



**Testing Process for Robustness
of Sanitary Ware used in locations
susceptible to damage.**

**This Standard has been developed in
association with the Ministry of
Justice, Bathroom Manufacturer
Association members and other
stakeholders.**

FILE REFERENCE: RS-2015-01-01

Testing Process for Robustness of Sanitary Ware

Table of Contents.

Foreword and Safety Statement.

1. Scope.
2. Prerequisites.
 - 2.1 Ability to be renewed.
 - 2.2 Cleaning of the Test Specimen.
3. Testing.
4. Material Testing.
 - 4.1 Test Samples
 - 4.2 Test 1: Gouging/Abrasion Test.
 - 4.3 Test 2: Blow Lamp.
 - 4.4 Test 3: Cigarette Burns.
 - 4.5 The Materials Test Report
5. Product Testing.
 - 5.1 Test Samples
 - 5.2 Test Rig
 - 5.3 Repetitive Nuisance Loading
 - 5.4 Impact Testing
 - 5.4.1 Steel Ball Pendulum Test (Derived from BS1125).
 - 5.4.2 Soft Body Pendulum Test (Derived from BSEN 14428).
 - 5.4.3 Impact Drop Test (Derived from UK Regulator's Specification TCS1312-10).
 - 5.5 The Product Test Report
6. Destruction Test.
7. The Test report
8. Acknowledgement

FOREWORD.

This Standard has been prepared by the Bathroom Manufacturers Association in conjunction with the Ministry of Justice and direct involvement of a number of manufacturers, test laboratories with expertise in design, manufacture and testing of 'robust' Sanitaryware. Compliance to this specification does not purport to include all the necessary provisions of a contract.

This document must be read in conjunction with the current version of 'Ministry of Justice Certified Testing Body Agreement for New Products within the Estate – Model Agreement'. Contact moj_ed_technicalstandards@justice.gsi.gov.uk for further information.

SAFETY STATEMENT.

Persons using this document should be familiar with normal laboratory ISO 17025 procedures, if applicable. This document does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate health and safety practices and to ensure compliance with any regulatory conditions.

The Bathroom Manufacturers Association and the Ministry of Justice take no liability for accidents resulting in damage or personnel injury occurring as a result of any test detailed within this document.

1. SCOPE.

This testing process covers the testing procedure, forces and method of testing for back to wall WC pans and wall mounted wash hand basins only.

This testing process should be used to demonstrate that the sanitary ware tested meets the minimum requirements for locations requiring sanitary ware which can withstand abuse that would render standard household grade products to be irreparably damaged.

This standard is not material specific; products which meet the requirements of this testing standard will be compliant regardless of the material that the product is manufactured from.

It should be noted that no product should be considered as indestructible and compliance with this standard should not be taken as a guarantee of indestructibility.

It should be noted that although this standard has been written in conjunction with the MOJ, compliance with this standard does not form any type of contract or guarantee that products compliant with this standard will be purchased by the MOJ. This standard does not test for or demonstrate compliance with anti-ligature or safer cell requirements.

2. PREREQUISITES.

Products shall be compliant with the performance characteristics of the current versions of the following harmonized European standards.

WC's – Water Supply (Water Fittings) Regulations 1999: WC Suite Performance Specifications and as applicable BS EN 997 Section 6 Class 2.

Washbasins – BS EN 14688 excluding overflows.

All products should meet the requirements of any applicable local or European legislation such as the Construction Products Regulation (CPR) and Water Supply (Water Fittings) Regulations 1999 and Water Byelaws 2000 Scotland.

Compliance shall be demonstrated by the production of a DoP (Declaration of Performance) and CE mark or appropriate test reports.

2.1 Ability to be renewed.

Under normal conditions of use, solid surface materials may sometimes need to be renewed by sanding or polishing in cases when scratches, gouges, chips or stains have marred the surface. In every case where any of these tests result in the need for the test specimen to be sanded or polished in order to return it to its original finish, then the procedure recommended by the manufacturer shall be followed. The results of the renewal treatment shall be included in the appropriate test report.

