

**SANITARY APPLIANCES****Technical document 017-19****Slip resistance of shower trays**

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## MODIFICATION HISTORY

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00	21/12/2018	Update to the document layout and reference

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Shower trays shall comply with the standards that apply to them:

- NF EN 14527
- NF EN 251
- NF D 11-124
- NF D 14-601
- NF EN 249

And with the additional specifications in the following documents:

- technical document 017-10
- technical document 017-20

They must be class 1 according to Standard NF EN 14527.

## 1 SLIP RESISTANCE TEST

The test is carried out using the inclined plane method (barefoot) as described in Appendix A of Standard XP CEN/TS 16165 (except A3).

The following requirements apply to the test method:

### 1.1 Preparing the test model

The model to be tested must be cut out of a shower tray and must have a test surface of about 500 mm x 1000 mm (the larger dimension must be a usable length with no plughole and no rims. The model must not exceed 500 mm x 1800 mm).

If these dimensions are not possible for technical reasons (dimensions too small, central plughole), other dimensions can be accepted (minimum required dimensions: 350 mm x 800 mm).

Before carrying out the test, the test surface must be cleaned with a standard gentle detergent and a non-abrasive natural sponge, then rinsed with water.

### 1.2 Packaging

Once the test model has been prepared as indicated above, the pollutant and the inclined plane must be conditioned at a temperature between 15°C and 30°C for 24 hours.

### 1.3 Validation of the operators' ability before each test

#### 1.3.1 Control surfaces

Both shower trays that were used in the cross-test campaign SFC/CSTB 2015 will serve as control surfaces to validate the operators before each test campaign. The surfaces will be qualified by 2 SFC operators and 2 CSTB operators, taking at least 30 measurements per operator (6 campaigns of 5 measurements).

The average ( $\alpha_{ref}$ ) and the standard deviation ( $\sigma_{ref}$ ) will then be determined using the recorded slope angles  $\alpha$ .

Both shower trays are listed as class PN6 and class PN12 (§6). Shower trays in class PN18 and class PN24 will need to be located afterwards to be used as control surfaces with higher slope angles. Their average statistical angles and the corresponding standard deviations will also be determined.

### 1.3.2 Operators

Each operator will take 5 measurements on the control surfaces. The average and standard deviation for these surfaces will have been evaluated as described above. The operator can only carry out the test under the following conditions:

$$\text{av ref.} - 1.5 \sigma \text{ ref.} \leq \text{av op} \leq \text{av ref} + 1.5 \sigma \text{ ref}$$

where av op = operator's average

## 1.4 Test procedure

The test is carried out in accordance with Standard XP CEN/TS 16165 §A.4.

## 1.5 Evaluation of the results

The test results are evaluated in accordance with Standard XP CEN/TS 16165 §A.5.

A critical angle  $\alpha$  is obtained (barefoot) which is the acceptable average for operators 1 and 2 (for 5 steps), rounded down to the nearest whole number.

However, if the individual averages of both operators differ by more than  $2^\circ$ , the test will be supplemented by a series of 5 additional steps for each operator. The individual average per operator will be calculated using the 10 results.

## 1.6 Expression of the results

Standard XP P 05-011 specifies a slip ranking for floors in rooms depending on their slip resistance. This ranking is used and applied for manufactured shower trays.

The barefoot slip requirements are as follows:

Class Barefoot	Requirements
PN 6	$6 \leq \alpha < 12$
PN 12	$12 \leq \alpha < 18$
PN 18	$18 \leq \alpha < 24$
PN 24	$\alpha \geq 24$

*Specific conditions: if the critical angle  $\alpha$  is within  $1^\circ$  of the lowest value for the PN class (example: critical angle of  $7^\circ$ ), the test will be supplanted with a series of 5 additional steps for each operator and the individual average per operator will be calculated using the 10 results. These provisions only apply once.*

## 2 DURABILITY OF SLIP-RESISTANT SHOWER TRAYS

Durability is verified when the shower tray is admitted by carrying out the slip resistance test before and after a thermal shock test.

The thermal shock test is carried out:

- according to NF D 14-503 for enamel shower trays
- according to technical document 017-10 §2.3 for shower trays made of synthetic materials
- according to technical document 017-20 §2.4 for shower trays made of impact-modified co-extruded ABS/acrylic sheets.

The thermal shock test is carried out on an uncut shower tray (model identical to the cut shower tray that was tested to determine slip resistance). After the test, the shower tray is cut and then tested in accordance with Chapter 1.

The slip resistance class used is the lowest value obtained after the series of tests.

## 3 CLEANABILITY OF A SLIP-RESISTANT SHOWER TRAY

Cleanability is verified by testing resistance to chemical products and stains on the shower tray for which a slip resistance class is being sought ("treated", new shower tray).

The test will be carried out according to Standard NF EN 14527.

For enamel shower trays, the test will also be carried out according to Standards NF D 14-506, NF D 14-507 and NF D 14-508.

The thickness of the steel plate before stamping shall not be less than 0.56 mm, to assure that sinks are satisfactorily strong.

## 4 MONITORING THE SLIP RESISTANCE CLASS

A slip resistance test will be carried out during annual follow-up on a new shower tray, using two samples taken from the shower tray to be tested (model taken at random from available stock).

The 2<sup>nd</sup> sample will be used if the slip class obtained is different from the one declared at admission.

A series of slip resistance/thermal shock tests can be carried out upon request from the NF committee, if necessary.