

1 **International Wastewater Services Flushability Group**
2 **IWSFG Standard 1: 2017 - Criteria for recognition as a flushable product.**

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10 permission from the IWSFG.

11 Once finalized, the IWSFG will permit the downloading and use of the documents without charge for the
12 purposes of determining whether a product is likely to be considered flushable and to be so identified.
13

14 Contents

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Forward

The International Wastewater Services Flushability Group (IWSFG) is a worldwide coalition of national and regional wastewater services' associations and organizations and individual wastewater services.

The work of preparing the standards is carried out by various drafting groups comprising volunteers designated by the principal and the supporting participants of the group. They participate on a voluntary basis, without remuneration of any kind.

The criteria for flushability and the test methods are the product of a global consensus of the coalition members and reflect the hydraulic, mechanical and environmental conditions of drain lines, various onsite treatment and wastewater collection and treatment systems as well as the receiving waters for treatment plant effluents.

The task of the group was to prepare standards reflecting the above purpose.

Wastewater services are organizations acting for the public good as a public service. 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. The IWSFG shall not be held responsible for identifying any or all such patent rights.

17

18 1. Introduction 4

19	2.	Purpose	4
20	3.	Scope	5
21	4.	Normative References	5
22	5.	Definitions	6
23	6.	General	6
24	6.1	Critical criteria	6
25	6.2	Critical Criteria to be Met	6
26	6.3	Conformity Assessment	7
27	6.4	Marking and Labelling	7
28	6.4.1	Conforming Products	7
29	6.4.2	Non-Conforming Products	7
30	7.	Criteria	8
31	7.1	Criterion One: Safety in the Environment and Human Health and Composition of Materials	8
32	7.1.1	Safety in the Environment and Human Health	9
33	7.1.2	Plastics	9
34	7.1.3	Regenerated Cellulose Fibres	9
35	7.1.4	Other Materials	9
36	7.2	Criterion Two: Toilet and Drain Line Clearance	9
37	7.2.1	Toilet Bowl Clearance:	10
38	7.2.2	Drain Line Clearance - Settling	10
39	7.2.3	Drain Line clearance - Snagging	10
40	7.3	Criterion Three: Disintegration	10
41	7.3.1	Accelerated Bench Top Disintegration	11
42	7.3.2	Slosh Box Disintegration	11
43	7.3.3	Flask and Shaker Table Disintegration	12
44	7.4	Criterion Four: Settlement	12
45	7.5	Criterion Five: Biodisintegration	13
46	7.5.1	Aerobic Biodisintegration	13
47	7.5.2	Anaerobic Biodisintegration	13
48		Bibliography	15
49			
50	4.	Normative References	5
51	5.	Definitions	6

52	6.	General.....	6
53	6.1	Critical criteria	6
54	6.2	Critical Criteria to be Met.....	6
55	6.3	Conformity Assessment	7
56	6.4	Marking and Labelling.....	7
57	6.4.1	Conforming Products	7
58	6.4.2	Non-Conforming Products	7
59	7.	Criteria	8
60	7.1	Criterion One: Safety in the Environment and Human Health and Composition of Materials	8
61	7.1.1	Safety in the Environment and Human Health	9
62	7.1.2	Plastics.....	9
63	7.1.3	Regenerated Cellulose Fibres.....	9
64	7.1.4	Other Materials.....	9
65	7.2	Criterion Two: Toilet and Drain Line Clearance	9
66	7.2.1	Toilet Bowl Clearance:	10
67	7.2.2	Drain Line Clearance - Settling.....	10
68	7.2.3	Drain Line clearance - Snagging	10
69	7.3	Criterion Three: Disintegration	10
70	7.3.1	Accelerated Bench Top Disintegration.....	11
71	7.3.2	Slosh Box Disintegration	11
72	7.3.3	Flask and Shaker Table Disintegration	12
73	7.4	Criterion Four: Settlement.....	12
74	7.5	Criterion Five: Biodisintegration	13
75	7.5.1	Aerobic Biodisintegration	13
76	7.5.2	Anaerobic Biodisintegration	13
77		Bibliography	15
78			
79			

80 1 Introduction

81

82 Wastewater services are public services with the objective of protecting public health and the
83 environment. They have been provided for many decades in their present institutional form, and for
84 centuries in earlier forms. Their principal task is to receive, collect, transport and treat sanitary
85 discharges from the residents of the areas they serve. These residents may be domestic, institutional,
86 commercial or industrial. The services routinely provide advice to their customers regarding the nature
87 of the products or wastes that are not to be discharged, particularly those from residential and
88 commercial customers. Finally, these services often also collect, transport and treat stormwater.

