

## מתקני תברואה – כיורי רחץ – דרישות תפקוד ושיטות בדיקה

Sanitary appliances – Wash basins – Functional requirements and test methods

מסמך זה הוא הצעה בלבד

מכון התקנים הישראלי  
The Standards Institution of Israel



תקן זה הוכן על ידי ועדת המומחים 591403 – אסלות וכיורים, בהרכב זה:  
רון באר, יעקב בירותי, עמנואל דילר, אחיעזר ישראלי, עודד פרוינד (יו"ר)

אתי אברהם ריכזה את עבודת הכנת התקן.

כיוונים

<p><b>הודעה על רוויזיה</b>                  תקן ישראלי זה בא במקום                  התקן הישראלי ת"י 239 מפברואר 1991                  גיליון התיקון מס' 1 מדצמבר 1993                  תיקון מס' 2 ממרס 1998                  גיליון התיקון מס' 3 מאוקטובר 2014                  (וראו הערה לאומית בסוף חלות התקן)</p>	<p><b>הודעה על מידת התאמת התקן הישראלי לתקנים או למסמכים זרים</b>                  תקן ישראלי זה, למעט השינויים והתוספות הלאומיים המצוינים בו,                  זהה לתקן של הוועדה האירופית לתקינה (CEN)                  EN 14688:2015+A1: October 2018</p>
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**מילות מפתח:**

מתקני תברואה, בדיקות מכניות, כיורי רחץ, ביצועים, יעילות, נצילות, סימון.

**Descriptors:**

sanitary appliances, mechanical testing, wash-basins, performance, efficiency, marking.

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## הקדמה לתקן הישראלי

תקן ישראלי זה הוא התקן של הוועדה האירופית לתקינה (CEN) EN 14688:2015+A1, מאוקטובר 2018, שאושר כתקן ישראלי בשינויים ובתוספות לאומיים.

התקן כולל, בסדר המפורט להלן, רכיבים אלה:

- תרגום סעיף חלות התקן האירופי (בעברית)

- פירוט השינויים והתוספות הלאומיים לסעיפי התקן האירופי (בעברית)

- התקן האירופי (באנגלית)

## חלות התקן (תרגום סעיף 1 של התקן האירופי)

תקן זה מפרט את מאפייני התפקוד ואת שיטות הבדיקה עבור כיורי רחץ למטרות ביתיות.

**הערה 1** למטרות תקן זה, המונח "מטרות ביתיות" כולל שימוש בבתי מלון, במגורים של תלמידים וסטודנטים, בבתי חולים ובבניינים דומים, למעט כאשר נדרשים תנאים רפואיים מיוחדים.

**הערה 2** כל הסרטונים הם דוגמות בלבד. צורת המתקן נתונה לשיקול דעתו של היצרן.

## הערה לאומית:

התקן הישראלי ת"י 239 מפברואר 1991 (לרבות גיליונות התיקון שלו) יישאר בתוקף במשך שנתיים מיום פרסום תקן זה ברשומות. בתום תקופה זו ייכנס לתוקף התקן הישראלי במהדורתו החדשה.

## פירוט השינויים והתוספות הלאומיים לסעיפי התקן האירופי

### 4.2 Draining of water

בסוף הסעיף יוסף:

הקוטר הפנימי של המוצא יהיה  $46.0^{+2.0}_{-3.0}$  מ"מ. סביב המוצא יהיה שקע בעומק מספיק ובזווית מתאימה, שיבטיחו שאביק תקני לא יבלוט מפני המשטח לאחר התקנתו.

### 5 Test methods

#### 5.6 Resistance to scratching

הסעיף אינו חל.

#### 5.7 Resistance to abrasion

הסעיף אינו חל.

### 7 Marking and product designation

- בכל מקום בסעיף שבו נכתב "EN 14688", הכתוב אינו חל.

### Table 3 — Characteristics and abbreviations for wash basins -

השורה הראשונה בטבלה, המתייחסת ל-"EN 14688", אינה חלה.