2.2 Cleaning of the Test Specimen.

The surface to be tested shall be prepared prior to testing using the procedure specified below.

2.2.1 Materials Required.

Cellulose sponge, non-abrasive cleaner (containing a bleaching agent), water, clean absorbent lint free material.

2.2.2 Procedure.

Clean the surface using a damp sponge and non-abrasive cleaner containing a bleaching agent, scrubbing the surface with light hand pressure for up to 1 minute per square metre. Rinse the prepared surface with water and dry with a clean, absorbent lint free material.

3. Testing

The testing is divided into 2 sections Materials and Product testing. In order for the product to be compliant with this standard it must pass the requirements of both materials and product testing sections.

4. MATERIAL TESTING.

Carry out the test at an ambient temperature of $18 \pm 5^{\circ}\text{C}$.

4.1 TEST SAMPLES.

Material testing is to be carried out on a special test sample manufactured under the same conditions that production samples are produced of minimum dimensions 150mm x 150mm x 25mm (with tolerances of $\pm 10\%$) and is suitable for both materials used to manufacture WC's and washbasins. Other suitable test sample dimensions may be used to suit materials unable to achieve the minimum sizes above.

4.2 TEST 1. Gouging/ Abrasion Test.

4.2.1 Equipment.

Any suitable utility knife e.g. Stanley, with a new blade, scribe and ruler.

4.2.2 Test Method.

Using a ruler as a guide run both a utility knife or scribe blades over the surface of the material 10 times in the same place. The minimum length of the run shall be at least 50mm.

4.2.3 Pass/ Fail criteria.

The surface of the material must be capable of being cleaned or refinished to a serviceable quality, see 2.1 'Ability to be renewed'. Any gouging marks where dirt could accumulate or would provide a sharp edge would be considered a fail.

4.2.4 Serviceable quality:

Original shape of product is not severely disfigured or can be repaired.

Scratches, gouge marks fully removed.

Damage area blended into surrounding product surfaces.

Surface finish polished to match original finish of surrounding area.

4.3 TEST 2. Blow Lamp.

4.3.1 Equipment.

Table mounted blow lamp.

4.3.2 Test Method.

Position the blow lamp so the hottest blue tip of the flame is on the product surface for a period of 5 minutes ± 30 seconds. Remove the blow lamp and wipe the area with a wet cloth.

4.3.3 Pass/ Fail criteria.

The surface of the material must be capable of being cleaned or refinished to a serviceable quality, see 2.1 'Ability to be removed'. Any pitting, roughness or discolouration still apparent following any cosmetic reworking would be considered a fail.

4.3.4 Serviceable quality:

Original shape of product is not severely disfigured or can be repaired.

Burn scorch marks fully removed.

Damage area blended into surrounding product surfaces.

Surface finish polished to match original finish of surrounding area.

4.4 TEST 3. Cigarette Burns. (Test method derived from BS ISO 19712-3).

4.4.1 Equipment.

Cigarettes.

4.4.2 Test Method.

Test to be conducted outside of premises in a controlled environment. Ignite a cigarette and let it burn until at least 5mm amount of exposed burning tobacco is available. Position burning cigarette in full contact with the product surface for a period of 5 minutes \pm 30 seconds. Remove the burning cigarette and wipe the area with a wet cloth.

4.4.3 Acceptance criteria.

The surface of the material must be capable of being cleaned or refinished to a serviceable quality, see 2.1 'Ability to be renewed'. Any pitting, roughness or discolouration still apparent following any cosmetic reworking would be considered a fail.

4.4.4 Serviceable quality:

Original shape of product is not severely disfigured.

Burn marks fully removed.

Damage area blended into surrounding product surfaces.

Surface finish polished to match original finish of surrounding area.