89 For an urban area of approximately 250,000 persons with the associated commercial, institutional, and
90 industrial activities, the investment in wastewater services infrastructure as measured in its replacement
91 value can exceed US\$500 million. Every effort therefore is made to protect and maintain the existing
92 infrastructure, and to rehabilitate or replace it when necessary.

93 In the past, discharges from toilets have been typically toilet paper, urine and faecal matter. However,
94 in the last 15 years or so, other products have been produced and marketed for hygiene applications;
95 this market has been growing significantly every year as manufacturers tap in to the desire of users to
96 have a convenient and hygienic solution to the matter of bodily excretions and wastes.

97 Consequently, the toilet, in some sense and for many people, has become a disposal unit. This is not
98 their designed or intended use.

99 The drainage system of the building leading to the wastewater collection system, the collection systems
100 themselves, and the treatment plants and the systems to which these discharges are led, are not
101 designed, intended for, or capable of adequately handling these additional “flushed” products.

102 Such products include: tissues, paper towels, diapers, wipes, feminine and personal hygiene products,
103 condoms, cardboards, plastics, pharmaceuticals and medical devices as well as other materials such as
104 clay and rock, etc. Many of these are composite products comprising several materials. They are often
105 coated with disinfecting or palliative chemicals and fragrances, and have bonding mechanisms to
106 increase their wet strength.

107 All such materials—other than natural cellulose products, and the chemicals and fragrances and bonding
108 agents—can impact the collection and treatment systems and consequently can adversely affect the
109 aquatic environment (receiving bodies of water) or the land to which biosolids have been applied for
110 their nutrient value.

111

112 2 Purpose

113

114 The purpose of this standard is to set down the criteria for the quality and characteristics of products
115 that may be disposed via the toilet. This standard is protective of the public infrastructures and
116 treatment systems providing wastewater services.

117 The goal of the IWSFG is not to ban the production and/or use of these products, or to limit the use of
118 the many hygiene products available on the market that promote public health; but it is to establish for
119 the manufacturers the limits of what is acceptable to wastewater services for discharge via toilets into
120 the wastewater transport and treatment systems, and therefore to encourage manufacturers to identify
121 those products that do not meet these test standards as being not “flushable” and to encourage users to
122 dispose of these products after use in a more appropriate manner.

123 Through gaining the cooperation of manufacturers or by enforcing regulations, manufacturers will label
124 their products as flushable only if those products meet the IWSFG standards.

125 Hence, products that do not meet these standards, will be labelled DO NOT FLUSH and will bear clear,
126 readily visible and appropriate guidance regarding the appropriate disposal of the product.

127 3 Scope

128

129 This standard applies to all products that:

- 130 • a manufacturer or distributor may wish to identify as being flushable, or
- 131 • by reason of the location of their use and likely contamination by human excreta are
132 likely to be flushed through a toilet into a drain line and a wastewater conveyance and
133 treatment system.

134 **Note:** A product is considered to be flushable only if it has been tested to and certified by a
135 third-party certifier as meeting the criteria set down in this standard.

136 4 Normative References

137

138 The following normative references are germane to this standard:

139 ISO 17026 *Conformity assessment – Example of a product certification scheme*

140 17067 *Conformity assessment – Fundamentals of product certification and guidelines for a*
141 *product certification scheme*

