.com/en-GB/standards/Information-about-standards/what-is-a-standard/) the IWSFG Standard and PAS documents are voluntary, and that the IWSFG neither possesses, nor is chartered to develop, mechanisms for enforcing these documents.	Clarify.	Accepted. Standard will be changed to specification.
24	PG				Ge	Misuse of the word “require,” and variations thereof, occurs frequently throughout the texts. The IWSFG documents can in no way require any action. Per the BSI definition of the term “standard” (https://www.bsigroup.com/en-GB/standards/Information-about-standards/what-is-a-standard/): “They are designed for voluntary use...” Note to entry: Use of the word, or quotation of the word “requirement” or similar in comments does not imply agreement with the use of the term in the IWSFG Standard 1 or PAS tests.	Revise to “recommend” or similar.	Partially Accepted.
25	PG				Ge	Contradictory use of words and phrases “test standards” “established IWSFG standard” or “Publicly Available Specification.”	Clarify the proper terminology to describe the documents the IWSFG has produced.	Accepted. Standard will be changed to specification.
26	PG				Ge	It is unclear from the documents if a national or international standardization body has certified, or will certify, the “established IWSFG standard.”	Clarify	Accepted. Standard will be changed to specification.
27	PG	4		Paragraph	Ge	Per the British Standards Institute (BSI) definition of the Publicly Available Specification (PAS) process, the public comments must be addressed to ensure that the content is satisfactory to “a wide range of stakeholders.” From BSI	In keeping with the designation of these documents as PAS, confirm the IWSFG will modify the Standard and associated PASs to the satisfaction of a wide range of stakeholders.	Accepted. Standard will be changed to specification.

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						(https://www.bsigroup.com/LocalFiles/en-GB/PAS/The%20PAS%20Process/BSI-PAS-0-2012-Principles-of-PAS-standardization-UK-EN.pdf): "Final consensus and publication: Comments arising from the public consultation are discussed by the steering group, with the aim of achieving a document underpinned by consensus (see 4.6)...In common with all BSI standardization documents, publication is subject to approval by the Director of Standards who will seek evidence that the final text of the document commands support from a wide range of stakeholders."		
28	PG	4			Ge	The PAS process is intended to be transparent.	Given that the PAS process is intended to be transparent, provide details regarding the process the IWSFG will follow for revising the documents.	There will be a second working draft and public comment period.
29	INDA	5	Copyright Notice		GE	As stated in the cover letter, the IWSFG has taken certain liberties to claim copyrights on materials that are already copyrighted by other organizations. In particular in this document, Annex's 4, 5, and 6 have a considerable amount of information copied verbatim from the INDA/EDANA Supplementary Guidance Documents © 2013 - sections SG001, SG002, and SG004. In addition, Section 5.4 is taken directly from INDA/EDANA FG502 – Slosh Box Disintegration Test with identical photos, also giving credit to an IWSFG member.	The IWSFG should provide proper references and statements that show the use of copyrighted material in this document has received the proper permissions.	Copyright issues have been addressed.
30	PG	6-7		Copyright Notice	Ge	IWSFG has attempted to copyright material that is currently under copyright protection. For example, consider the following definition from BSI (https://www.bsigroup.com/LocalFiles/en-GB/PAS/The%20PAS%20Process/BSI-PAS-0-	Provide evidence of consent/license on the IWSFG for all copyrighted content the IWSFG has utilized that was not developed by the IWSFG.	Copyright issues have been addressed.

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						2012-Principles-of-PAS-standardization-UK-EN.pdf): “2.2 essential intellectual property rights (essential IPR) intellectual property rights that have been included within a PAS such that it would be impossible to implement the PAS without making use of those rights, and the only way to avoid an infringement of the rights in respect of implementation of the PAS is therefore to request a licence from the owner.”		
31	INDA	15	Forward		ED	<p>“The group expects the manufacturers and distributors of their products to act in a socially responsible and environmentally sustainable manner by adhering to the established standards.”</p> <p>This statement is presumptuous. The IWSFG implies that not adhering to this standard precludes the possibility of being socially responsible or environmentally sustainable. The IWSFG has neither the expertise nor the authority to define what is meant by “socially responsible” and “environmentally sustainable”. At best, this can be stated as an opinion of the IWSFG.</p>	Remove statement or reword to reflect this is an opinion of the IWSFG.	Not Accepted. No relevance to the PAS.
32	PG	15		Forward [sic]	Ge	<p>General and technical content in the IWSFG Standard and associated PASs, and the current Draft Technical Report (TR) from TC224 WG10, share a common source.</p> <p>The “purpose” included in the forward[sic] of the IWSFG Standard 1 contains language identical to the Scope of the ISO TC224 WG10 TR.</p>	<p>Describe how the membership of the IWSFG differs from the wastewater stakeholders in International Standards Organization (ISO) Technical Committee (TC) 224 Working Group 10 (WG10).</p> <p>Declare for all common details between the IWSFG and ISO documents, if the IWSFG or ISO are the rightful copyright owners.</p>	Not Accepted. No relevance to the PAS.
33	PG	15		Forward [sic]	Ge	<p>Sentence describing wastewater services is hyperbole.</p> <p>Expectations of the IWSFG are irrelevant to the document.</p>	Delete the following sentence: “Wastewater services are organizations acting for the public good as a public service. The group expects the manufacturers and distributors of their	Not Accepted. No relevance to the PAS.

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							<p>products to act in a socially responsible and environmentally sustainable manner by adhering to the established standards.”</p> <p>If the sentence is retained, for context, provide the IWSFG’s position on “blending,” specifically how the practice of blending protects the public good and represents environmentally sustainable operation by wastewater services.</p> <p>Note to entry:</p> <p>“The [US Environmental Protection Agency] EPA issued guidance in the mid-2000s banning a technique used by some utilities in which some wastewater is routed around the treatment process before being blended with treated flows and then discharged into areas in the receiving waters known as mixing zones. The practice is used to keep the high volumes of wastewater, such as those during storms, from overwhelming the treatment plant. The agency said blending and the use of mixing zones violate the Clean Water Act.” (from: https://www.bna.com/wastewater-practice-mostly-n57982084593/). “Opponents argue that the blending ban raises costs for wastewater utilities.” (From https://www.wateronline.com/doc/epa-s-wet-weather-policies-debated-in-court-0001)</p>	
34	PG				Ge	Provide appropriate citations for sources of information throughout text.	Confirm this test is based on the INDA/EDANA FG-502 Slosh Box Disintegration Test.	Accepted. – Yes it is, and appropriate language will be inserted to give them credit
35	PG				Te	Additional details regarding test design are necessary.	Clarify whether the PAS-3B is a real-world test. Provide reference to existing sources or	Not Accepted. No relevance to the PAS.

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							field testing results where 2 hours of transit under the hydraulic conditions utilized in PAS-3B are cited.	
36	PG				Te	Additional details regarding test design are necessary.	Clarify whether the water utilized for testing in the PAS-3B slosh box test contains “wave action.” Specifically, provide a description of the required flow of liquid in the slosh box. In particular, describe whether the water flows continuously (like a lazy river, for example) or whether flow is intermittent, where the water experiences stoppages with each oscillation as the water collides with the end of the box, resulting in the generation of waves (crashing like waves on a shore break, for example).	Not Accepted. No relevance to the PAS.
37	PG				Te	Additional details regarding test design are necessary.	Clarify if PAS-3B predicts performance expected in household drainlines, small-diameter sewers, or large-diameter sewers after two hours of transit, or if PAS-3B represents a laboratory test for differentiating products based on performance under specific laboratory conditions.	Not Accepted. No relevance to the PAS.
38	PG				Te	Additional details regarding establishment of benchmarks is necessary to understand the relevance of PAS-3B to infrastructure compatibility.	Provide the results of all testing conducting to establish benchmarks for PAS-3B. Provide a list of, and all results from, ISO-accredited laboratories that conducted test PAS-3B for establishing benchmarks using PAS-3B as written.	Not Accepted. No relevance to the PAS.
	PG				Te	Additional details required to understand the establishment of toilet paper as a benchmark for performance, and how this benchmark is necessary for infrastructure compatibility.	Provide all test results and associated interpretation of data demonstrating the establishment of benchmarks for PAS-3B. Specifically provide the results of tests conducted using toilet paper to establish	Not Accepted. No relevance to the PAS.

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							benchmark performance in PAS-3B. Specifically provide the results of tests conducted that demonstrates the ability of PAS-3B to be utilized, using the proposed Acceptance Criteria, to differentiate between different types of toilet paper, toilet paper and flushable wipes, toilet paper and baby wipes, toilet paper and surface cleaning wipes, and any other comparison testing done in the development of PAS-3B.	
39	PG				Te	Additional details regarding the PAS-3 series disintegration tests is necessary. It is unclear from the text why three tests are proposed or necessary.	Provide the rationale for allowing the use of alternate methods. Specifically, provide the rationale for having three disintegration tests: PAS-3A, PAS-3B and PAS-3C.	See comment 2
40	PG				Te	Clarification regarding acceptable test performance is necessary.	Clarify that a product that passes one version of the IWSFG PAS-3 series but fails two alternate versions is flushable.	See comment 2
41	PG				Te	It is unclear if alternative, country-specific versions of PAS-3B have been developed.	Provide access on the IWSFG website to any country-specific alternate PAS-3B methods that currently exist but have not been made available for public comment.	Not Accepted. No relevance to the PAS.
42	PG				Te	Provide list of accredited labs.	Provide a list of all ISO 17025:2005 accredited labs that have conducted testing using PAS-3B.	Not Accepted. No relevance to the PAS.
43	PG	93	1	Introduction	Te	Undefined term: "wastewater process systems"	Define	Partially Accepted. Remove word process
44	DPI	95	1		Te	Consider adding 'reuse/recycling'		Accepted.
45	PG	95-98	1	Introduction	Te	Incomplete. The list of post-treatment pathways has significant omissions. Revise to include all relevant pathways, particularly for liquid effluent from WWTPs (indirect potable reuse, for example).	Revise.	Partially Accepted. -
46	NP	101-102	Introduction		Ge	This list is not inclusive of all products found in various forensic collection studies including	Recommend reviewing various forensic collections studies including NYC 2016,	Not Accepted. No relevance to the PAS.