ICS 91.140.70

English Version

## Sanitary appliances - Wash basins - Functional requirements and test methods

Appareils sanitaires - Lavabos - Exigences fonctionnelles et méthodes d'essai

Sanitärausstattungsgegenstände - Waschbecken - Funktionsanforderungen und Prüfverfahren

This European Standard was approved by CEN on 19 June 2015 and includes Amendment 1 approved by CEN on 14 April 2018.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
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**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

## 1 Scope

This European Standard specifies the functional  $\square_{A1}$  characteristics  $\square_{A1}$  and test methods for wash basins for domestic purposes.

NOTE 1 For the purposes of this standard the term “domestic purposes” includes use in hotels, accommodation for students, hospitals and similar buildings, except when special medical provisions are required.

NOTE 2 All drawings are examples only. The shape of the appliance is left to the discretion of the manufacturer.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN ISO 6506-1, *Metallic materials - Brinell hardness test - Part 1: Test method (ISO 6506-1)*

ISO 9352, *Plastics - Determination of resistance to wear by abrasive wheels*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 3.1

#### wash basin

sanitary appliance primarily intended for washing the upper parts of the body, with one or more bowls, each with a waste outlet hole, with or without overflow and with or without taphole(s)

Note 1 to entry: The various types of wash basins are differentiated by the methods of mounting. The main types are given in the definitions that follow.

#### 3.1.1

##### wall-hung wash basin

wash basin attached directly to a wall

Note 1 to entry: See Figures 1 and 2.

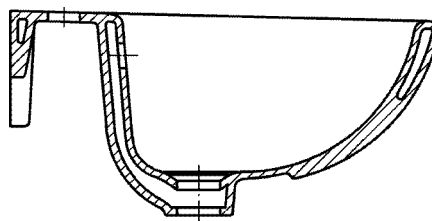


Figure 1 — Wall-hung wash basin with overflow

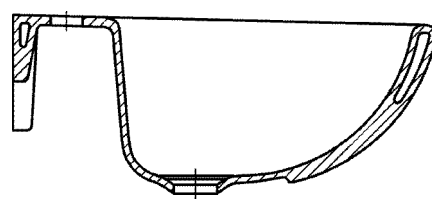


Figure 2 — Wall-hung wash basin without overflow

## 4 **A1** Characteristics **A1**

### 4.1 Load resistance

When tested in accordance with 5.2, wall-hung wash basins shall not crack, be broken or show permanent distortion.

### 4.2 Draining of water

When tested in accordance with 5.3, all water shall drain away.

### 4.3 Resistance to temperature changes

When wash basins are tested in accordance with 5.4, they shall not show defects, such as cracks or delamination which influences the intended use.

Experience has shown that wash basins made of glazed ceramics, stainless steel, enamelled steel and glass comply with this requirement.

### 4.4 Resistance to chemicals and staining agents

When used as intended, any functional surface shall be resistant to household chemicals and cleansing agents recommended by the manufacturer.

When tested in accordance with 5.5, wash basins shall not show any permanent surface deterioration, such as stains or deterioration not removable with water or abrasive agent.

Experience has shown that wash basins made of glazed ceramics, stainless steel and enamelled steel comply with this requirement.

### 4.5 Surface stability

This requirement is applicable only to multi-layer wash basins to ensure the stability of the top layer.

When tested in accordance with 5.6, any scratch shall not exceed 0,1 mm and/or the total depth of the top layer whichever is the least.

When tested in accordance with 5.7, the top layer of the test specimen shall not be abraded through.

Experience has shown that wash basins made of glazed ceramics and enamelled steel comply with these requirements.

### 4.6 Cleanability

When tested in accordance with 5.8, wash basins shall have smooth and readily cleansed non-absorbent functional surfaces which are free from acute internal corners which would be difficult to clean, i.e. surfaces intended to or likely to come into contact with water during use.

Experience has shown that wash basins manufactured from plastics materials, enamelled steel/cast iron, stainless steel, glazed ceramics and glass, designed and constructed without acute internal corners, satisfy this requirement.

### 4.7 Protection against overflowing

#### 4.7.1 Wash basins with overflow

Every wash basin shall be protected against overflowing.

When tested in accordance with 5.9, the flow rate of a single overflow shall not be less than the values given in Table 1.



