

BRL-K621

2019-10-02

Evaluation Guideline

for the Kiwa product certificate for
Close coupled suites



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Quality
Progress**

Preface

This evaluation guideline has been accepted by the Kiwa Board of Experts Watercycle (CWK), in which all relevant parties in the field of Close coupled suites are represented. The Board of Experts also supervises the certification activities and where necessary requires the evaluation guideline to be revised. All references to Board of Experts in this evaluation guideline pertain to the above mentioned Board of Experts.

This evaluation guideline will be used by Kiwa in conjunction with the Kiwa Regulations for Product Certification.

The main changes compared to the previous version of the evaluation guideline are:

- Related to the publication of the European Standard EN 997:2018 because of a revision on the Annex ZA in the format of TF N 687 rev1 of 2015-06-02 was implemented.
- Including the FECS requirement in article 5 of the BRL and excluding dangerous substances.
- Use of other methods to determine the renewal of the water trap.
- Editorial modifications in the content of the BRL in relation to the quality objective of Kiwa.

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The use of this evaluation guideline by third parties, for any purpose whatsoever, is only allowed after a written agreement is made with Kiwa to this end.

Validation

This evaluation guideline has been validated by the Director Certification and Inspection of Kiwa on 1 December 2018

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1 Introduction

1.1 General

This evaluation guideline includes all relevant requirements which are adhered to by Kiwa as the basis for the issue and maintenance of a certificate for products used for Close coupled suites

This guideline replaces the evaluation guideline BRL-K621/06, dated 01-02-2012. The quality declarations issued and based on that guideline will not lose their validity.

For the performance of its certification work, Kiwa is bound to the requirements as included in NEN-EN-ISO/IEC 17065 "Conformity assessment - Requirements for bodies certifying products, processes and services".

1.2 Field of application / scope

The products are intended to be applied as sanitary appliances giving a nominal flushing volume of 6, 7 or 9 litres. These appliances are intended for connection to drinking water installations with a maximum water temperature of 30° C and a maximum working pressure of 1000 kPa.

1.3 Acceptance of test reports provided by the supplier

If the supplier provides reports from test institutions or laboratories to prove that the products meet the requirements of this evaluation guideline, the supplier shall prove that these reports have been drawn up by an institution that complies with the applicable accreditation standards, namely:

- NEN-EN-ISO/IEC 17020 for inspection bodies;
- NEN-EN-ISO/IEC 17021 for certification bodies certifying systems;
- NEN-EN-ISO/IEC 17024 for certification bodies certifying persons;
- NEN-EN-ISO/IEC 17025 for laboratories;
- NEN-EN-ISO/IEC 17065 for certification bodies certifying products.

Remark:

This requirement is considered to be fulfilled when a certificate of accreditation can be shown, issued either by the Board of Accreditation (RvA) or by one of the institutions with which an agreement of mutual acceptance has been concluded by the RvA. The accreditation shall refer to the examinations as required in this evaluation guideline. When no certificate of accreditation can be shown, Kiwa shall verify whether the accreditation standard is fulfilled.

1.4 Quality declaration

The quality declaration to be issued by Kiwa is described as a Kiwa product certificate.

A model of the certificate to be issued on the basis of this evaluation guideline has been included for information as Annex.

2 Terms and definitions

2.1 Definitions

In this evaluation guideline, the following terms and definitions apply:

- **Board of Experts:** the Board of Experts “Water Cycle” (CWK).
- **Certification mark:** a protected trademark of which the authorization of the use is granted by Kiwa, to the supplier whose products can be considered to comply on delivery with the applicable requirements.
- **Drinking water:** water intended or partly intended for drinking, cooking or food preparation or other domestic purposes, but does not include hot water, and is made available by pipeline to consumers or other customers.
- **Drinking water installation:** an installation direct or in-direct connected to the public drinking water distribution network of a drinking water company (source Dutch drinking water act);
- **Evaluation Guideline (BRL):** the agreements made within the Board of Experts on the subject of certification.
- **Hot tap water:** water intended or partly intended for drinking, cooking or food preparation or other domestic purposes, which is heated before it is made available for those applications.
- **House hold water:** non-potable water that may only be used within premises for flushing toilets (source Dutch drinking water act);
- **Installation:** configuration consisting the pipe work, fittings and appliances;
- **Inspection tests:** tests carried out after the certificate has been granted in order to ascertain whether the certified products continue to meet the requirements recorded in the evaluation guideline.

Remarks

The test matrix contains a summary showing what tests Kiwa will carry out in the pre-certification stage and in the event of inspections as well as showing the frequency with which the inspection tests will be carried out.