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						paper towels, baby wipes, etc.	Portland and other global reports for a comprehensive list.	
47	PG	101-106	1	Introduction	Te	The statement: "The physically adverse effects of the introduction of such products to wastewater systems (clogging and plugging) have already been identified" is incorrect and misleading. No such identification of physically adverse effects from flushable wipes has been demonstrated.	Delete. If retained, provide the results of studies demonstrating physical adverse effects (i.e., impacts to wastewater infrastructure) from flushable wipes.	Not Accepted. No relevance to the PAS.
48	PG	101-106	1	Introduction	Te	The statement "...environmental effects have not been studied systematically. For example, various flushed products may comprise materials and chemicals that can be harmful to the environment; hence, such products should not be identified as "flushable"." is entirely speculative and anecdotal.	Delete. If retained, provide the results of studies demonstrating environmental effects that are attributable to flushable wipes. Note to Entry: The conclusions of studies regarding regenerated cellulose referenced in the IWSFG documents refute the IWSFG's position on regenerated cellulose and are not appropriate substantiation for the IWSFG's standard, PASs or positions.	Not Accepted. No relevance to the PAS.
49	KCC	102-105			Ed	The systematic study of clogs in UK, and the materials found in influent stream entering UK and US treatment plants provide clear data to support that the burden of clogging is not due to wipes labelled flushable. In classic risk assessment terms wipes labelled flushable are low occurrence, low impact based on materials and design to break up Non flushable baby, cleaning wipes are high occurrence, high impact based on material properties and design to not break up Any mitigation plan should mitigate high/high risks not the low/low risks.		Not Accepted. No relevance to the PAS.
50	KCC	108-111			Ed	"By adhering to these test methods and providing the appropriate advice to the product users regarding the after use disposal of such products will ultimately lead to long-term		Not Accepted. No relevance to the PAS.

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						<p>sustainability of wastewater systems and the minimization of potential problems such as pipe blockages and equipment failures in sewer networks.”</p> <p><u>Many US Toilet Papers and no US flushable wipes can pass this test. Thus, the most likely outcome of the IWSFG guidelines is the complete opposite of what IWSFG aspire for.</u> As drafted, these IWSFG 'standards' could eliminate an entire flushable wipes category and promote a very significant increase in the amount of baby wipes being flushed as consumers switch wipes to maintain their established cleaning regimen.</p> <p>Today in USA it is estimated that half as many Baby Wipes are flushed as Flushable Wipes.</p>		
51	KCC	112-115				<p>“The goal of the IWSC is not to ban the production and/or use of these products, but to encourage manufacturers to identify those products that do not meet the established IWSFG standards as not being “flushable” and to encourage users to dispose the products after use in a more appropriate manner.”</p> <p>This paragraph is disingenuous knowing that many US Toilet Papers cannot pass any of the 3 disintegration tests.</p>		Not Accepted. No relevance to the PAS.
52	PG	112-115	1	Introduction	Te	<p>“The goal of the IWSFG is... identify those products that do not meet the IWSFG’s standards.” Here, the reference to “the IWSFG’s standards” appears to imply that the PAS documents are “standards” and not “Publicly Available Specifications.”</p>	Clarify if the PAS documents are “tests,” “Publicly Available Specifications” or “established IWSFG standards.”	Accepted. Standard will be changed to specification.
53	PG	112-115	1	Introduction	Te	Clarify.	Confirm the national or international standards body that has certified, thereby	Accepted. Standard will be changed to specification.

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53	INDA	118-120			TE	<p>The choice of a Reynolds number of 20,000 came from discussions within ISO TC224/WG10. At the time it was agreed that quiescent sewer lines could be described with this value, although a much larger range would be needed to capture the majority of flows within these systems.</p> <p>In what type wastewater system is this a “typical” flow condition (water flow, pipe dimensions, etc).?</p> <p>Wastewater systems are extremely dynamic and complex. Flow conditions are not only inconsistent from place to place, they are inconsistent within the same pipe from day to day and day to night.</p> <p>What materials have been benchmarked under these conditions ? In many test method development programs, “good” materials and “bad” materials are used as benchmarks for testing. In PAS 3A, the following statement is made:</p> <p><i>“Since toilet papers historically have not caused clogging, or plugging, problems in wastewater systems, the IWSFG has benchmarked its tests for flushability to toilet paper performance, particularly in respect to its disintegration.”</i></p> <p>Please reference testing where toilet paper is used as a benchmark using this method. Based on the statement in 3A and the conditions chosen, all TP brands should be able to pass this test.</p> <p>In addition, there have been no studies or</p>	<p>establishing the “established IWSFG standards” or the IWSFG “Publicly Available Specifications.”</p> <p>A separate Annex that shows benchmarking data on a variety of TP brands and types (blind data) would provide the details necessary to further consider these pass/fail criteria.</p> <p>In addition, showing the same TP materials benchmarked against all three disintegration test methods would be helpful in understanding the relationship between the methods and the chosen parameters.</p>	<p>Not Accepted. No relevance to the PAS.</p>

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						conclusions presented that are based on data to indicate what level of disintegration is necessary to define compatibility with wastewater infrastructure. The current position taken by IWSFG is based on opinion.		
54	WSL NZ	118-120	2			Purpose: I would expect consistency between this test and that of 3C but they differ slightly.		Not Accepted. No relevance to the PAS.
55	NP	118-120	2	Purpose	Te	<p>How does 4 l, 13 rpm simulate Re=20,000? The flow is</p> <ul style="list-style-type: none"> • laminar when Re < 2300 • transient when 2300 < Re < 4000 • turbulent when 4000 < Re <p>Based on our calculations, Reynolds number for 8 in pipe is around 48000 and for 4 in pipe is around 93000.</p> <p>As the water temperature increases or decrease these numbers will change. Also in the wastewater system, since it is not pure water as it has other effluents in it and this changes the viscosity of the water and velocity and it will change the calculation a lot.</p> <p>So it would appear that the system is more dynamic than 20000 they are recommending.</p> <p>Couple the fact the system appears more dynamic than stated Re number and previous work completed for ISO flushability work that baselined toilet paper that did not break down / disperse as expected, all of which makes it unclear what the endpoint is for this test and what negative impact to the system is being protected by this test.</p>	Recommend water volume, rpm and water temperature conditions are specified to yield a Re of 20,000.	Partially Accepted, will be addressed in next revision.
56	KCC	118-120			TE	What part of collection systems is this test	Please provide justification for 2hr test	Partially Accepted.

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						protecting – everything within 2 hours of a residence?	time in context of system impact and protection thereof	The test time period has been adjusted to reflect the period of time immediately following the flush, 0-30 minutes
57	KCC	118-120			Ge	<p>Reynolds numbers of 20,000 can occur in 8" pipes flowing half full at velocities close to the self-scouring velocity of 2ft/sec</p> <p>It is very unlikely any product in a sewer would see 20,000 for a full 2hrs, instead the Reynolds number would be stepping up significantly as different laterals combine into larger and larger diameter pipes whilst maintaining self-scouring velocity of 2ft/min</p> <p>20,000 may represent the minimum Reynolds number seen for the early portion of the 2hr transit, an average for the 2 hrs could easily be 2x and peak 3x the 20,000</p> <p>Examples of range Reynolds number by pipe size for 10% and 60% pipe fill</p>		<p>Not Accepted.</p> <p>The chart does point out that for 8-inch pipe the chosen Reynolds Number of 20,000 is appropriate especially at sections of pipe closest to the discharge point.</p>