- e) Rinse with deionized water and visually examine the test area. If deterioration persists, repeat the cleaning process with the 12 h-alumina and re-examine the test area.
- f) Record:
  - 1) whether or not the reagent causes a stain or deterioration;
  - 2) whether or not such stain or deterioration is removed, and if so, with water or with 12 h-alumina.

## 5.6 Resistance to scratching

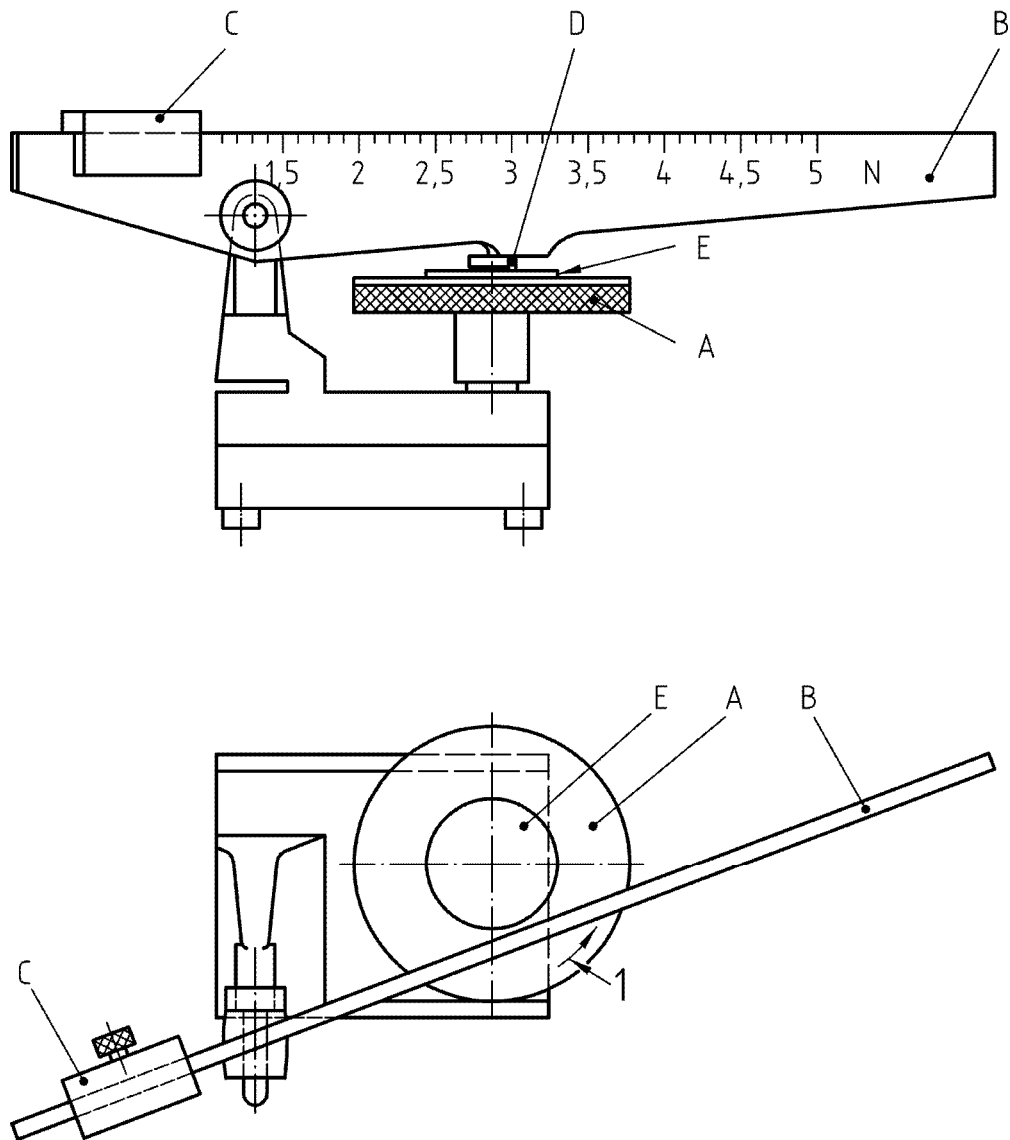
### 5.6.1 Apparatus

Scratch testing apparatus (see Figure 8) consisting of:

