



**SLOVENSKI STANDARD**  
**SIST EN 60312-1:2017/oprAA:2020**  
**01-junij-2020**

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**Sesalniki za uporabo v gospodinjstvu - 1. del: Sesalniki za suho čiščenje - Metode za merjenje lastnosti - Dopolnilo AA**

Vacuum cleaners for household use - Part 1: Dry vacuum cleaners - Methods for measuring the performance

Staubsauger für den Hausgebrauch - Teil 1: Trockensauger - Prüfverfahren zur Bestimmung der Gebrauchseigenschaften

Aspirateurs de poussière à usage domestique - Partie 1: Aspirateurs a sec - Méthodes de mesure de laptitude à la fonction

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**ICS:**

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EUROPEAN STANDARD  
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**EN 60312-1:2017**

**prAA**

April 2020

ICS

English Version

## Vacuum cleaners for household use - Part 1: Dry vacuum cleaners - Methods for measuring the performance

Aspirateurs de poussière à usage domestique - Partie 1:  
Aspirateurs a sec - Méthodes de mesure de l'aptitude à la  
fonction

Staubsauger für den Hausgebrauch - Teil 1: Trockensauger  
- Prüfverfahren zur Bestimmung der  
Gebrauchseigenschaften

This draft amendment prAA, if approved, will modify the European Standard EN 60312-1:2017; it is submitted to CENELEC members for enquiry.

Deadline for CENELEC: 2020-07-17.

It has been drawn up by CLC/TC 59X.

If this draft becomes an amendment, CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment the status of a national standard without any alteration.

This draft amendment was established by CENELEC in three official versions (English, French, German).

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Comité Européen de Normalisation Electrotechnique  
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**EN 60312-1:2017/prAA:2020 (E)**163 **European foreword**

164  
165 This document (EN 60312-1:2017/prAA:2020) has been prepared by CLC/TC 59X "Performance  
166 of household and similar electrical appliances".

167  
168 This document is currently submitted to the Enquiry.

169  
170 The following dates are proposed:

- latest date by which the existence of this document has to be announced at national level (doa) dor + 6 months
- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) dor + 12 months
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) dor + 36 months (to be confirmed or modified when voting)

171 This document modifies by common modifications of EN 60312-1:2017 which consists of the  
172 text of IEC 6031-1:2010+A1:2011 by IEC/SC 59F "Surface cleaning appliances", of IEC/TC  
173 59 "Performance of household and similar electrical appliances".

174 Significant technical differences are:

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- 175 a) rephrased Clause 4.6 on the operation of the dry vacuum cleaner;  
176 b) new debris pick-up test for hard floor and carpet;  
177 c) number of double strokes in the dust removal tests from carpets and hard floors with  
178 crevices reduced from five to three;  
179 d) improvement of test with loaded dust receptacle in Clause 5.9;  
180 e) inclusion of a new Clause 5.10 on total emissions while vacuum cleaning;  
181 f) mew durability test for secondary hoses;  
182 g) two normative Annexes on the description and maintenance of the reference vacuum  
183 cleaner system RSB.

184 This document has been prepared under a mandate M/540 given to CENELEC by the European  
185 Commission and the European Free Trade Association.

186 This document is foreseen as a supporting document for future Commission Delegated  
187 Regulation on labelling and future Commission Regulation on ecodesign for vacuum cleaners.

188



189 **Vacuum cleaners for household use - Part 1: Dry vacuum cleaners -**  
 190 **Methods for measuring the performance**

191  
 192

193 **1 Modification to Clause 1, Scope**

194 *Add:*

195 “A recommendation on information for the consumer at the point of sale is given in Annex B.”