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						<table border="1"> <thead> <tr> <th rowspan="2">Pipe Diameter (inch - cm)</th> <th colspan="2">Re Number (dimensionless)</th> </tr> <tr> <th>Minimum</th> <th>Maximum</th> </tr> </thead> <tbody> <tr> <td>6 – 15</td> <td>8840</td> <td>29209</td> </tr> <tr> <td>8 – 20</td> <td>10070</td> <td>39582</td> </tr> <tr> <td>12 – 30</td> <td>16562</td> <td>56283</td> </tr> <tr> <td>15 – 40</td> <td>23485</td> <td>75138</td> </tr> <tr> <td>18 – 45</td> <td>25572</td> <td>81814</td> </tr> <tr> <td>20 – 50</td> <td>27484</td> <td>89054</td> </tr> <tr> <td>24 – 60</td> <td>34280</td> <td>106643</td> </tr> <tr> <td>28 – 70</td> <td>41211</td> <td>125934</td> </tr> <tr> <td>32 – 80</td> <td>47265</td> <td>148678</td> </tr> </tbody> </table> <p>Source : DISINTEGRATION OF FLUSHABLE WET WIPES IN WASTEWATER SYSTEMS. Fatih KARADAGLI, Ph.D., Associate Professor, Department of Environmental Engineering, Sakarya University, Turkey. Presented</p> <p>Presented at “TOILETS ARE Not GARBAGE CANS” Workshop May 5, 2015</p> <p>at the Wolf Auditorium, Downtown Library 252 Dundas Street, London, Ontario, Canada</p>	Pipe Diameter (inch - cm)	Re Number (dimensionless)		Minimum	Maximum	6 – 15	8840	29209	8 – 20	10070	39582	12 – 30	16562	56283	15 – 40	23485	75138	18 – 45	25572	81814	20 – 50	27484	89054	24 – 60	34280	106643	28 – 70	41211	125934	32 – 80	47265	148678		
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58	KCC	118-120			TE	Please provide data that indicates the parameters suggested for the slosh box, 13rpm and 4 liters is equivalent to a Reynolds number of 20,000.		See comment 55																																
59	KCC	118-120			Te	Significant work by K-C was presented to ISO TC224 WG10 in 2016 which attempted to match up the disintegration of 5 US toilet papers (1,2,3 plys) in a half full flowing 10” pipe (SMPT) set for 1.2ft/sec flow which was calculated to be	Test set up at 4l 13 rpm is too low in energy to be a proxy for Nr ~20,000. Alternate set ups of 4L 20 or 9L 26 rpm should be considered in place of 4l 13rpm, if Nr ~20,000 is the system design	Partially Accepted. The IWSFG are aware of the research, but believe that the 4L@ 13 rpm slosh box produces a benchtop test																																

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						<p>Reynolds Number of 20,000 versus slosh boxes running under 3 different conditions of volume and speed.</p> <p>The closest analogue was the 20rpm and 4L set up, using a 15min flush and hold in drainline before running the test, followed by 9L and 26 rpm.</p> <p>This work confirmed that <u>13rpm and 4L behaved the least like the flowing pipe(SMPT) at 20,000 Reynolds Number.</u></p> <p><u>The energy in the 13rpm and 4L slosh box was too low to be a proxy for a 10" pipe with 20,000 Reynolds number.</u></p>		<p>that is equivalent to a Reynolds Number of 20,000. This is based on comparing data from same sample tests in the section of sewer in Vancouver WA that averages 20,000 , as well as a shake flask set at 100 rpm/Re = 20000 .</p> <p>The IWSFG would also like to point out that the 4L@13rpm combination was initially proposed by Kimberly Clark as a replacement for the 12L@26 rpm that was used in the "Vilsee Test" version of the slosh box</p> <p>As far as some of the other numbers like 9L @26 rpm, we would agree that based on calculations provided by Michael Paschka of Procter & Gamble that this equals a Reynolds Number of 50,000 (+/-), 2 ½ times what is being sought.</p>
60	PG	118-120	2	Purpose	Te	Vague. Lacks supporting details, references and calculations.	Clarify the specific portion of wastewater transport systems under evaluation in PAS-3B, and provide relevant technical	Not Accepted. No relevance to the PAS.

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							details and specifications for said portions. Specifically, provide a detailed explanation, with appropriate reference to design manuals or similar, of where continuous flow conditions are found for a duration of 2 hours in wastewater transport systems with flow conditions described by a Reynolds Number of 20,000.	See comment 56
61	ANON 1	118-120			GE	"The purpose of this test is to assess the disintegration performance of a product when subjected to the hydraulic forces normally found in gravity wastewater transport system", i.e forces equivalent to Reynolds number of 20,000." Hydraulic forces in wastewater transport systems worldwide are likely to vary from time to time. Is there any background information in support of Re 20, 000 being a relevant, realistic and representative average?	Please provide references to studies, articles or similar.	Partially Accepted. Survey Results done as part of GD4 identified the pipe diameters and design flow and construction parameters for the pipes that the wipe is going to be flushed into Based on those parameters the Reynolds Number of 18,000+ was calculated by Michael Paschka of P&G
62	LZ	120	2	Purpose	Te	Where does the Reynolds number 20,000 come from?	Explain the scientific background and it's relation to the waste water sewage systems.	See comment 61
63	SUO	120	2		Te	It is mentioned that the hydraulic forces typically found in continuous flow conditions in wastewater transport systems is equivalent to Reynolds number of 20,000. Please provide a reference to this point.	Please provide a relevant reference to the comment.	See comment 61
64	INDA	122	Section 3		GE	The scope of this document is unusually broad. There are many products that are designed to be flushed that are in no way appropriate for these guidelines. Examples include disinfecting and cleaning products (liquids and gels). A recommendation would be to tighten the scope of this document to include only those products that would be appropriate to test using these methodologies.	Refine the scope to include only those material systems that can actually be tested using these methodologies.	Not Accepted. No relevance to the PAS.

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65	PG	128	4	References	Te	Incomplete. The content of the test bears significant resemblance to existing copyrighted methods.	Provide appropriate reference and acknowledgement in this Section and throughout the document where both verbatim and paraphrased materials are utilized. Otherwise, delete content from unreferenced sources.	Copyright issues have been addressed.
66	WSL NZ	142	5			Terms and Definitions: Would have expected Unit Sizes to be presented here similar to other PAS's for consistency.		Partially Accepted. Addressed in PAS0 and section 8
67	NP	144-145	6	Principles	Te	See concerns raised in row directly above this one.	Please clarify.	Partially Accepted. Already addressed
68	PG	145	6	Principles	Te	Vague. Lacks supporting details, references and calculations.	Define "normally." Specifically, provide a reference to sewer design and/or other literature sources that identify a Reynolds Number of 20,000 as "normal" or typical for a wastewater transport system. Further, provide the percentage of flows this Reynolds Number represents globally with breakdown by country based on the research conducted by the IWSFG. Also, relate the Reynolds Number of 20,000 to pipe flow.	See comment 61
69	PG	145	6	Principles	Te	Vague. Lacks supporting details, references and calculations.	Provide the results of modeling where a Reynolds Number of 20,000 has been determined for the Slosh Box operated under the conditions shown in PAS-3B. If available, also provide modeling results that demonstrate whether the Reynolds Number of 20,000 represents an average value or maximum value. If an average value, provide the minimum and maximum Reynolds Number values produced during each oscillation of the slosh box.	See comment 61

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							If a maximum value, provide the time-weighted average calculation that results in a Reynolds Number of 20,000.	
70	NP	147-150	6	Principles		<p>Who uses wastewater to flush their toilets? Should that be artificial fecal matter?</p> <p>Although wastewater is not used to flush toilets, there is a reference to FG501 (line 108) that includes use of simulated fecal matter.</p> <p>It is not clear how this proposed test method would reflect more real world conditions without accounting for actual voids of urine, feces and/or both.</p> <p>It appears that inconsistencies are anticipated if anything other than potable water is used. What data exists to show these inconsistencies?</p>	Please clarify.	Accepted. Remove Note
71	PG	147-150	6	Principles	Te	<p>Contradictory. Significant concern regarding the amount of hydraulic force present in the test is evident from the content of PAS-3B, which appears to indicate an interest in establishing a test that has real-world conditions as a primary concern.</p> <p>As such, prohibiting the use of wastewater for disintegration tests in the PAS-3 series tests significantly reduces realism in the test and makes the test not representative of real-world conditions.</p>	<p>Revise PAS-3B to allow for the inclusion of wastewater.</p> <p>Provide a list of preventative actions that are utilized by IWSFG (for example, personal protective equipment) to address health and safety concerns, as well as ranges of wastewater characteristics (for example, Total Suspended Solids and Carbonaceous Oxygen Demand) typical to wastewater based on IWSFG data, to address concerns related to inconsistency.</p>	<p>See comment 70</p> <p>Not Accepted. No relevance to the PAS.</p>
72	PG	147-150	6	Principles	Te	<p>Contradictory. The same health and safety and consistency concerns are present in the PAS-5 series tests, yet real media is utilized for those tests.</p>	<p>Revise PAS-3B to allow the use of wastewater, and utilize the same procedures and strategies employed in the PAS-5 series tests in the PAS-3 series tests to ensure safety and consistency.</p>	See comment 70
73	PG	147-150	6	Principles	Te	Clarify.	<p>If the prohibition on the use of wastewater is maintained, given that the IWSFG is concerned about "inconsistency" related to</p>	See comment 70

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							wastewater, provide specific ranges of "inconsistency" between potable water aliquots for testing. For example, the characteristics of tap water will vary by location, and within a location by time of year, depending on the water source. Provide ranges of parameters, including but not limited to, pH, hardness, and temperature, deemed levels of "inconsistency" that are acceptable.	
74	LZ	155	7.1	Apparatus	Te	The material for plastic box of Slosh-Box needs to be defined. Some materials show calcification on the surface especially if the hard water is used. It causes that fibers fragments will pick on the surface of the box and influence the test results.	Discuss this issue with the manufacturer of Slosh- Box to define the materials for the boxes.	Not Accepted.
75	LZ	156- 157	7.1	Slosh Box Design Parameters	Ge	Why is the inside dimension of the Slosh-Box different as those of Slosh-Box described in the INDA/EDANA GD3 FG502 (Chapter 4.1)	Explain the size differences of Slosh-Box.	Accepted. The size of the box in PAS 3B is indeed different from GD3. It is the size from GD2. However, when there was round robin testing done in GD4 this issue was brought up since all the boxes in the round robin, as well as the plans available from INDA utilized an 18" x 12" box. In fact, no one on the INDA side remembered changing the size for GD3 or how 17" x 13" came about. It was agreed that in GD4 the size would be 18" x12" and the IWFSG is consistent with that agreement.
76	SUO	157	7.1.a		Te	The slosh box test apparatus size differs from the test apparatus which nearly all 3rd party	Keep the current slosh box test apparatus of same size as most of the manufactures	Not Accepted.