142 ISO/IEC Guide 41, *Packaging — Recommendations for addressing consumer needs*

143 IWSFG PAS 0: 2017 *Terms and Definitions for Determination of Flushability*

144 IWSFG PAS 1: 2017 *Environmental Health and Safety Requirements*

145 IWSFG PAS 2A: 2017 *Toilet Clearance Test*

146 IWSFG PAS 2B: 2017 *Drain Line Clearance - Settling Test*

147 IWSFG PAS 2C: 2017 *Drain Line Clearance - Snagging Test*

148 IWSFG PAS 3A: 2017 *Accelerated Bench Top Disintegration Test*

149 IWSFG PAS 3B: 2017 *Slosh Box Disintegration Test*

150 IWSFG PAS 3C: 2017 *Flask and Shaker Table Test*

151 IWSFG PAS 4: 2017 *Settling Test*

152 IWSFG PAS 5A: 2017 *Aerobic Biodisintegration Test*

153 IWSFG PAS 5B: 2017 *Anaerobic Biodisintegration Test*

154 TAPPI/ANSI Test Method T 401 om-15, *Fiber Analysis of Paper and Paperboard*, as amended

155 5 Definitions

156 See: IWSFG PAS 0: 2017 *Terms and Definitions for Determination of Flushability*.

157

158 6 General

159 6.1 Critical criteria

160 This standard sets out 5 critical criteria respecting either the qualities of products that
161 are accepted by wastewater services as being flushable, or their performance
162 characteristics when subjected to those hydraulic, mechanical and environmental
163 conditions that are likely to be encountered in toilets and drain lines, the collection and
164 transport systems and the treatment systems of municipal wastewater services. These
165 standards are also applicable to non-sewered on-site wastewater systems whose
166 septage is often delivered to municipal wastewater treatment plants for final treatment.

167 The 5 critical standard criteria are:

- 168 1. environmental and health protection
- 169 2. toilet and drain line clearance;
- 170 3. disintegration
- 171 4. settling
- 172 5. biodisintegration

173 To be recognized as being suitable for flushing and to be so marked, labelled or
174 marketed, the product must meet all 5 of the critical criteria as set out in section 6.2.
175 Failure to meet any of the critical criteria as shown in section 6.2 means that the
176 product will not be recognized by wastewater services as being flushable, and should
177 not disposed of (flushed) through a toilet, but disposed of in another manner.¹

178

179 6.2 Critical Criteria to be Met

180 To be considered to be a flushable product, products must meet the acceptance criteria
181 of the IWSFG PAS documents as follows:

¹ Alternative disposal mechanisms are offered by almost all municipal organizations.

Critical Characteristic	Mandatory PAS (with relevant acceptance criteria)
Environmental and Health Protection	PAS 1
Toilet and Drain Line Clearance	PAS 2A and PAS 2B <i>(Note: PAS 2C is included as a recommended PAS but not at this time, a mandatory PAS.)</i>
Disintegration	Any of the three PAS: i.e., PAS 3A or PAS 3B or PAS 3C
Settling	PAS 4
Biodisintegration	PAS 5A and PAS 5B

182

183 6.3 Conformity Assessment

184 The conformity assessment and certification of flushable products shall be undertaken
185 only by third party processes, provided by organizations accredited to
186 ISO/IEC 17025:2005 *General requirements for the competence of testing and calibration*
187 *laboratories.*

188

189 6.4 Marking and Labelling

190

191 6.4.1 Conforming Products

192 Since it is in the inherent marketing interest of the manufacturer to mark and
193 label products that meet the IWSFG standard and are thus identified as being
194 flushable by the International Wastewater Services Flushability Group® there is
195 no provision in this standard for the manner of displaying that condition, except
196 to permit the use of a clear and visible statement associated with any use of the
197 term **flushable** on the product packaging, as follows:

198 “This product has been certified by [name/logo of certifier] as conforming to
199 IWSFG Standard 1: 2017”

200 **Note:** The International Wastewater Services Flushability Group **does not**
201 **recognize** euphemisms such as “dispersible”.

202 6.4.2 Non-Conforming Products

203 Products that do not conform to this standard shall be clearly identified as being
204 **not flushable** in one of two ways:

- 205 1. A clear and visible statement visible on the face of the sales packaging in
206 the appropriate languages of the market place: “This product is not
207 flushable and should be disposed of by alternative means” or,
- 208 2. Subject to 3 below, the placement on the face of the sales packaging

209 and on the product’s primary packaging, if any, the following
210 recommended global logo with the minimum dimensions of 2 cm by 2
211 cm (See Figure 1.) should be used.