4.5 The Materials Test Report

The test report shall comply with the requirements in ISO 17025 and contain at a minimum, the following information:

- Name and address of the test laboratory.
- Date of the test.
- Operator(s) conducting test.
- Complete description of test materials.
- Complete description of any changes in the described standard test method.
- Statement of overall Pass/Fail results.
- Post-test photograph of all test specimens showing result of each test.

5. PRODUCT TESTING.

Carry out the test at an ambient temperature of $18 \pm 5^{\circ}\text{C}$.

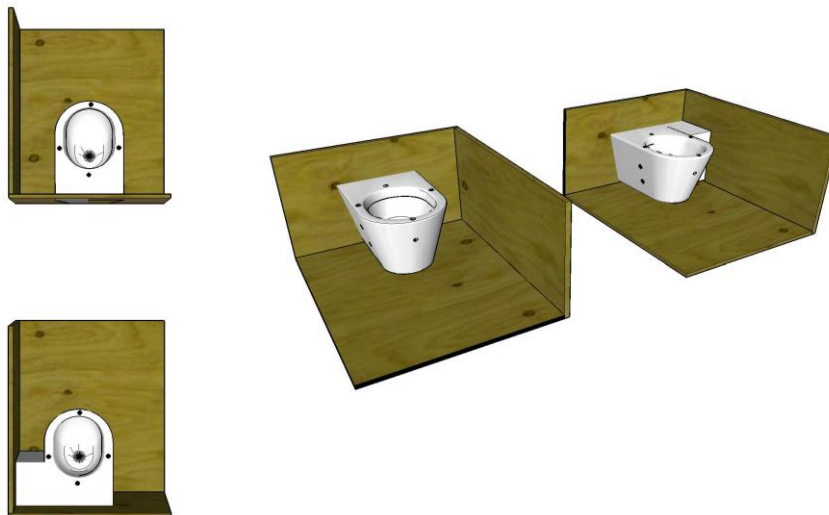
5.1 Test Samples.

Samples for product testing shall be manufactured using standard production methods and be representative of production intent product.

5.2 Test Rig.

The product must be mounted in a plywood test rig in order to ensure the product is firmly held while all testing is carried out. The Test rig will be constructed from 18mm plywood to a similar configuration as seen below. Side test to be applied to exposed side only.

TEST RIG



5.3 Repetitive Nuisance Load Testing.

Repetitive nuisance loading will be applied for a period of five minutes \pm 30 seconds by hand or foot. Kicking of furniture with steel toe capped boots will be simulated for a period of five minutes \pm 30 seconds.

5.4 Impact Testing.

All Tests involve strike points on both exposed side only and front of the products as shown in diagrams below.

Back to Wall W.C. Pan



RS-2015-01-01

Wall Mounted Basin



The above images are general outlines of a WC pan and washbasin.

The impact points shall be measured as follows:

WC Pan

The top surface impact points shall be measured equally throughout as determined by the diagrams shown and within a tolerance of $\pm 10\text{mm}$.

Side impact points shall be measured equally throughout as determined by the diagrams shown and down from the top surface by $75\text{mm} \pm 5\text{mm}$.

Bottom impact points shall be measured equally throughout as determined by the diagrams shown and up from the base by $75\text{mm} \pm 5\text{mm}$.

Washbasin.

The top surface impact points shall be measured equally throughout as determined by the diagrams shown and within a tolerance of $\pm 10\text{mm}$.

Side impact points shall be measured equally throughout as determined by the diagrams shown and down from the top surface by $75\text{mm} \pm 5\text{mm}$.

Rear top surface impact point does not require testing if non-existing when installed.

Both top side impact points to be tested in as near to central where washbasin design prevents.