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						labs and industry labs have- L 18" (45.72cm) x W 12" (30.38cm) x H 12" (30.48cm) --- Instead of L 17" (43cm) x W 13" (33cm) x H 12" (30cm)	and testing laboratories are having	See comment 75
77	LZ	164	7.1	Slosh Box Design Parameters	Ge	A.1.2. not mentioned in Annex 1.	Add A.1.2. to Annex 1	Accepted.
78	NP	168	7.2	Functional Parameters	Te	Current equipment capability of the slosh boxes are not capable of generating a +/- ½ or ¼ degree accuracy when they oscillate. They are not made this sophisticated so a new design should be recommended in the test method.	Please clarify if this restriction impacted test accuracy and reproducibility.	See comment 1
79	KCC	168-173			ED	The rock angle can measured, but not adjusted. The angle is set with the design and fabrication of the equipment by the manufacturer.	Please share that the angle spec of 11 degrees+/-1 0.5 degrees meets the manufacturing spec and tolerances of the 2 equipment manufacturers listed in A1.1	See comment 1
80	KCC	169			Ed	Angle is against horizontal not vertical?	Check	Accepted. Clarify in the revised edition of the PAS.
81	NP	173	7.2	Functional Parameters	Te	Current equipment motor control at a setpoint of 13 rpm would appear to be on low end of motor range. Does benchmark study confirm that equipment provides reliable and reproducible data,	Please clarify.	Not Accepted. No relevance to the PAS.
82	SUO	173	7.2.b		Te	The speed of the cam mentioned in the document is 13 rpm. Is this rpm equivalent to Reynolds number of 20,000?	The speed of the cam should be 26rpm as it correlates to the conditions in wastewater.	Not Accepted.
83	JHI	173	7.2 (b)		TE	Speed is half of previous test method.	Explain reasoning and provide data for proposed change.	Not Accepted. No relevance to the PAS.
84	LZ	179	7.3 (b)	Other Equipment	Te	According to our experience use of fine sieve or a strainer will have an impact on the test results. Disintegrated materials agglomerate on the strainer. No need to have a sieve or hand strainer.	Remove 7.3 (b)	Not Accepted.
85	LZ	180	7.3 (c)	Other Equipment	Te	What is the technical reason to use a sieve with significantly smaller pore size (6.3 mm) for Slosh-Box test as those of described in GD3 FG502 (12.5 mm)?	Provide scientific references which explain the necessity for use of smaller pore size of the sieve for the slosh-box test.	Partially Accepted. A change in sieve size will occur in the revised draft PAS.

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86	INDA	180-181			ED	6.3 mm sieve? 6.3 mm diameter, radius, circumference?	Clarify.	See comment 85
87	JHI	180	7.3		TE	Sieve size of 6.3 mm too restrictive – what is this significant reduction in size based on?	Explain reasoning and provide data for proposed change.	See comment 85
88	GP	181, 297, 335, 337, 340, 364, 370, 371, 391, 606, 712			Te	The sieve size mentioned is not consistent.	Establish a consistent sieve size at 12.5mm.	Partially Accepted. A consistent sieve size will be used throughout the PAS.
89	GP				Te	The size of this sieve is very small. A sieve of 12.5 mm is more representative of the size of screens used in treatment plants.	Establish a consistent sieve size at 12.5mm.	See comment 88
90	NP	181	7.3	Other Equipment	Te	Screen size of 6.3mm – is this common in waste water? What is rationale to move to such a screen size. There are concerns with this screen size opening and potential for blinding. Would this impact test method predictably coupled with shower rinse. Is there data to show this is a robust test method?	Please clarify.	See comment 85
91	SUO	181	7.3.c		Te	The perforated plate screen with round holes size of 6.3 mm should be 12.5 mm as the test measures the dispersibility of the wipe/tissue by hydraulic forces.	The slosh box measures the dispersibility of the wipes as the wipes breaks down into smaller pieces which are supposed to pass through 12.5 mm sieve. Please provide a reference point on why 6.5 sieve should be used for dispersibility test.	See comment 85
92	NP	182	7.3	Other Equipme	Ge	It states to measure temperature. It is unclear why and if water temperature should be adjusted.	Please clarify.	Partially Accepted. Based on GD3 FG502, the water temperature should be within a range - if the water temperature is not within that range it should be adjusted
92	NP	Various		Sample Preparation	Ge	Please refer to other documents for inquiries regarding sample acquisition, sample size and moist tissue nomenclature.	Please clarify.	Not Accepted. No relevance to the PAS.
93	INDA	186-187			GE	Unacceptable burden on test labs. Not all laboratories will have access to all materials – even those materials that are available in the market place.	Reassess the material acquisition requirements in your test methods.	Accepted. Will modify in the revised edition of the PAS.
94	KCC	186-187			Te/Ge	Manufacturers may not sell in the country in	Material acquisition requirements in your	See comment 93

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						which the test lab is located. This is impractical and unnecessary burden on test labs	test methods need to be reconsidered – this is not manageable.	
95	LZ	193	8.2	Number of test pieces	Te	Why 5 specimens and not 6 (FG502 uses 6 specimens)? If the slosh-box is designed with 3 boxes it makes more sense to test 6 specimens.	Explain the use of 5 specimens instead of 6.	Not Accepted.
96	ANON 2	193			TE	Not clear how many samples are required from each package. Instructions are not consistent.		Partially Accepted. 2 from one and 3 from the other -- will correct and clarify in the revised edition of the PAS.
97	INDA	193-197			GE	Instructions are inconsistent. Need to clarify the number of samples required from each package and for what purpose.	The wording is confusing between the need for 5 or 10 samples and from a single or multiple packages. Please add clarifying language.	See comment 96
98	LZ	193-197	8.2	Number of test pieces	Ge	If 5 specimens have to be tested and the package of wipes is in divided in 5 sections to take one sample from each section, then the following sentence is not clear: Specimens should be obtained at least from two distinct packages of a product.	Remove the text: Specimens should be obtained at least from two distinct packages of a product.	See comment 96
99	JHI	193-197			GE	5 specimens needed. Also Instructions are unclear on how to take samples	Slosh box has 3 compartments so do groups of 3. Clarify sample procedure.	See comment 96
100	KCC	193-197			GE	Instructions are inconsistent. Need to clarify the number of samples required from each package and for what purpose.	The wording is confusing between the need for 5 or 10 samples and from a single or multiple packages. Please add clarifying language.	See comment 96
101	NP	198-199	8.2		Te	Why don't we expect the glued part of the toilet paper to pass this test?	Please clarify.	Not Accepted. No relevance to the PAS.
102	KCC	207			Te	A slosh box is large enough to accommodate a 6 sheet implement of toilet paper	Clarify rationale for 2 sheets which is a smaller sample than typically flushed, why not 6 sheet implement?	Not Accepted. No relevance to the PAS.
103	SUO	207	8.3.1		Te	It was said that the specimen size shall be either one or two sheets of toilet paper but in reality and actual use its more than 2 sheets of toilet tissue.	Instead of two sheet of toilet tissue, 6 sheets of toilet tissue should be used irrespective of the type and mass of toilet tissue as relates to realistic scenario.	Not Accepted. No relevance to the PAS.
104	LZ	208-210	8.3.1	Dry Tissues	Ge	The title is about dry tissues and not toilet papers. Toilet papers and their performance are	Replace toilet paper in line 208 and 210 by dry tissues.	Accepted.

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						in the scope of ISO TC 6 working groups (paper, board and pulps).		
105	LZ	209-210	8.3.1	Dry Tissues	Te	How is the total area of 180 – 300 cm ² calculated?	Explain.	Not Accepted. Length x width
106	LZ	216-224	8.3.2	Moist Tissues	Ge	What is the purpose of chapter 8.3.2? Number of test specimens was mentioned in chapter 8.2.	Explain or rewrite chapter 8.3.2	Not Accepted.
107	SGS-IPS	217	8.3.2	1	Te	Why cut test specimen if over your self-imposed limit? Products going down the sewer line are not cut to length in real-world. Limiting size in test 3A makes sense because of size of the beaker. The slosh box in 3B is much larger.	Delete this spec and leave in whole-product.	Partially Accepted. Larger than that size tends to create a lot of material that could cause difficulty with the visual and sieving processes
108	NP	217-219	8.3.2	Moist Tissues	Te	Size of the sheet will impact versus toilet paper where they can use a single sheet as small as 180cm ² – whereas the moist tissue has a minimum size fo 260 cm ²	Please clarify.	Not Accepted.
109	LZ	219	8.3.2	Moist Tissues	Te	Why the size of the fabric should be at 260 cm ² ?	Explain.	See comment 107
110	KCC	221-222			GE	Sample preparation described in Section 8.2 is incompatible with “as soon as they are removed from the packaging”.	Removing just before testing is not consistent with preparation in Section 8.2.	Accepted.
111	ANON 2	221			GE	Sample preparation in 8.2 is incompatible with directions “as soon as they are removed from the packaging.”		See comment 110
112	INDA	221-222			GE	Sample preparation described in Section 8.2 is incompatible with “as soon as they are removed from the packaging”.	Removing just before testing is not consistent with preparation in Section 8.2.	See comment 110
113	KCC	221-222			Ge	Sample preparation described in Section 8.2 is incompatible with “as soon as they are removed from the packaging”.	Removing just before testing is not consistent with preparation in Section 8.2.	See comment 110
114	SGS-IPS	221	8.3.2	2	Te	Lotion should be removed in bucket or drain line, as this would happen in real-world. Lotion will affect dispersion and the moisturizing chemicals can foam and cause other issues when trying to capture images.	Add reference to remove lotion prior to testing.	Not Accepted.
115	KCC	222			Te	Minimize evaporation of moisturizing chemicals?	Guidance on time would be prudent if this is of concern	Accepted. Will be addressed in the revised edition of the PAS.
116	PG	228	9	Storage and	Te	Contradictory. The test method requires	Remove storage requirements	See comment 110