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IWSFG Standard 1:2017

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Figure 1 – Do Not Flush Symbol

216 3. For application in respect to a specific region(s) of the world, alternative
217 logos may be used so long as the message “do not flush” is clear. Such
218 alternatives can include:



219

220

221 7 Criteria

222 7.1 Criterion One: Safety in the environment and human health as well as the
223 composition of materials

224 See: *IWSFG PAS 1: 2017 – Environmental Health and Safety Requirements*

225

226 7.1.1 Safety in the Environment and Human Health

227 Any product including any components thereof or substances (such as bonding
228 agents and lotions) used within or on the product that are banned for
229 environmental and human health reasons by the national legislation of a
230 country where the product is to be marketed, is NOT FLUSHABLE by this
231 standard.

232 7.1.2 Plastics

233 Any product that intentionally includes any plastic material is NOT FLUSHABLE
234 by this standard. [1], [2], [3], [4].

235 7.1.3 Regenerated Cellulose Fibres

236 Any product using a substrate that intentionally includes more than 20%
237 regenerated cellulose is NOT FLUSHABLE by this standard. [1], [2], [3], [4].

238 **NOTE to entry:** The presence of microfibrils in aquatic environments, which are
239 largely believed to originate from wastewater treatment plant effluent
240 discharges, is of increasing concern due to their potential take-up in the food
241 chain. While it is believed that many of these fibres come from washing clothes
242 having rayon and related fibres, there is apparently no reason why flushable
243 products cannot be produced with satisfactory qualities for use and with
244 reduced levels of this material. Accordingly, the IWSFG proposes to reduce the
245 currently designated level of more than 20% intentionally included regenerated
246 cellulose fibres according to the following schedule:

247 After January 1, 2019, no more than 15% intentionally introduced
248 regenerated cellulose fibres.

249 After January 1, 2021, no more than 10% intentionally introduced
250 regenerated cellulose fibres.

251 After January 1, 2023, no more than 5% intentionally introduced
252 regenerated cellulose fibres.

253 After January 1 2025, no intentionally introduced regenerated cellulose
254 fibres.

255 7.1.4 Other materials

256 Any product comprising any clay, stone or chert materials is NOT FLUSHABLE by
257 this standard.

258 7.2 Criterion Two: Toilet and Drain Line Clearance

259 Products that, when subjected to the toilet and drain line clearance tests set out in the
260 three Toilet and Drain Line Clearance Test Methods, shall meet the following conditions:

261 7.2.1 Toilet Bowl Clearance:

262 To be acceptable:

- 263 1. No test sequence can require more than 3 flushes for the test specimen
264 to clear the bowl.
265 2. No test sequence required the use of a plunger for the specimen to
266 clear the bowl,
267 3. The toilet bowl water is not surcharged up to its rim.

268 Note: None of the 10 flush sequences containing a test specimen should fail to
269 meet the above criteria.

270 See: *IWSFG PAS 2A:2017 - Toilet Clearance Test*

271 7.2.2 Drain Line Clearance - Settling

272 To be acceptable:

- 273 1. No specimen remains stationary after 3 flushes; and
274 2. All of the flush sequences result in all of the specimens clearing the
275 drain line in more than 5 flushes.

276 See: *IWSFG PAS 2B: 2017 Line Clearance - Settling Test*

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278 7.2.3 Drain Line clearance - Snagging

279 To be acceptable:

- 280 1. All ten specimens in a test sequence of the five flushes must clear the
281 drain line.
282
283 2. Where residual pieces or torn sections of the specimens are observed
284 on one or more snags, the specimen will be considered to pass the test
285 provided that the collected pieces or torn sections constitute no more
286 than 95% of the starting dry mass of the ten specimens.

287

288 See: *IWSFG PAS 2C Drain Line Clearance - Snagging Test*

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290 7.3 Criterion Three: Disintegration

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292 Products that, when subjected to the disintegration tests set out in the referenced
293 Disintegration Test Methods, shall meet the maximum fragment size within the time set
294 out from at least one of the 3 alternative tests.