196 **2 Modification to Clause 2, Normative references**

197 *Add:*

198 “IEC/TS 62885-1, *Surface cleaning machines – Part 1: Surface cleaning appliances – Part 1:*  
 199 *General requirements on test material and test equipment*”

200 DIN 53734 <sup>1</sup>, *Testing of plastics; sieve analysis of powdered plastics with air-jet sieve*  
 201 *apparatus*“

202 *Delete the following:*

203 “ISO 554, *Standard atmospheres for conditioning and/or testing – Specifications*”

204 ISO 1763, *Carpets – Determination of number of tufts and/or loops per unit length and per unit*  
 205 *area*”

206 ISO 1765, *Machine-made textile floor coverings – Determination of thickness*”

207 ISO 1766, *Textile floor coverings – Determination of thickness of pile above the substrate*”

208 ISO 2424, *Textile floor coverings – Vocabulary*”

209 ISO 2439, *Flexible cellular polymeric materials – Determination of hardness (indentation*  
 210 *technique)*”

211 ISO 3386-1, *Polymeric materials, cellular flexible – Determination of stress-strain*  
 212 *characteristics in compression – Part 1: Low-density materials*”

213 ISO 8543, *Textile floor coverings – Methods for determination of mass*”

214 **3 Modification to Clause 3, Terms and definitions**

215 *Delete 3.9 “cleaning cycle”.*

216 *Replace 3.Z1 by:*

217 **“in-house reference vacuum cleaner**

218 electrically operated laboratory equipment designated for internal comparison within a  
 219 laboratory”

<sup>1</sup> Withdrawn.

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220 *Delete 3.Z3 “battery operated active nozzle”*

221 *Add:*

222 **“3.Z4**

223 **cordless active nozzle**

224 **cleaning head** provided on a mains-driven machine with an agitation device to assist dirt  
225 removal driven by a battery-operated motor

226 **3.Z5**

227 **cylinder vacuum cleaner**

228 portable **dry vacuum cleaner** having a nozzle separated from the cleaner housing by a hose;  
229 in use, only the nozzle is guided over the surface area to be cleaned

230 Note 1 to entry: These **dry vacuum cleaners** are generally floor-supported.

231 Note 2 to entry: The **dry vacuum cleaner** may have detachable passive or active nozzles, attachments, and **tubes**  
232 for both floor and above the floor cleaning.

233 **3.Z6**

234 **forward stroke**

235 forward movement of a stroke pattern

236 Note 1 to entry: On test carpets, forward strokes are carried out in the direction of the carpet pile (direction of  
237 manufacturing that can be determined by respective marking on the back).

238 **3.Z7**

239 **hand-held cleaner**

240 **dry vacuum cleaner** that will not be used on the floor by the user from an erect standing  
241 position

242 Note 1 to entry: However, the hand-held **dry vacuum cleaner** may be used on stairs from a standing position.

243 **3.Z8**

244 **maximum operational power**

245 power level that the machine is not capable of exceeding in any operating condition set either  
246 by the user or automatically by the appliance

247 **3.Z9**

248 **parallel pattern**

249 stroke pattern where the **forward strokes** and the **return strokes** are congruent and are carried  
250 out in the direction of the carpet pile (direction of manufacture) unless otherwise specified

251 **3.Z10**

252 **reference vacuum cleaner system RSB**

253 electrically operated laboratory equipment intended to provide different laboratories with a  
254 similarly constructed vacuum cleaner to measure the reference dust removal ability on carpets  
255 for passive and active nozzles to improve the reproducibility of results

256 Note 1 to entry: The RSB reference vacuum cleaner system may be used with active or passive nozzles.

257 Note 2 to entry: The RSB reference vacuum cleaner system is not intended for tests other than dust pick-up from  
258 Wilton carpets.

259 Note 3 to entry: The RSB reference vacuum cleaner system is described in Annex C. Adjustment of the RSB is  
260 described in Annex D.

261 Note 4 to entry: The RSB is required for measurements in accordance with legislation in the European Union.

262 **3.Z11**

263 **stroke**

264 single traverse of the **cleaning head** over the **test area**

265 **3.Z12**  
 266 **test**  
 267 entirety / superset of all **trials** and **trial batches** of all samples to be measured for a single  
 268 **vacuum cleaner** model

269 **3.Z13**  
 270 **trial**  
 271 single instance of a performance measurement carried out under identical conditions that can  
 272 be repeated multiple times

273 **3.Z14**  
 274 **tube**  
 275 rigid length or lengths of hollow pipe that connect the end of the hose to various vacuum cleaner  
 276 accessories.