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				Conditioning		samples to be utilized immediately (Line 204: "Specimens must be removed just before testing starts.").	If storage requirements remain, provide the quantity of moisture absorption (for dry samples) or evaporation (for moist samples), with appropriate references for establishing threshold values for these parameters.	
117	INDA	229	9.1		GE	Storage of samples precludes removing the samples from the (original) packages just before testing. In addition, if soft packages are cut open to remove a stack and separate it into 5 ... the soft package is no longer available for storage.	The IWSFG needs to rethink the sample strategies within these documents. Alternative procedures need to be developed if all of the various options are to be consistent.	See comment 110
118	ANON 2	229	9.1		GE	Storage of samples does not allow removal of the samples from the (original) packages just before testing. If packages are cut open to remove a stack and separate it into 5, the soft package is no longer available for storage.		See comment 110
119	KCC	229	9.1		GE	Storage of samples precludes removing the samples from the (original) packages just before testing. In addition, if soft packages are cut open to remove a stack and separate it into 5 ... the soft package is no longer available for storage.	The IWSFG needs to rethink the sample strategies within these documents. Alternative procedures need to be developed if all of the various options are to be consistent.	See comment 110
120	GP	233-235			Te	Why does this test condition the samples and 3A and 3C doesn't? If they are supposed to equivalently test the product the conditioning should be the same.	Include conditioning in the test methodology.	Addressed by moving to a single PAS document for disintegration.
121	GP				Te	What work supports that the 3 disintegration tests give equivalent results on similar products? The amount of energy in each of these tests varies significantly.	Provide support that all three tests yield similar results or consolidate to a single test.	Addressed by moving to a single PAS document for disintegration.
122	LZ	236-243	9.1	Storage of Samples	Ge	If the package of moist tissues is cut on its side (lines 200-202), how is it possible to store the rest of the samples in the same soft plastic package?	A consistent sampling procedure and sample storage is required.	Not Accepted.
123	NP	246	9.2	Conditioning	Te	This step requires a pre-conditioning step. However, this statement conflicts with "no rinsing of lotion" statement found in Line 223. Preconditioning method requires a drainline set	Please clarify.	Accepted. There is no pre- rinsing of the lotion prior to the pre-conditioning step -- will review and attempt to clarify

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						up for slosh box test.		
124	DPI	246	9.2/10.1		Ed	New paragraph for 10 Procedures		Accepted.
125	WSL NZ	246	10			Procedures: Formatting error Title needs to be on a new line.		Accepted.
126	WSL NZ	246	10			Procedures: No summary as in other PAS's outlining the procedure which is helpful.		Accepted.
127	SGS- IPS	247	10.1.1.		Te	This section conflicts with 8.3.2.		Not Accepted.
128	PG	247-270	10.1	Pre- conditioning	Te	Contradictory pre-conditioning requirements for PAS-3 series test. The implication of the PAS-3 series, given that a product must only pass one test, is that they are equivalent. However, PAS-3B is the only PAS-3 series test that requires pre-conditioning.	Provide an explanation for why preconditioning is required for PAS-3B, but not PAS-3A or PAS-3C, given that all three tests are intended to evaluate the same property. Given that all three tests can be used interchangeably, in order to ensure consistency between methods, the preconditioning step should be deleted. Alternatively, add preconditioning steps to PAS-3A and PAS-3C.	Addressed by moving to a single PAS document for disintegration.
129	LZ	254-255	10.1.1	Toilet and Drain Line Method	Ge	If the toilet with 4.5 L flush is not available what would be recommended?	Give a table with different toilets flushes for different regions in the world.	Not Accepted.
130	KCC	269			Ge	Hold where? In the drainline? In the basket, somewhere else?	Clarify	Accepted.
131	ANON 2	269			TE	How the specimen is held for 15 minutes is unclear. This step needs to be more specific.		See comment 130
132	SGS- IPS	269	10.1.1	b-5	Te	Why hold specimen for 15 minutes before placing in slosh box? No bucket rinsing for lotion removal, just drain line?	Strike paragraph and add section to rinse lotion using bucket method.	Not Accepted.
133	WSL NZ	269	10.1.1			Toilet and Drain Line Method: Need to explain how and why you need to hold the specimen i.e. do you allow it to drain of water or not etc.		See comment 130
134	INDA	269-270			TE	Hold the specimen for 15 minutes is ambiguous. Where and how should the sample be held ?	Clarify.	See comment 130

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135	LZ	269-270	10.1.1	Toilet and Drain Line Method	Ge	How and where the sample should be hold for 15 minutes?	It is not clear. Explain it.	See comment 130
136	ANON 1	269-270			ED	Unclear what is meant by "Hold the specimen for 15 minutes before placing it in the slosh box for testing."	Describe where and how this should be done.	See comment 130
137	NP	270	10.3		Te	Why is the purpose of holding the sample for 15 min after preconditioning before slosh box testing?	Please clarify.	See comment 130
138	KCC	273			TE	Choosing a water temperature spec outside ambient tappi lab temperature range will require additional provision for climate control in labs	Suggest to standardize at 22 ± 3 °C	Not Accepted.
139	LZ	274-278	10.2 (b, c)	Test Set-Up	Te	Why 4l/13 rpm?	Explain the technical reasons in a wastewater system for a decision 4l/13 rpm.	See comment 59
140	JHI	274-275	10.2(b)		TE	Significant change in water volume.	Explain reasoning and provide data for proposed change.	See comment 59
141	SUO	275	10.2		Te	It is mentioned that the slosh box should be filled with 4L of water. Does 13 rpm of cam rod and 4 L water equivalent to Reynolds number of 20,000?	The test measures the overall breaking down of wipes/tissue in water with certain hydraulic forces. Please provide a reference on how 13 rpm of cam speed and 4L of water provides hydraulic forces which can be found similar in wastewater and treatment system. Again, it is highly doubtful that with these conditions, the normal toilet tissue will breakup.	Not Accepted. No relevance to the PAS.
142	ANON1	275-277	10.2		TE	Are the proposed slosh box parameters (13rpm, 4L) representative for: "hydraulic forces normally found in gravity wastewater transport system", i.e forces equivalent to Reynolds number of 20,000." (as stated on lines 118-120) ?	Please explain if/how a relationship between chosen Slosh box parameters (13rpm, 4L) and continuous flow conditions equivalent to Re 20,000 has been established.	See comment 59

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143	NP	277	C			What data to support 13 rpm? See notes above.	26 rpm as per INDA / EDANA Guidelines	See comment 59
144	JHI	277-279			TE	Again, RPM target is half of current test method.	Explain reasoning and provide data for proposed change.	See comment 59
145	SGS-IPS	289	10.3	e	Ge	Taking pictures every 30 minutes unnecessary, judgement call as to 6mm X 6mm pieces.	Strike requirements.	Accepted.
146	LZ	289-294	10.3	Test Procedures	Te	How is it possible to measure pieces 6mm x 6mm visually in a moving Slosh-Box to take a picture?	Describe a procedure.	Partially Accepted. Pictures are only taken at the beginning and end of the test in the revised edition of the PAS.
147	INDA	289-292			TE	Take pictures of what? How? What is the placement of the camera?	Clarify. Images would be helpful.	See comment 146
148	KCC	289-294			TE	Steps 2,3 Estimating 1" pieces in a slosh box is an art form, estimating 1/4" pieces in a moving box would be way more difficult to do reproducibly.	The 6mm x 6mm observation is a subjective step and should be removed.	Accepted.
149	ANON 2	289			GE	Process for taking photos is ambiguous. Requires clarification of set up and process.		See 146 – More detail will be provided in the revised edition of the PAS.
150	WSL NZ	291-294	10.3			Test Procedures: It is uncertain why the size of disintegrated pieces is defined here and not in other similar methods?		Addressed by moving to a single PAS document for disintegration.
151	AFGC	293	10.3	4.a.	Te	The screen size has been reduced from 12.5mm from the current INDA/EDANA Guidelines and question why this change has been made.	Revert to current 12.5mm	Not Accepted. Although sieve size may change in the revised edition of the PAS.
152	NP	293	10.3		Te	Rinsing procedure requires to use a 6.3 mm diameter hole sieve. The slosh box requirement is 6 mm x 6 mm pieces left after 120 min. These pieces will not necessarily pass through this size all the time to create 95% pass. Also there is no explanation for what the density of the holes (how often, spacing in between, etc.) on the sieve surface as well as the thickness of the metal used for the sieve, this will change the results. How smooth the sides of the holes should be, as this will cause snagging.	Please provide data if these concerns are not warranted.	Not Accepted. No relevance to the PAS.