5.4.1 Steel Ball Pendulum Test (Test method derived from BS 1125)

5.4.1.1 Equipment

Steel ball $1\text{ kg} \pm 0.1\text{ kg}$

Fine wire $2.5\text{m} \pm 20\text{mm}$ horizontal length

5.4.1.2 Test Method

Securely install the Test sample in accordance to the manufacturer's instructions, Suspend a $1\text{ kg} \pm 0.1\text{ kg}$ steel ball by a fine wire $2.5\text{m} \pm 20\text{mm}$ long, the point of suspension being located vertically over the point of impact. Release the ball from a point directly in front of the product at a horizontal distance of $2\text{m} \pm 20\text{mm}$ away from the point of impact, with the point of impact being $75\text{ mm} \pm 5\text{mm}$ from the top surface of the product. Repeat test on exposed side only plus $75\text{mm} \pm 5\text{mm}$ from the bottom of the product for WC only.

Carry out the test once at an ambient temperature of $18 \pm 5^\circ\text{C}$.

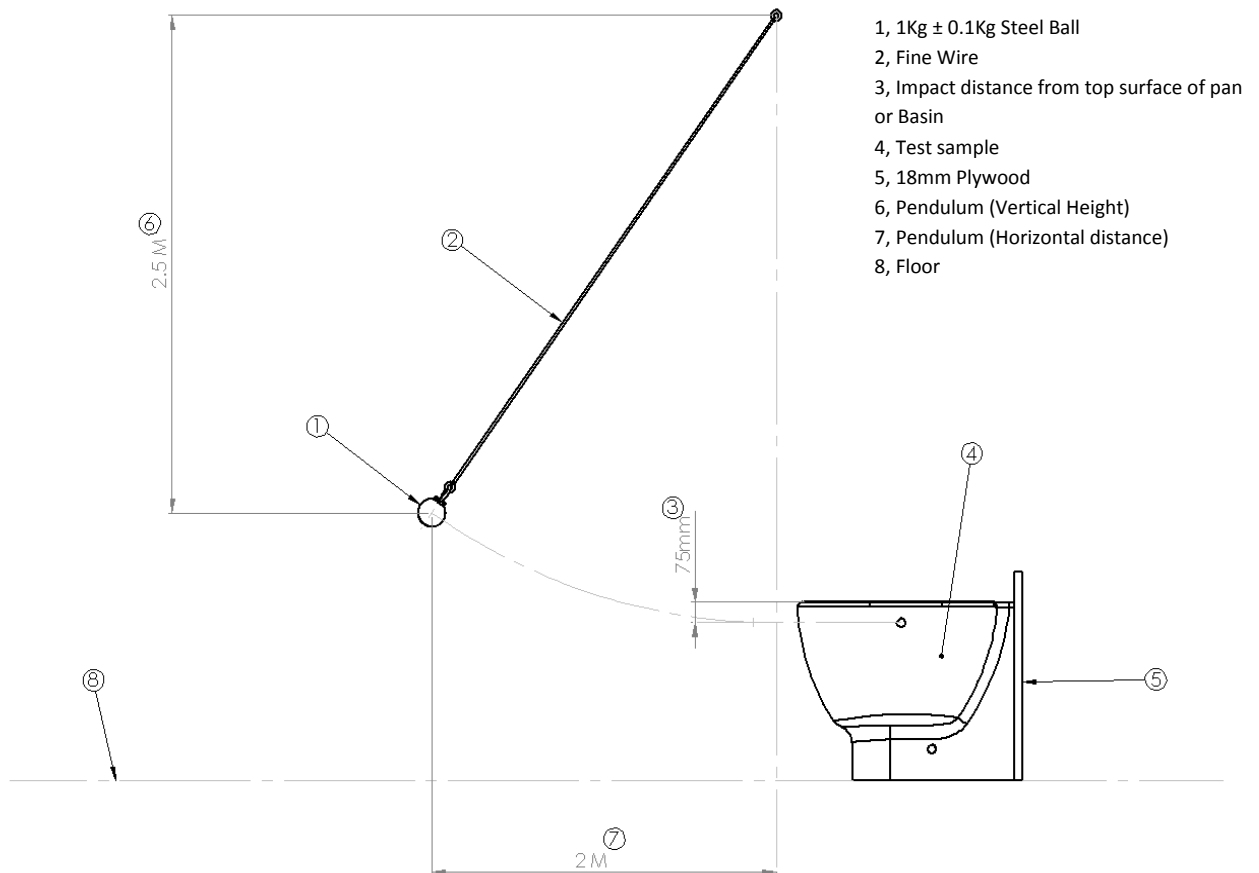
5.4.1.3 Acceptance criteria.