277 Note to entry: The tube may be fixed length, multiple parts or telescoping, passive or energized.

278 **3.Z15**  
 279 **water filter vacuum cleaner**  
 280 **dry vacuum cleaner** that uses water as the main filter medium, whereby the suction air is  
 281 forced through the water entrapping the removed dry material as it passes through

282 **3.Z16**  
 283 **water filter system**  
 284 removable water filter components that are in contact with the water"

## 285 **4 Modification to Clause 4, General conditions for testing**

286 **4.1 Atmospheric conditions** [SIST EN 60312-1:2017/oprAA:2020](https://standards.iteh.ai/catalog/standards/sist/fa4b89ff-10cd-4b28-90ad-150a0c457089/iso-554-2-1-2017-prAA-2020)  
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 287 *Delete the bracket "(in accordance with ISO 554)" in the first paragraph.*

288 *Add a new paragraph after the first paragraph as follows:*

289 "Temperature and humidity conditions within the specified ranges are required for good  
 290 repeatability and reproducibility. Care should be taken to avoid changes during a test."

291 *Delete the Note.*

## 292 **4.2 Test equipment and materials**

293 *Replace with:*

294 "

### 295 **4.2.1 General**

296 To minimize the influence of electrostatic phenomena, measurements on carpets shall be  
 297 carried out on a flat floor consisting of a smooth untreated pine plywood or equivalent panel,  
 298 at least 15 mm thick and of a size appropriate for the test.

299 Equipment and materials for measurements (devices, test carpets, test dust, etc.) to be used in  
 300 a test shall, prior to the test, be stored for at least 16 h at standard atmospheric conditions in  
 301 accordance with 4.1.

302 Carpets that have already been used shall be stored unbeaten at standard atmospheric  
 303 conditions in accordance with 4.1.

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304 When not in use carpets shall be hanging free, or lying flat, pile upwards and uncovered.  
 305 Carpets shall not be rolled when stored between testing. Carpets that have been rolled shall be  
 306 laid flat for a minimum of 16 h before use.

307 **4.2.2 Pile direction**

308 Machine or manufacturing direction is an indication of the projected pile direction for carpet  
 309 production. Pile direction is what is important for DPU testing.

310 If the pile direction is clearly parallel to the test bed, as is required by the applicable test  
 311 procedures, the carpet is acceptable for use for that test. If the pile direction is at an angle to  
 312 the test bed, the laboratory will be required to make a decision as to that carpet panel's usability  
 313 for relevant comparative testing. "

314 **4.3 Voltage and frequency**

315 *Replace 2<sup>nd</sup> paragraph with:*

316 **Dry vacuum cleaners** designed for DC only shall be operated at DC. **Dry vacuum cleaners**  
 317 designed for both AC and DC shall be operated at AC. **Dry vacuum cleaners** not marked with  
 318 rated frequency shall be operated at either (50 ± 1) Hz or (60 ± 1) Hz with a total harmonic  
 319 distortion of □3 %, as is common in the country of use.

320 *Replace the words "Vacuum cleaners" with "Dry vacuum cleaners" in the 4<sup>th</sup> and 5<sup>th</sup> paragraph.*

321 **4.6 Operation of the dry vacuum cleaner**322 **4.6.1 General**

323 *Replace with:* [SIST EN 60312-1:2017/oprAA:2020  
 https://standards.iteh.ai/catalog/standards/sist/fa4b89ff-10cd-4b28-90ad-  
 b50a9cd57989/sist-en-60312-1-2017-opraa-2020](https://standards.iteh.ai/catalog/standards/sist/fa4b89ff-10cd-4b28-90ad-b50a9cd57989/sist-en-60312-1-2017-opraa-2020)

324 "The tube grip of cleaners with suction hose or the handle of other cleaners shall be held at a  
 325 height of (800 ± 50) mm above the test surface. For nozzles without pivoting connectors, it shall  
 326 be ensured that the bottom of the **cleaning head** be made parallel with the test surface by  
 327 adjusting the handle height within the tolerances. If this is not possible, the length of a telescopic  
 328 **tube** may be adjusted. Any adjustment shall be reported.

329 During measurements where the agitation device of an **active nozzle** is not used as in normal  
 330 operation, the agitation device shall be running but not in contact with any surface.

331 The following wording regarding declaration and compliance shall also apply to EN 60704-2-1,  
 332 and EN 60335-2-2: "For declaration and compliance purposes, related tests conducted on a  
 333 surface type (carpet or hard surface with or without crevice) shall be conducted with the same  
 334 dry vacuum cleaner setting configurations such as power, cleaning head and cleaning head  
 335 setting."