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153	ANON 2	293			TE	Estimating ¼" size in a rotating box is impossible to do accurately. This step is too subjective and should be removed.		See 146
154	INDA	293-294			TE	Estimating ¼" size in a moving box is very difficult to do reproducibly. This is a very subjective step and should be removed.	Remove.	See 146
155	LZ	295-299	10.3 (4a)	Test Procedures	Te	<p>What is the diameter of the sieve plate?</p> <p>4 l Box is very difficult to handle it and it is not safe for the lab technician to pour the 4l content on a very small sieve with a pore size of 6.3 mm.</p> <p>What is the procedure if the boxes do not equipped with a drain to empty the water?</p> <p>A range of 10 – 15 cm distance between the drain and the top surface of the sieve is not clear.</p>	<p>Safety is very important for lab technicians. Any test procedure has to be safe for the laboratory stuffs. Provide appropriate values for the diameter of the sieve plate with a pore size of 6.3 mm.</p> <p>Define a test procedure to empty the boxes which do not equipped with a drain.</p> <p>Define an exact value for the distance. Define also a distance in a test procedure if boxes are not equipped with a drain to empty the water.</p>	<p>Not Accepted.</p> <p>Not Accepted.</p> <p>Accepted. Will be changed to 10 cm</p>
156	INDA	295-302			TE	Confusing. If I've drained the slosh boxes in (a), how can I use the hand sieve in (b) ? What should be done with remaining materials in the slosh box that haven't drained out ? Should the box be rinsed ?	Clarify.	Not Accepted.
157	KCC	295-302			TE	Simplify and use hand sieve for collection of all materials	Delete a, keep b	Accepted.
158	LZ	300-302	10.3 (4b)	Test Procedures	Te	It is not clear the function of a hand sieve in this context. As commented for line 179 use of any hand sieve shows an impact on the test results (fibers fragments agglomerate on a strainer).	Remove lines 300-302 [10.3 (4b)].	See comment 157
159	DPI	303	10.3		Ge/Te	Consider replacing the word 'lower' with 'underside'		Accepted.
160	SGS-IPS	303	10.3	5	Ed	Too many pictures, lower sieve pics will spill top portion of sieve.	Strike requirements.	Partially Accepted. Remove requirement for lower sieve picture on un-rinsed sieve – retain it for

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								rinsed sieve – the rinse pushes the material through and the often times the lower sieve picture shows more of the residual
161	JHI	303	10.3		GE	Calls for several sets of pictures to be taken.	Taking pictures prior to rinsing will not show final results. Not sure pictures are necessary. Hard to store and be taken consistently by all operators.	Not Accepted. The IWSFG believe there is transparency value in taking a pre-rinse picture
162	NP	306	7			What data to support 1 minute? Rationale for decreasing is unclear.	2 minutes as per INDA /EDANA Guidelines	Partially Accepted. After multiple tests it was determined that 2 minutes was too long and could lead to product being pushed through the sieve simply by the duration of the spray. Note: In the TC proposal for Toilet Paper there is a proposal using a sieve bath technique that has no rinse provision. In testing it was determined that a 60 second rinse was appropriate, but not too long.
163	JHI	306-310	10.3(7)		TE	Again, sieve size change is restrictive, also 50% reduction in rinse time.	Explain reasoning and provide data for proposed change.	See comment 146
164	LZ	308	10.3	Test Procedures	Te	What is the technical reason to use 6.3 mm sieve instead of 12.5 mm sieve?	Provide information related to the wastewater systems.	See comment 85
165	LZ	309-310	10.3	Test Procedures	Te	What is the reason to rinse the sieve 6.3 mm at 4l for one minute instead of 2 minutes?	Provide information for this change.	See comment 146
166	PG	310	10.3	Test Procedures	Te	Contradictory. The test procedure prohibits the rinse step from forcing material through the sieve, however, the rinse has been demonstrated to force material through the sieve. Note to Entry: The results of independent laboratory tests using the PAS-3B procedure demonstrate that for multiple toilet paper types, the 1 minute rinse	Provide test results that demonstrate that the 1-minute rinse “do[es] not force the passage of any material through the sieve.” Specifically, share the results of benchmark testing where PAS-3B tests were conducted on toilet paper samples, and the 1 minute rinse was shown to not result in the forced passage of material	Not Accepted. No relevance to the PAS.

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						<p>step results in the forces passage of significant percentages of the sample initially retained through the 6.3mm sieve.</p> <p>For example, for a single ply toilet paper, 79% of the initial dry weight of the sample passes through the 6.3mm sieve after a 1 minute rinse (n=3). For the same single ply toilet paper, only 50.6% of the initial dry weight of the sample passes through the 6.3mm sieve without a rinse (n=3). This pattern was observed for all toilet paper substrates tested (one-ply, two-ply, and three-ply).</p> <p>As such, the rinse step for method PAS-3B method is invalid for toilet paper and should be withdrawn until the error introduced via the proposed sample processing is addressed.</p>	through the sieve.	
167	SGS-IPS	311	10.3	8	Ed	1 minute rinse?	2-minute rinse.	See comment 153
168	DPI	312	10.3		Ge/Te	Consider replacing the word 'back' with 'underside'. Also use consistent terminology to assist the reader		Accepted.
169	JHI	324-330	10.4		GE	Not really necessary. In order to complete the testing for pass through %, you must drain the box	Remove	Partially Accepted. Remove 2 nd pp.
170	INDA	325-326			ED	Shouldn't all the residual material already be out of the box? As with a previous comment, doesn't the box need to be rinsed to remove any pieces that get trapped?	Clarify.	See comment 169
171	PG	329-330	10.4	Test termination	Te	<p>Contradictory. PAS-3B requires that after testing "specimens contain[ing] fiber-binding chemicals" that "the surfaces shall be washed using solvents such as ethanol and methanol."</p> <p>Note that this requirement contradicts the requirements of IWSFG PAS-1 (Environmental Health and Safety Requirements), which contains the following language in Section 7.5: lines 151-153 "chemicals: for example, solvents</p>	<p>Clarify the IWSFG position on use of solvents for PAS tests and disposal of solvents.</p> <p>Provide an explanation of what solvents, in what forms, and under what circumstances those solvents, are suitable for disposal into the drainline of a building.</p>	See comment 169

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						<p>used for laboratory preparations...” and related: lines 162-164 “Note: None of these waste types can be flushed through toilets into the wastewater infrastructure; instead, they must be handled according to the relevant policies and regulations.”</p> <p>Per Lines 162-164 of PAS-1 (Environmental Health and Safety Requirements), solvents are not suitable for disposal into the drainlines of buildings. Or, alternatively, the IWSFG condones the disposal of solvents through a sink into the drainline of a building, however, were those solvents to be applied to a surface-cleaning wipe, for example, that meets all the requirements of IWSFG Standard 1: 2017 (Section 6.2- Critical Criteria to be Met) such that it was appropriately labeled as flushable and suitable for disposal via the toilet, <i>the solvent would not be suitable for disposal into the drainline due to its presence on a surface-cleaning wipe.</i></p> <p>Further, for example, consider chlorine: “Chlorine reacts with water in and out of the body to form hydrochloric acid and hypochlorous acid. Both are extremely poisonous.” https://medlineplus.gov/ency/article/002772.htm</p> <p>Given its widespread use, the disposal of this chemical through sinks and laundry machines into drainlines is very common. Provide IWSFG’s opinion whether a surface-cleaning wipe that meets all the requirements of IWSFG Standard 1: 2017 (Section 6.2- Critical Criteria to be Met) but contains chlorine can be labelled as flushable. Note that such a wipe would, under many usage conditions, likely become contaminated with bodily fluids, such as typical</p>		

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						bathroom cleaning and therefore fall within the Scope of the IWSFG Standard 1: 2017.		
172	INDA	333			ED	The test must be repeated with 5 specimens? All at once ??	Clarify.	Partially Accepted. Clarification – One wipe per box
173	KCC	333			ED	The test must be repeated with 5 specimens? All in one box?	Improve sentence	See comment 172
174	INDA	334-341	10.5		GE	The acceptability criteria are confusing. Does a sample pass with (a) or (b)? There are situations where a sample might be able to meet (a) but not (b) (example, half of the 5th sample is residual – result in a 10% solids remaining). Likewise a sample could meet (b) but not (a) (example, residuals remain for more than 1 sample).	Clarify	Partially Accepted. Delete A.
175	KCC	334-335			GE	(a) is a redundant criteria.	Remove (a).	See comment 174
176	ANON 2	334				Acceptance criteria are unclear and ambiguous. Need to clarify pass/fail criteria.		See comment 174
177	JHI	334-335	10.5		TE	Do not need to state a if b is an option.	Remove A	See comment 174
178		336-341	10.5 (b)		TE	Dry sample for 4-8 hours seems excessive. Pass through requirement is drastically different – 25% to 95%.	45 minute drying time at 103C should be sufficient. Provide data that pass through needs to be 95%.	Not Accepted.
179	LZ	339	10.5	Test Results	Te	Moist toilet tissues are made of cellulosic fibers. Drying of cellulosic materials at 103°C for 4 hours is low. Depends on the material size and morphology, it takes at least 8 hours to dry cellulosic materials at 105°C.	Change the text to: Quantify the dry - mass of all residual fragments from the 5 specimens by drying the fragments at 105 °C in the oven overnight.	Accepted.
180	INDA	345-348				10.3.10 (a) only describes samples with no residuals left ?	Remove line 345.	Accepted. Delete lines 345 to 348.
181	LZ	345-348	10.6	Calculation	Te	10.3.10 (a) describes a sample with no residuals remaining on the sieve.	Remove line 345.	See comment 180
182	ANON 1	359			ED	Refers to Annex 9. Annex 9 is missing.	Please, amend.	Accepted. Change annex 9 to 6.
183	INDA	360	Section 11			There is confusion reading this acceptance criteria and those in 10.5. As mentioned in the comment for 10.5, is OR required between (a)	Confusing between 10.5 and 11. Needs clarification and consistency	Partially Accepted. Delete lines 362 to 368