295

296

7.3.1 Accelerated Bench Top Disintegration

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To be acceptable:

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1. The fragments from four (4) of the five (5) test specimens at the end of the 2-minute test must clear completely (100% pass through) the 6.3 mm sieve after the 1 minute rinse, i.e., No fragments on the sieve should be observed; this result must be supported with a visual examination and pictures of solids on the sieve.

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304

OR:

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2. If there is material left on the 6.3 mm sieve after the 1 minute rinse as per Annex 3, the percent of the starting dry mass passing through the 6.3 mm sieve four (4) of the five (5) test specimens after 2 minutes must be greater than 95%. This result must be supported with visual examination and pictures of the solids on the sieve.

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See: *IWSFG PAS 3A:2017 Accelerated Bench Top Disintegration Test.*

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7.3.2 Slosh Box Disintegration

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To be acceptable:

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317

1. The fragments from four (4) of the five (5) test specimens the end of the 120-minute test must completely clear (100% pass through) the 6.3 mm sieve after the 1 minute rinse, i.e., There should be no fragments on the sieve to be observed visually; this result must be supported with visual examination and pictures of solids on the sieve,

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OR:

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2. If there is material left on the 6.3 mm sieve after the 1 minute rinse, the percent of the starting dry mass 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.

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See: *IWSFG PAS 3B:2017 Slosh Box Test.*

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335 7.3.3 Flask and Shaker Table Disintegration

336 To be acceptable:

337 1. The fragments from four (4) of the five (5) test specimens at
338 the end of the 120-minute of shaking at 100 rpm must clear
339 completely (100% pass through) the 6.3 mm sieve after the 1
340 minute rinse, i.e., there should be no fragments on the sieve to
341 be observed visually; this result must be supported with visual
342 examination and pictures of solids on the sieve.

343
344 OR:

345
346 2. If there is material left on the 6.3 mm sieve after the 1 minute rinse
347 as per Annex 3, the percentage of the total initial dry mass of the
348 five (5) test specimens (as computed in step b of Section 10.5)
349 passing through the 6.3 mm sieve after 120 minutes of testing must
350 be greater than 95%. This result must be supported with a visual
351 examination and pictures of the solids on the sieve.

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353
354 See: *IWSFG PAS 3C:2017 Flask and Shaker Table Test.*
355

356 7.4 Criterion Four: Settlement

357 To be acceptable:

358 1. In at least 90% of the tests, the specimens must settle at an
359 average velocity of at least 1 mm/second over the 1200 mm
360 measuring distance, (i.e. to have settled through the 1200 mm
361 test range within 20 minutes),

362
363 and

364
365 2. In tests that are regarded as successful (see 1 above), the
366 specimen or disintegrated parts of the specimens tested must
367 not become sufficiently buoyant to rise more than 300 mm
368 from the Stop Mark of the column within 24 hours. If this
369 occurs, that particular test should be regarded as being a 'failed'
370 test.

371
372 and

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375 At least 90% of all of the specimens should meet both criteria
376 (a) and (b) above.

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4.

See: IWSFG PAS 4: 2017 *Settlement Test*

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7.5 Criterion Five: Biodisintegration

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For a material to be considered completely biodegradable, the parent material must disappear and there must be an absence of persistent metabolites (substances produced by biological processes). There are two biodisintegration tests.

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7.5.1 Aerobic Biodisintegration

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To be acceptable:

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1. The biodisintegrated specimen residues of all of the flasks must all pass completely through the 600 micron sieve.

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OR:

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2. If there is material left on the 600 micron sieve (after the 1 minute rinse), the percent of the starting dry mass passing through the 600 micron sieve must be greater than 95%. This result must be supported with visual examination and pictures of the solids on the sieve.

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See: IWSFG 5A: 2017 – *Aerobic Biodisintegration Test*

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7.5.2 Anaerobic Biodisintegration

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To be acceptable:

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1. The biodisintegrated specimen residues of all three flasks must all pass completely through the 600 micron sieve.

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OR:

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2. If there is material left on the 600 micron sieve (after the 1 minute rinse), the percent of the starting dry mass passing through the 600 micron sieve must be greater than 95%. This result must be supported with visual examination and pictures of the solids on the

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sieve.

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See: *IWSFG 5B: 2017 – Anaerobic Biodisintegration Test*

419

Drain.

DRAFT

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