- 5.6.1.1 Stand with a device to indicate the horizontal position**, e.g. a spirit level.
- 5.6.1.2 Freely rotating supporting turntable (A)** which can be motor driven turning about a vertical axis without play.
- 5.6.1.3 Arm (B)** carrying the holder for the diamond, mounted on a horizontal axis ball bearing.  
The height of this axis shall be adjustable so that the arm is exactly horizontal when the scratching point rests on the test specimen.
- 5.6.1.4 Means of applying a defined force (C).**
- 5.6.1.5 Diamond scratching point (D)**, cone-shaped, the axis of which is perpendicular to the sample surface and which has an angle of  $(45 \pm 0,5)^\circ$  at the top.  
The point of the cone shall be hemispherical with a radius of  $(0,09 \pm 0,001)$  mm. Its geometrical regularity shall be verified and its profile measured on a complete rotation of  $360^\circ$ . The point shall be rejected, if any irregularity of the curvature above  $\pm 0,001$  mm is measured. All diamond points shall be rechecked after each 1 000 tests to confirm geometry.
- 5.6.1.6 Microscope or similar measuring device** capable of measuring to an accuracy of 5  $\mu\text{m}$ .

### 5.6.2 Test specimen

Use a test specimen cut from the bottom of wash basin (see Figure 9). Test specimens shall be flat. When the test specimen cannot be cut from a wash basin, specially prepared specimens can be used provided the top functional layer is of the same thickness as that in a wash basin to be tested. The thickness of the top layer shall be measured in accordance with 5.6.3. The test specimen shall be preconditioned at a temperature of  $(23 \pm 2)^\circ\text{C}$  and relative humidity of  $(50 \pm 5)\%$  for 24 h. When using a microscope, pre-coat the test specimen with an ink of a contrasting colour.



**Key**

- 1 rotating direction
- A supporting turntable
- B arm
- C means to apply the force
- D scratching point
- E locking disc

**Figure 8 — Scratch-testing apparatus**

Dimensions in millimetres

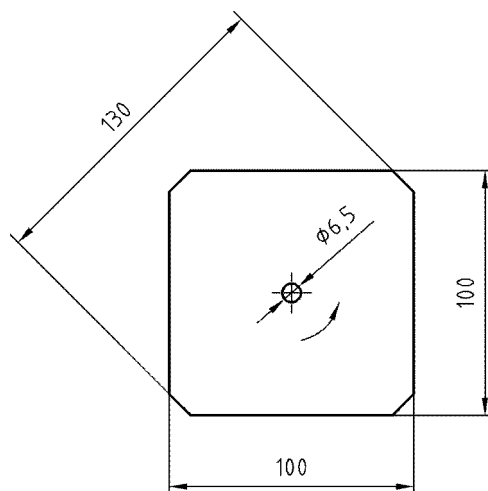


Figure 9 — Test specimen

### 5.6.3 Procedure

- Adjust the height of the arm (B) so that it is horizontal when the diamond point rests on the test specimen. Place the arm (B) in a vertical position. Fix the test specimen with the locking disc (E) and secure it correctly to avoid any slipping. Lower the arm (B) and place the diamond point in contact with the test specimen taking care to avoid any impact.
- Apply a force of  $(10 \pm 0,1)$  N.
- Start rotating the turntable in order to produce a scratch of 3 cm to 4 cm long.

Measure the width of the scratch and calculate its depth as 50 % of the width of the scratch. Measure the thickness of the top layer in the middle of the four sides and calculate the average.

## 5.7 Resistance to abrasion

### 5.7.1 Principle

The test measures the ability of the top layer of the multi-layer wash basin to resist abrasion through to the sub-layer. Abrasion is produced by rotating a test specimen in contact with a pair of loaded cylindrical wheels covered with abrasive paper.

### 5.7.2 Test apparatus and materials

Test machine<sup>2)</sup> as specified in ISO 9352:

**5.7.2.1 Calibration plates of rolled zinc sheet** having a thickness of  $(0,8 \pm 0,1)$  mm and a Brinell hardness of  $(48 \pm 2)$  BHN when tested in accordance with EN ISO 6506-1, except that the ball diameter shall be 5 mm and the force 360 N.