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						and (b). In Section 11 OR is there, but not 10.5. In addition, lines 370 – 373 (a) [sic] are different than in Section 10.5 (b). Lines 370-373 imply that only 4 of 5 samples need collected?	between the two.	Combine 10.5B with Section 11 and delete 10.5.
184	AFGC	363	11	a	Te	The testing time has been reduced from 3 hours to 120 mins – question why this change has been made.	Revert to current 3 hours	See comment 183
185	KCC	363-368			Ge	(a) is a redundant criteria.	Remove per previous comment. Redundant.	See comment 183
186	ANON1	363-373	11			Unclear and ambiguous. There can only be one acceptance criterion for the same method/test data. Criterion covers 4 of 5 test specimens. What is the requirement for the 5th test specimen?	Clarification needed.	See comment 183
187	PG	363-373	11	Acceptance Criteria	Te	Proposed acceptance criteria lacks sufficient detail regarding protection of infrastructure and test reliability.	Provide evidence that acceptance criteria is necessary for the protection of infrastructure.	See comment 183
188	PG	363-373	11	Acceptance Criteria	Te	Independent laboratory testing of multiple toilet paper samples was conducted at three laboratories to evaluate interlab variability of the proposed PAS-3 series tests. Five toilet papers were tested using the three PAS-3 series tests. Results: 1. Three of five toilet papers tested did not meet the acceptance criteria for all three PAS-3 series disintegration tests. Two of the three samples tested failed to meet the proposed acceptance criteria across all three laboratories, but did meet the acceptance criteria at one laboratory in one test. In summary, two substrates that failed to meet the proposed acceptance criteria for eight of nine tests conducted across three	Based on an inter-lab evaluation of the PAS-3 series disintegration tests, the tests give inconsistent results across laboratories, and therefore are not suitable for publication as written- both the methods and the currently proposed acceptance criteria must be revised. Conduct an appropriate interlab testing program utilizing a range of products. Once complete, establish relationships between laboratory test method results and infrastructure compatibility issues experienced based on field studies and documented issues to determine appropriate test conditions and acceptance criteria.	Not Accepted. No relevance to the PAS.

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						laboratories would, according to Section 7.3 (IWSFG Standard 1), be flushable. Put another way, two substrates that failed to meet the proposed acceptance criteria in 89% of tests conducted would meet the IWSFG criteria for dispersibility.		
189	PG	363-373	11	Acceptance Criteria	Te	Proposed acceptance criteria lacks sufficient detail regarding test reliability and reproducibility.	Provide a statistical analysis of PAS-3B that demonstrates the accuracy, reproducibility and repeatability (both intra-lab and inter-lab) of the method. Demonstrate through statistical analysis of results of various substrates, including toilet paper, that the method has sufficient resolution to distinguish between substrates at the 95% acceptance criteria level.	Not Accepted. No relevance to the PAS.
190	PG	363-373	11	Acceptance Criteria	Te	Contradictory and vague. PAS-3B contains two pass criteria: the method requires that a sample either attain: 100% passing the sieve or 95% passing the sieve.	Establish a single pass criteria. Alternatively, provide test results demonstrating the ability of laboratory technicians to visually determine, with an accuracy greater than 5%, the amount of material present on a sieve.	Partially Accepted. See comment 183
191	PG	363-373	11	Acceptance Criteria	Te	Attached below is a photograph of a one-ply toilet paper after 30 minutes in the PAS-3B slosh box test. Per PAS-3B, this sample was pre-conditioned and as such this photograph represents the condition of the toilet paper after being flushed through a toilet, transit through a 24-meter drainline, sitting in room temperature tap water for 15 minutes, and 30 minutes of agitation in room temperature tap water in the slosh box.	Based on testing using the PAS-3 series tests, the methods and the currently proposed acceptance criteria are inappropriate and required revision. Conduct an appropriate interlab testing program utilizing a range of products. Once complete, establish relationships between laboratory test method results and infrastructure compatibility issues experienced based on field studies and documented issues to determine appropriate test conditions and acceptance criteria.	Not Accepted. No relevance to the PAS.

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						 <p>Note that based on the 1" x 1" grid drawn on the bottom of the slosh box there are a number of pieces of the substrate that have dimensions larger than 1" and are larger than 1" x 1" square.</p> <p>After 2 hours, the average percentage (n=3) of the initial dry weight of the sample passing the 6.3 millimeter sieve specified by PAS-3B was 79%.</p> <p>Therefore, based on the proposed PAS-3B acceptance criteria, this substrate (again, a single-ply toilet paper) would not be considered flushable in accordance with the IWSFG.</p> <p>2. In conclusion, based on the results</p>		

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						of testing to evaluate the applicability of PAS-3B, the PAS-3B test should be withdrawn and critically reviewed before publishing for use.		
192	JHI	370-373	11		TE	Overall procedure is drastically different then current.	Re-visit all of the changes: # of samples, sieve size, slosh time, amount of water, temperature, rpm, pass through requirement, additional pictures	Not Accepted.
193	LZ	372-373	11	Acceptance Criteria	Te	<p>Lines 372-373 are not aligned with section 10.5. (b). Section 10.5. (b): Record the test results for each of the 5 specimens. Collect any residual fragments that remained on the 6.3 mm sieve during each test. Quantify the dry - mass of all residual fragments from the 5 specimens by drying the fragments at 103 °C for 4 to 8 hours. For a product to pass, total dry - mass of the residual fragments (>6.3 mm) must be less than 5 % of the average initial dry mass calculated dry - mass of 5 specimens.</p> <p><u>Section 11, lines 372 - 373:</u> If there is material left on the 6.3 mm sieve after the 1 minute rinse, the percent of the total initial dry mass (as computed in step b of section 10.5) passing through the 6.3 mm sieve for the four (4) of the five (5) test specimens after 120 minutes of testing must be greater than 95%. This result must be supported with visual examination and pictures of solids on the sieve.</p>	Rewrite section 11 or 10.5. (b) for clarity and consistency.	See comment 183
194	SUO	373	11.a		Te	It is mentioned that the passing criteria for test product should be greater than 95% in 120 mins. The passing percent and duration of test doesn't correlate with the purpose of test.	The overall purpose of the slosh box test method is to measure the disintegration performance of a product found in flow conditions in wastewater transport system. Therefore, the slosh box test duration should be increased to 180 min instead of	Not Accepted. No relevance to the PAS.

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							120 mins and the passing percentage should be kept more than 50% as the test measures the disintegration of wipes in small pieces.	
195	SGS-IPS	383	12	8	Ed	RPM and rock angle calibration data is overkill.	Strike requirement for report.	Not Accepted. – in round robin testing that was done for GD4 the rock angles were found to be all over the place, sometimes varying more than 4 degrees between sides. The calibration was based on the drawings from Kimberly Clark.
196	KCC	397	Precision		Te/Ge	In order to evaluate the disintegration potential of a flushed product to assess compatibility with wastewater infrastructure it is unnecessary to use such fine sieves with such high pass through criteria. Fine sieves with aggressive criteria may exacerbate the risk of type I and type II errors.		Not Accepted. No relevance to the PAS.
197	KCC	397	Precision		Te	Using 6mm sieves with fine dispersions of pulp fibers and a very high pass criteria of >95% pass through exposes the problem of fiber blinding, or clumping of fibers on the sieve face which can lead to variable and lower pass through rates in turn delivering a false negative result (Type II error).		Not Accepted. No relevance to the PAS.
198	KCC	397	Precision		Te	Unlike when using sieves with larger openings, using 6mm sieves with fine dispersions of pulp fibers also leads to an increased risk of showering variability whereby small pieces and fine fibers are broken up by the showering force and are forced through the sieve., this could lead to intralab and interlab variability driving false positive results (Type I error)		Not Accepted. No relevance to the PAS.
199	SGS-IPS	398	13	1	Te	The precision statement should address the precision of the method and not the variability of the product.	Indicate precision of the method.	Partially Accepted. Rename title 'Precision' to

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								'Variability'.
200	PG	398-399	13	Precision	Te	Remove as unnecessary and unrelated to Precision. Precision of test equipment is wholly distinct from sample precision.	Delete. If retained, provide details of statistical analysis completed on a range of products that demonstrates that 5 "separate specimens" is an appropriate number of replicates to eliminate variability within a single product.	Accepted.
201	PG	398-399	13	Precision	Te	Proposed precision text contradicts precision requirements in other PASs.	Provide the rationale and data supporting why in PAS-3B, 5 "separate specimens" is an appropriate number of samples to eliminate variability, whereas in PAS-2B, for example, 10 "separate specimens" are necessary to eliminate variability. Provide the statistical analysis for PAS-3B and PAS-2B that justifies the different in requisite "separate specimens."	Not Accepted. No relevance to the PAS.
202	ANON 1	399				There is no relevant info in Section 8.1 related to number of specimens to be acquired	Please remove.	Not Accepted.
203	KCC	400-401			Ed	Rock angle is fixed, the only way to change it is to purchase new		See comment 1
204	SGS- IPS	401	13	2.	Te	Method specifies to measure rock angle to a half of a degree. Have you determined the true ability of these instruments to be calibrated and hold to that precision of calibration?		See comment 1
205	LZ	421- 422	A.1.1	Sources	Ed	Lenzing Instruments GmbH & Co. is cited as a source for Slosh-Box.	Add a picture of Slosh-Box from Lenzing Instruments GmbH in Annex 1.1.	Partially Accepted. Appropriate photo to be sourced with permission.
206	KCC	424-449			Ed	Photo source incorrectly attributed	Source is INDA. Please confirm appropriate permissions have been granted.	Copyright issues have been addressed.
207	PG	436-440		Bibliography	Ge	References not cited in the document.	Delete. If the references are retained, provide	See comment 206