There shall be no visible indication of damage i.e. cracking should not be limited to the test area as a result of the above test. Damage of the material must be to a minimal level and should leave the product in a fully serviceable quality, see 2.1 'Ability to be renewed'.

5.4.1.4 Serviceable quality:

Product to show no signs of cracking either in test or surrounding areas.

Front Impact example shown below



5.4.2 Soft Body Pendulum Test (Test method derived from BSEN 14428)

5.4.2.1 Equipment

Leather Shot Bag 45 kg ± 0.1 kg
 Fine wire 1.5m ± 20mm horizontal length

5.4.2.2 Test Method

Securely install the Test sample in accordance to the manufacturer's instructions, Suspend a 45 kg ± 0.1 kg leather shot bag by a fine wire 1.5m ± 20mm long, the point of suspension being located vertically over the point of impact. Release the bag from a point directly in front of the product at a horizontal distance of 1m away from the point of impact, with the point of

impact being 75 mm ± 5mm from the top surface of the product. Repeat test on exposed side only plus 75mm ± 5mm from the bottom of the product for WC only.

Carry out the test once at an ambient temperature of 18 ± 5°C.

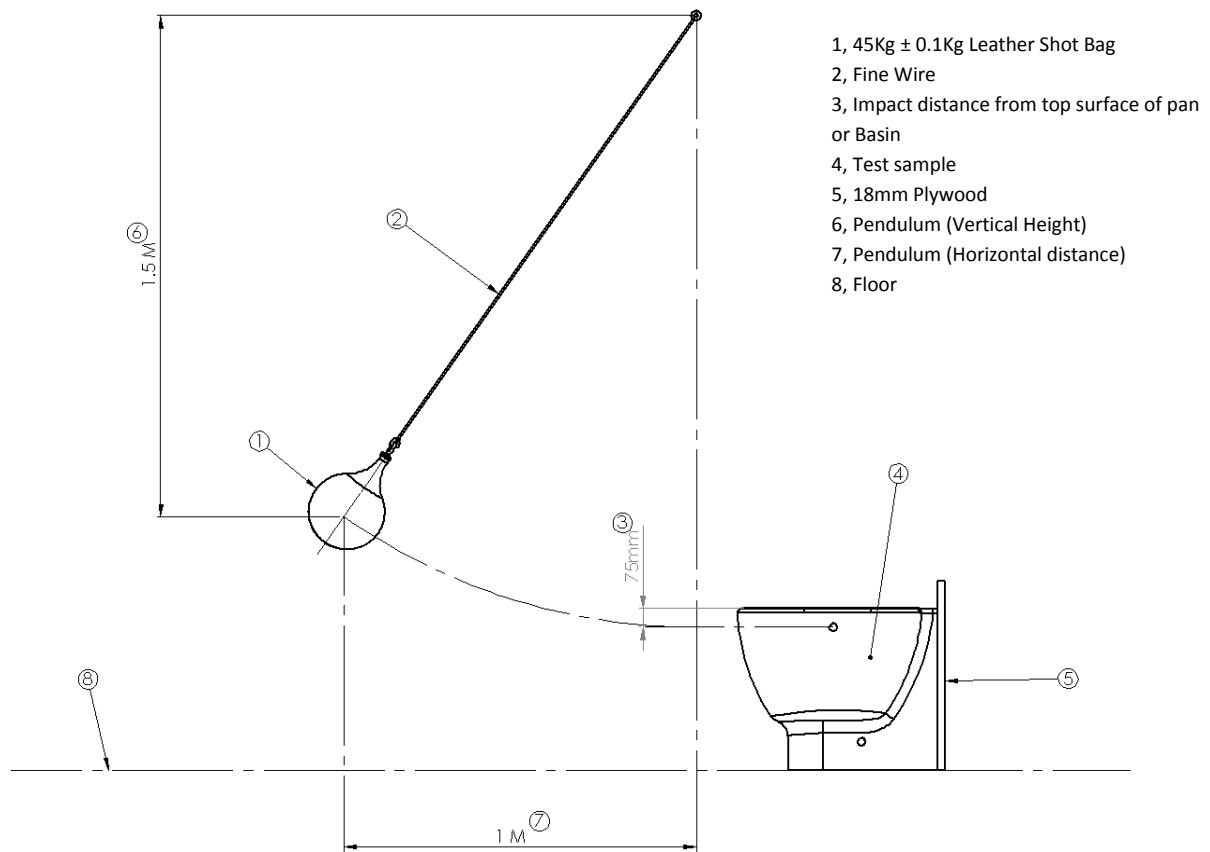
5.4.2.3 Acceptance criteria.