2) A suitable machine is available from Taber Acquisition Corp. Taber Industries, 455 Bryant St. P.O. Box 164, North Tonawanda, NY 14120, USA. This test machine is an example of a suitable machine available commercially. This information is given for the convenience of users of this standard and does not constitute an endorsement of the machine by CEN.

**5.7.2.2 Abrasive paper strips** with a width of 12,7 mm and length of about 160 mm having the following specification<sup>3)</sup>:

- a) paper with grammage of 70 g/m<sup>2</sup> to 100 g/m<sup>2</sup>;
- b) aluminium oxide powder (Al<sub>2</sub>O<sub>3</sub>) having a particle size such that it will pass through a sieve of aperture 100 µm and remain on a sieve having an aperture of 63 µm.

**5.7.2.3 Double sided adhesive tape**, required only if the abrasive paper has no adhesive backing.

### 5.7.3 Test specimen

Three test specimens shall be taken, each from a different wash basin of identical type and model.

They shall be discs of diameter about 130 mm, or squares of about 120 mm with corners to give a diagonal of about 130 mm, and have a hole of diameter 6 mm in their centres.

Test specimens shall be flat. When the test specimen cannot be cut from a wash basin, specially prepared specimens can be used provided the top functional layer is of the same thickness as that in a wash basin to be tested. The thickness of the top layer shall be measured in accordance with 5.6.3.

Clean the surface of the test specimens with a non-hazardous organic solvent which is immiscible with water.

### 5.7.4 Procedure

- Prepare the abrasive wheels by bonding a strip of abrasive paper (see 5.7.2.2) to each of the rubber covered wheels, using either the adhesive backing, if present, or the double-sided adhesive tape (see 5.7.2.3), in such a way that the cylindrical surface is completely covered, but without any overlapping of the abrasive paper.
- Check the suitability of the abrasive paper by preparing two abrasive wheels with unused strips of abrasive paper from the batch to be used for testing as follows: Clamp a zinc plate (see 5.7.2.1) in the test specimen holder, operate the suction device, and abrade the zinc plate for 500 revolutions. Wipe the zinc plate clean and weigh it to the nearest 1 mg. Replace the used abrasive paper strips on the wheels, with unused strips from the same batch, clamp the same zinc plate in the specimen holder, lower the abrasive wheels and operate the suction device. Abrade the zinc plate for an additional 500 revolutions, then wipe it clean and reweigh it to the nearest 1 mg. Its loss in mass shall be (130 ± 20) mg. Any batch of abrasive paper which causes a loss in mass of the zinc plate outside this permitted range shall not be used for testing.
- Prepare sufficient abrasive wheels for the test, using unused abrasive paper. Fit two wheels to the machine loaded to 250 g each and set the revolution counter to zero.
- Clamp the test specimen in the holder, ensuring that its surface is flat. Lower the abrasive wheels onto the test specimen so that the wheels' cylindrical faces are at an equivalent distance from the test specimen's axis of rotation but not tangential to it. Operate the suction device and allow the test specimen to rotate.
- Replace the abrasive paper after every 100 revolutions.

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3) Paper S 33 provided by Taber Acquisition Corp. Taber Industries, 455 Bryant St. P.O. Box 164, North Tonawanda, NY 14120, USA, is deemed to satisfy this specification. The calibration procedure prescribed in 5.7.4 can be omitted. This information is given for the convenience of users of this standard and does not constitute an endorsement of the machine by CEN.

- Stop the test after 750 revolutions.
- Observe if the top layer of any of the three test specimens is abraded through.

### 5.8 Cleanability

- Visually examine the functional surfaces of the wash basins using a suitable light source.
- Record any failure to comply with 4.6.

Imperfections that do not affect the functionality of the surface should not constitute a failure.

### 5.9 Determination of flow rate of overflow

- The wash basin shall be installed horizontally in accordance with the manufacturer's instructions.
- Close the waste-outlet hole(s).
- Introduce the water supply by means of a flexible tube with an inner diameter of 20 mm which leads to the bottom of the bowl. Adjust the quantity of water supply in such a way that no water spills over the external rim of the wash basin or work top.
- Read the water flow rate after a steady-state condition has been established for a period of 60 s by means of a flow-meter fitted into the supply pipe.