336 Unless otherwise specified, the dry vacuum cleaner setting configurations, such as cleaning  
 337 head and cleaning head setting, shall be used and adjusted in accordance with the  
 338 manufacturer's instructions for the surface to be cleaned (e.g. carpet or hard floor) for the test  
 339 to be carried out.

340 In the absence of unambiguous instructions within the manufacturer's instructions the product  
 341 shall be tested with settings that are in accordance with any explicitly clear text, symbol or  
 342 pictogram that is identifiable on the product.

343 If, after following the above order of checks, the tester believes the device under test to be in a  
 344 configuration that is ambiguous, or that multiple configurations are possible with no way to

345 clearly determine which is the most suitable for a given task, then the manufacturer shall be  
346 contacted for additional guidance.

347 Complete details of the settings used for each cleaning task, such as suction power, height  
348 settings and the like shall be recorded in the test documentation.

349 If values for the performance of a product measured in accordance with this document are  
350 published/declared, e.g. in the technical documentation, accurate and unambiguous details of  
351 the settings that were used during the test procedure shall be provided.

352 NOTE Performance in other settings/combinations may differ from the results in the declaration settings, however  
353 the document does not address those results. "

#### 354 **4.3.1 Operation of water filter vacuum cleaners, additional requirements**

##### 355 **4.3.1.1 Determining the water loss**

356 *Replace 3<sup>rd</sup> paragraph with:*

357 "Since ambient conditions have a significant influence on the water loss, standard conditions  
358 shall be carefully maintained."

##### 359 **4.3.1.2 Filter conditions**

###### 360 **4.3.1.2.1 For dust removal from hard flat floors (see 5.1) and from carpets (see 5.3)**

361 *Add the following paragraph after the first paragraph.*

362 "The **water filter vacuum cleaner** should not be moved to minimize loss of water."

363 *Replace the last paragraph with:*  
<https://standards.iteh.ai/catalog/standards/sist/fa4b89ff-10cd-4b28-90ad-b50a9cd57989/sist-en-60312-1-2017-opraa-2020>

364 "The dust collecting box is equipped with a filter bag. The filter bag from the **RSB reference**  
365 **vacuum cleaner system** in accordance with 3.Z10 could be used. For measuring dust pick-up,  
366 the filter bag shall be handled in the same way than it is handled in the **RSB reference vacuum**  
367 **cleaner system.**"

#### 368 **4.4 Conditioning prior to each test**

369 *Replace the words "vacuum cleaner" by "dry vacuum cleaner".*

#### 370 **4.5 Mechanical operator**

371 *Replace the word "measurement" by "test" in the 1<sup>st</sup> paragraph.*

372 *Replace the 2<sup>nd</sup> paragraph with:*

373 "It is recommended to simulate the handling of the **dry vacuum cleaner** by using a mechanical  
374 operator such as that described in 7.3.12."

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375 **4.6 Number of samples**376 *Add as paragraph after the 1<sup>st</sup> paragraph as follows:*

377 “For increased confidence in the test results, a minimum of three samples of a **dry vacuum**  
 378 **cleaner** should be tested. Some performance tests may require additional samples or  
 379 replacement parts if performance is adversely impacted by testing. If additional samples or  
 380 replacement parts are used, they should be recorded in the report.”

381 *Delete the NOTE.*382 **4.Z1 Reference vacuum cleaner system**383 *Delete.*384 *Add:*

385 “

386 **4.Z1 Carpets for testing**

387 NOTE The reference cleaner referred to in this document is a product designated within a laboratory for internal  
 388 comparison and is not suitable for inter-laboratory comparisons.

389 Test carpets used in a laboratory for the determination of dust removal ability will, over time,  
 390 change from their original condition, for instance due to wear or gradual filling with dust.  
 391 Therefore, the **in-house reference cleaner** as defined in 3.Z1 shall be used to regularly check  
 392 the carpet conditions as a verification of the test results obtained and recorded.