There shall be no visible indication of damage i.e. cracking should not be limited to the test area as a result of the above test. Damage of the material must be to a minimal level and should leave the product in a fully serviceable quality, see 2.1 'Ability to be renewed'.

5.4.2.4 Serviceable quality:

Product to show no signs of cracking either in test or surrounding areas.

Front Impact example shown below



5.4.3 Impact Drop Test (Derived from UK Regulator’s Specification TCS1312-10).

Test involving 4 strike points on top of the products as shown in diagrams under Section 5.2.

5.4.3.1 Equipment

An impacting mass of 1kg (± 0.1kg) with a hemi-spherical lower surface of diameter 50mm (± 2mm).

A horizontal support, to enable the test to be undertaken.

RS-2015-01-01

5.4.3.2 Test Method.

The product shall be marked at 4 different points equally split and marked so the centre of the striker shall impact on the product 10mm from the edge or corners as is practical. Drop the impacting mass once vertically from a height of $2m \pm 5mm$ on to the marked areas.

Observe and record if the product suffers any cracking.

5.4.3.3 Acceptance criteria.

There shall be no visible indication of damage i.e. cracking to the test area as a result of the above test. Damage of the material must be to a minimal level and should leave the product in a fully serviceable quality, see 2.1 'Ability to be renewed'.

5.4.3.4 Serviceable quality:

Product to show no signs of cracking either in test or surrounding areas.

5.5 The Product Test Report

The test report shall comply with the requirements in ISO 17025 and contain at a minimum, the following information:

- Name and address of the test laboratory.
- Date of the test.
- Operator(s) conducting test.
- Complete description of test materials.
- Complete description of any changes in the described standard test method.
- Statement of overall Pass/Fail results.
- Post-test photograph of all test specimens showing result of each test.

6. Destruction Test.

Sledge hammer (Minimum 3Kg) or other no less effective device to be used. The product must be struck with force at any angle until it becomes unserviceable, when any piece of the material becomes detached from the main body of the product and the product would become beyond repair. Photographs and description of failure mode required. Destruction test can be done in-house on products. Fragments to be retained in-house. If test laboratory used, fragments to be retained until report issued and passed/accepted by MoJ at the following:-

Ministry of Justice
Estate Directorate
Programme & Project Delivery Unit
4.25 Blue Zone
102, Petty France
London SW1H 9AJ

7. The Test Report

The test report shall be an accumulation of both Materials and Product test reports and shall comply with the requirements in ISO 17025 and contain at a minimum, the following information:

- Name and address of the test laboratory.
- Date of the test.
- Operator(s) conducting test.
- Complete description of test materials.
- Complete description of any changes in the described standard test method.
- Statement of overall Pass/Fail results.
- Post-test photograph of all test specimens showing result of each test.

8. Acknowledgement

Participating organizations and companies in the development of this industry standard are as follows:-

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