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							proper citations within the text.	
208	KCC	460			Ed	The IWSFGre any adjustments required? Only speed can be adjusted. This is redundant, since no adjustment short of purchasing a new piece of equipment can change the rock angle – it is designed into the equipment	Delete	See comment 1
209	WSL NZ	489	A.4.3			Annex 4: Section A.4.3 is missing or numbering is incorrect.		Accepted.
210	LZ	497-498	A.4.4.1	Equipment	Te	If there are no toilets at 4.5 L flushes there should be a table to recommend other toilets.	Provide a table with different toilet flushes for different regions of the world.	Not Accepted.
211	LZ	510	A.4.4.2	Procedure	Te	Line 510 in section A.4.4.2 describes no more than 2 wipes should be flushed at one time. However it is not mentioned in section 10.1.1.	Consistency in test procedure in A.4.4.2 and 10.1.1 is required.	Accepted. Make consistent for flush one at a time.
212	LZ	528-529	A.4.5.2	Procedure	Te	In A.4.5.2 is mentioned to submerge the specimen in the water and swirl them for approx. 30 seconds or longer if necessary to remove any perceptible lotion or additives. What is longer? How can the labs determine if a material needs longer than 30 seconds to remove the lotion?	If IWSFG PAS 3B is intended to be used by external labs globally, test procedures shall be described very precise to avoid any mistakes in testing.	Partially Accepted. Delete A4.5
213	KCC	545-557			Ed	Photo source incorrectly attributed	Source is INDA. Please confirm appropriate permissions have been granted.	Copyright issues have been addressed.
214	WSL NZ	562				Annex 5: Missing “or:” to join text as in other versions of this Annex.		Accepted.
215	KCC	583			Ed	Need a much clearer picture – unable to make out items in caption		Accepted.
216	LZ	587	A.5.4.1 (1)	Procedure	Te	Use of a strainer shows an impact on the test results. Because fiber fragments will agglomerate and it influences the test results.	Remove line 587.	Not Accepted.
217	LZ	588	A.5.4.1 (2)	Procedure	Te	The test requires 4 L water in a box and the picher is 3L. Which one is correct?	Clarify.	Partially Accepted. Volume has been clarified in PAS3.
218	KCC	615			Ed	5 pictures. Photo source incorrectly attributed	Source is INDA. Please confirm appropriate permissions have been granted.	Copyright issues have been addressed.
219	LZ	615	A.5.4.2	Procedure	Te	The picture 3 describes transfer samples/fibers	Clarify or rewrite the picture 3 in line 615.	See comment 217

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						from strainer to 3 L picher. Test requires 4 L water in a box. This is an inconsistent message.		
220	SGS-IPS	616	A..5.4.2	Right photo	Te	12.5mm sieve shown in picture and is not a 6.3mm sieve.	Show photo of correct sieve.	Partially Accepted. Corrected.
221		626-646	A.6.2.1		GE	Drying procedure is not reasonable.	Simplify drying procedure to a specific time in the dryer.	See comment 179
222	LZ	635-636	A.6.2.1 (2)	Loss of Mass Calculation Procedures	Te	It is mentioned to dry the materials in the oven at 103°C.	Recommend to change the temperature from 103°C to 105°C to dry the cellulosic materials completely.	See comment 179
223	SGS-IPS	637	A.6.2.1	3.	Te	Please place specimens on a tarred aluminum weighing dish.	Strike the piece of foil reference.	Accepted.
224	WSL NZ	641	A.6.2.1			Loss of Mass Calculation Procedure: In other documents the time is defined as 4 – 8 hours times should be more specific that several hours and consistent between methods.		See comment 179
225	LZ	641	A.6.2.1 (5)	Loss of Mass Calculation Procedures	Te	The time to dry the material in this section is not the same as the time mentioned in the section 10.5 (b).	Change text to: Dry the specimen in the oven overnight.	See comment 179
226	LZ	647	A.6.2.1 (10)	Loss of Mass Calculation Procedures	Te	This is inconsistent with section 11 (lines 372-373). Section 10.5 (b): Record the test results for each of the 5 specimens. Collect any residual fragments that remained on the 6.3 mm sieve during each test. Quantify the dry - mass of all residual fragments from the 5 specimens by drying the fragments at 103 °C for 4 to 8 hours. For a product to pass, total dry - mass of the residual fragments (>6.3 mm) must be less than 5 % of the average initial dry mass calculated dry - mass of 5 specimens. Section 11 lines 372-373:	Requires a consistent description for sections 10.5. (b), 11 (lines 372-373) and A.6.2.1. (10).	Accepted.

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						<p>If there is material left on the 6.3 mm sieve after the 1 minute rinse, the percent of the total initial dry mass (as computed in step b of section 10.5) passing through the 6.3 mm sieve for the four (4) of the five (5) test specimens after 120 minutes of testing must be greater than 95%. This result must be supported with visual examination and pictures of solids on the sieve.</p> <p>A.6.2.1 (10): Record the total weight of residuals from tests 1-5.</p>		
227	JHI	647	A.6.2.1		GE	The average of 3 test results should be sufficient. Most slosh boxes have 3 boxes.	Change 5 samples to 3 samples.	Not Accepted.
228	ANON 1	651		A 6.3.1	ED	Reference is made to Annex 4, Section A.4.3 but this section is missing.	Please amend.	Accepted.
229	ANON 1	651		A 6.3.1	ED	<p>“Select 10 specimens...” contradicts the information on line 666</p> <p>“record the initial total weight of the 5 (five) specimens”.</p>	Please clarify the number of specimens required.	Accepted.
230	ANON 2	651			ED	There is no section A.4.3 in Annex. In the text of the document (footnote 1), an additional 5 samples are requested. A.6.3.1 (1) requires 10. Line 666 is back to 5.		Accepted.
231	INDA	651			ED	<p>There is no section A.4.3 in that Annex.</p> <p>In addition, within the text of the document (footnote 1) an additional 5 samples are requested. A.6.3.1 (1) requires 10. (Line 666 is back to 5.)</p>	Clarify – 5 or 10.	See comment 230
232	WSL NZ	651	A.6.3.1			Initial Dry Mass Calculation Procedure: Should the number of initial mass measurements be the same as the number of tests i.e. 5?		See comment 229

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233	LZ	655	A.6.3.1 (3)	Initial Dry Mass Calculation Procedure	Te	To dry completely cellulosic materials it is recommended to change the oven temperature from 103°C to 105°C.	Recommend to change the oven temperature from 103°C to 105°C.	See comment 179
234	LZ	660	A.6.3.1 (6)	Initial Dry Mass Calculation Procedure	Te	Inconsistent with sections 10.5 (b)	Change text to: Dry the specimen in the oven overnight.	See comment 179
235	INDA	689		Annex 8	ED	Appears to be redundant. Already shown in Annex A.5.4 ???	Remove Annex 8.	Accepted. Remove references to Annex 6 in doc
236	ANON 1	689-725		Annex 8	ED	Seems to be identical to A.5.4 (lines 585-617)	Clarify. Remove Annex 8.	See comment 235
237	LZ	689-725	Annex 8	Alternative Approach for Recovering and Rinsing Materials from the Slosh-Box	Ed	Already described in A.5.4.	Remove Annex 8.	See comment 235
238	KCC	722			Ed	5 pictures. Photo source incorrectly attributed	Source is INDA. Please confirm appropriate permissions have been granted.	See comment 235

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Initials for Public Comments

AFGC – Australian Food & Grocery Council
AF&PA – American Forest & Paper Association
ANNA – All Nippon Nonwovens Association
ANON1 – Anonymous commenter #1
ANON2 – Anonymous commenter #2
CCWES – Clackamas County Water Environment Services
CG – City of Gresham
CO – City of Olympia
CWS – Clean Water Services
DPI – DPI Water
EDANA – EDANA
FAD – City of Vancouver
FCPC – Food and Consumer Products of Canada
GHC – GammaHealthcare Ltd.
GIL – Grasim Industries Ltd.
GP – Georgia-Pacific Consumer Products
GT – GreenbergTraurig
INDA – INDA, Association of the Nonwoven Fabrics Industry
JCFA – Japan Chemical Fibers Association
JHI – Jacob Holm Industries
JHPIA – Japan Hygiene Products Industry Association
KCC – Kimberly-Clark Corporation
KFG – Kelheim Fibres GmbH
LZ – Lenzing Aktiengesellschaft
MW – Midcoast Water
NP – NicePak Products, Inc.
NYC – New York City Department of Environmental Protection
PG – Procter & Gamble
SGS-IPS – SGS – IPS Testing
SUO – Suominen
WC – Water Corporation
WSL NZ – Watercare Services Ltd, New Zealand