393 If a **RSB reference vacuum cleaner system** as defined in 3.Z10 is present, this should be  
 394 used for monitoring Wilton test carpet conditions by comparing the values for calibrated and  
 395 reference dust pick-up,  $DPU_{cal}$  and  $DPU_{ref}$ , of the RSB.

396 NOTE  $DPU_{cal}$  and  $DPU_{ref}$  are defined in Clause ZB.5.

397 If the difference between  $DPU_{cal}$  and  $DPU_{ref}$  is greater than 5 percentage points, it is  
 398 recommended to:

- 399 – replace the carpet, and/or
- 400 – re-adjust the RSB, and/or
- 401 – check the laboratory conditions and testing procedure.

402 Given that dust pick-up ability may differ between carpets used for **active nozzles** or **passive**  
 403 **nozzles**, the result from tests between **active nozzles** and **passive nozzles** shall not be  
 404 compared.

405 Test carpets designated for testing of **passive nozzles** shall only be cleaned with a **passive**  
 406 **nozzle** on the face. Test carpets designated for testing **active nozzles** shall only be cleaned  
 407 with an **active nozzle** on the face.

408 **4.Z2 Stroke length and test area**

409 Unless otherwise specified within the document, the length of the test area is  $(700 \pm 5)$  mm.  
 410 The width of the test area is equal to the **cleaning head width** (see 3.7).

411 A length of at least 200 mm shall be added before the beginning of the test area and at least  
 412 300 mm after the end of the test area in order to allow acceleration and deceleration of the  
 413 **cleaning head**.

414 Thus, the stroke length is at least 1 200 mm for the given test length of 700 mm. The centre  
 415 line of the front edge of the **cleaning head** is aligned to the centre line of the beginning of the  
 416 acceleration area at the commencement of the stroke, allowing the distance of 200 mm to be  
 417 used for acceleration. The **cleaning head** shall reach the end of the stroke when the rear edge  
 418 of the **active depth of the cleaning head** is at least 200 mm past the end of the test area, thus  
 419 allowing a suitable distance for deceleration. The return stroke is carried out in the same manner  
 420 until the front edge of the **cleaning head** is once again lined up with the beginning of the  
 421 acceleration length in front of the test area.

#### 422 4.Z3 Stroke speed

423 Unless otherwise specified within the document, the **active depth of the cleaning head** shall  
 424 move at uniform **stroke speed** (0,50 ± 0,02) m/s and in a straight line over the test area.

425 For optimum control of the **double stroke** movement, an electromechanical operator (see 4.8)  
 426 should be used.

427 Two hold-downs in accordance with 7.3.4 act as guides to keep the **cleaning head** in a straight  
 428 line as it is moved over the test area and to ensure an undisturbed flow.

429 **Dry vacuum cleaners** equipped with a self-drive device shall be operated at the prescribed  
 430 **stroke speed** of (0,5 ± 0,02) m/s, if possible. Otherwise, the **stroke speed** will be determined  
 431 by the **dry vacuum cleaner**.

432 "

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### 433 5 Modification to Clause 5, Dry vacuum cleaning tests

434 **5.1 Dust removal from hard flat floors** SIST EN 60312-1:2017/oprAA:2020  
 standards/sist/fa4b89ff-10cd-4b28-90ad-  
 b50a9cd57989/sist-en-60312-1-2017-opraa-2020

#### 435 5.1.2 Test area and stroke length

436 *Replace with:*

437 "The test area and stroke length are specified in 4.Z2. The stroke speed is specified in 4.Z3."

#### 438 5.1.5 Preconditioning of dust receptacle

439 *Replace with.*

440 "The **dry vacuum cleaner** under test is equipped with a clean dust receptacle and allowed to  
 441 run with an unimpeded air flow with the nozzle clear of the surface for 2 min or until input power  
 442 has stabilized.

443 After the preconditioning, the dust receptacle and any filters removable without tools are  
 444 removed from the **dry vacuum cleaner** to be weighed. The mass shall be noted, and the items  
 445 are replaced.

446 Since the **dry vacuum cleaner** air flow can have an effect on the mass of the dust receptacle  
 447 during the 2-min preconditioning, caution should be taken so that the mass of the dust  
 448 receptacle has stabilized before weighing.

449 Consideration should be given to 4.6.2 for **water filter vacuum cleaners**."

#### 450 5.1.6 Determination of dust removal ability