## 6 Dangerous substances

National regulations on dangerous substances may require verification and declaration on release, and sometimes content, when construction products covered by this standard are placed on those markets.

In the absence of European harmonized test methods, verification and declaration on release/content should be done taking into account A1 *deleted text* A1 provisions in the place of use.

NOTE An informative database covering European and national provisions on dangerous substances is available at the Construction website on EUROPA A1 accessed through: [https://ec.europa.eu/growth/tools-databases/cp-ds\\_en](https://ec.europa.eu/growth/tools-databases/cp-ds_en) A1.

## 7 Marking and product designation

The intended use of wash basins is personal hygiene in accordance with the scope of this European Standard.

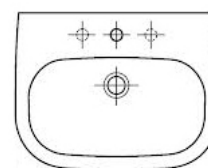
A1 *deleted text* A1

A schematic drawing of the product may optionally follow the abbreviation for personal hygiene.

EXAMPLE 1 Use of full text: Personal hygiene.

EXAMPLE 2 Use of abbreviation: PH.

EXAMPLE 3 Use of the abbreviation and the optional schematic drawing: PH



Wash basins belong always to one  $\langle A_1 \rangle$  type and sub-type  $\langle A_1 \rangle$  at least. For each  $\langle A_1 \rangle$  type and sub-type  $\langle A_1 \rangle$  a set of  $\langle A_1 \rangle$  characteristics  $\langle A_1 \rangle$  to be tested (see 8.2.2) is defined. Due to this, a wash basin can be described with a designation code which includes all fulfilled essential  $\langle A_1 \rangle$  characteristics  $\langle A_1 \rangle$ .

The relevant product characteristics and the Essential Characteristics for wash basins including their abbreviations are given in Table 3.

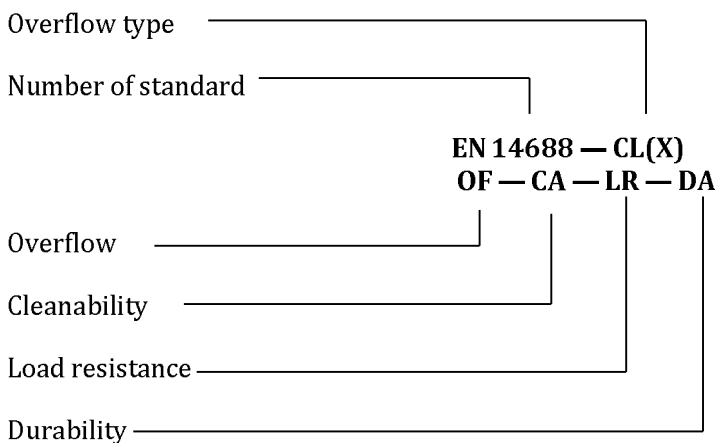
$\langle A_1 \rangle$  Table 3 — Characteristics and abbreviations for wash basins

Abbreviation	Characteristics
EN 14688	Number of European Standard for communal washing troughs for product description
CL (X)	Type of wash basin with an integral overflow providing a flow rate (X) with: 25 for $\geq 0,25$ l/s flow rate 20 for $\geq 0,20$ l/s flow rate 15 for $\geq 0,15$ l/s flow rate 10 for $\geq 0,10$ l/s flow rate 00 for without integral overflow
OF	Overflow
CA	Cleanability
LR	Load resistance (for wall-hung wash basins only)
DA	Durability

$\langle A_1 \rangle$

All wash basins shall be designated in accordance with the following system:

$\langle A_1 \rangle$



$\langle A_1 \rangle$

$\langle A_1 \rangle$  deleted text  $\langle A_1 \rangle$

EXAMPLE 4  $\langle A_1 \rangle$  Type  $\langle A_1 \rangle$  25 wash basin, i.e. wash basin with an integral overflow providing a flow rate  $\geq 0,25$  l/s. All Essential Characteristics specified for these products  $\langle A_1 \rangle$  deleted text  $\langle A_1 \rangle$  are satisfied.

EN 14688 — CL 25