- **IQC scheme (IQCS):** a description of the quality inspections carried out by the supplier as part of his quality system.
- **Pre-certification tests:** tests in order to ascertain that all the requirements recorded in the evaluation guideline are met.
- **Private Label Certificate:** A certificate that only pertains to products that are also included in the certificate of a supplier that has been certified by Kiwa, the only difference being that the products and product information of the private label holder bear a brand name that belongs to the private label holder.
- **Product certificate:** a document in which Kiwa declares that a product may, on delivery, be deemed to comply with the product specification recorded in the product certificate.

- **Product requirements:** requirements made specific by means of measures or figures, focussing on (identifiable) characteristics of products and containing a limiting value to be achieved, which can be calculated or measured in an unequivocal manner.
- **Supplier:** the party that is responsible for ensuring that the products meet and continue to meet the requirements on which the certification is based.
- **Tap water** (origin Drinking Water Directive): water intended for drinking, cooking, food preparation or other domestic purposes.
- **Float operated valve:** Flow control device, through which a flushing cistern is filled after flushing to a pre-set water level. The objective of the float operated valve is to open directly after the cistern is flushed and to close to water inlet directly after the required water level in the cistern is reached.
- **Working pressure (p_w):** The maximum pressure occurring under normal circumstances in drinking water installations or their parts.
- **Effective pressure (p_e):** The difference between absolute pressure (p) and ambient pressure (p_{amb})
The formula: $p_e = p - p_{amb}$.
- **Service pressure:** The pressure directly before the connection point of an appliance in use.
- **Flush volume:** The volume of water which is flushed on operation of the cistern. During delivery of the water volume, no refilling occurs.
- **Complete flush (full flush):** A flush in which the entire water volume is delivered on operation of the cistern.
- **Interrupted flush:** A flush in which, on operation of the cistern, the delivery is interrupted so that a smaller water volume than the complete flush volume is delivered.
- **Overflow level:** The water level at which the horizontally mounted cistern just begins to release excess water via the overflow level.

2.2 Types

WC-pans in this BRL-K are designated by there:

Use of water:

- Close coupled suites needing an effective flushing volume of 4 Litres ¹.
- Close coupled suites needing an effective flushing volume of 5 Litres ¹.
- Close coupled suites needing an effective flushing volume of 6 Litres
- Close coupled suites needing an effective flushing volume of 7 Litres.
- Close coupled suites needing an effective flushing volume of 9 Litres.

The way of mounting:

- Pedestal Close coupled suites floor mounting;
- wall-hung Close coupled suites for wall mounting;

¹ Are not allowed in the Netherlands.

Internal shape of the WC bowl:

- wash-out WC-pans;
- wash-down WC-pans.

In general 2 types are defined, these are:

- Type 1 are products designated for use in the European continent.
- Type 2 are products which are deemed to comply with the legal, market requirements and application in the United Kingdom.

The mentioned types are divided in categories in relation the flush volume:

Category 1 : Close coupled suites designated for use with and tested using a nominal flushing volume 4; 5; 6; 7 or 9 litres according to the EN997 clause 5.

Category 2 : WC suites designed for use with a pressure flushing valve or a flushing cistern incorporating some other flushing device, and tested as described in EN 997 clause 6, using a maximum flushing volume of 6 litres, or a dual-flush combining a maximum flush of 6 litres and a reduced flush no greater than two-thirds(2/3) of the maximum flush volume.

The categories are then specified on the basis of type and flush volume to be used.

The Dutch law has no binding law describing the class and types of Close coupled suites, however there are regulations stipulated by law for drainage systems inside buildings. In the Dutch Building Regulations reference is given to the NEN 3215 *“Drainage systems inside buildings – Requirements and determination methods”* in which clause 4.1.8 is specified that:

For a good function of the drainage systems inside buildings the use of a flush volume of at least 6 litres is required.

At the moment of publication of the EN 997 is the use of flush volume less than 6 litres not advised, unless it is proven that no problems occur to the drainage system when using of a less flush volume.

The Dutch sewage system is not designed for the application and use of ceramic sanitary appliances using a flush volume less than 6 litres. Without adapted measures the use of less flush volumes can cause problems to the sewage waste systems.

3 Procedure for granting a product certificate

3.1 Initial investigation

The pre-certification tests to be performed are based on the (product) requirements as contained in this evaluation guideline, including the test methods, and comprises the following:

- type testing to determine whether the products comply with the product and/or functional requirements;
- production process assessment;
- assessment of the quality system and the IQC-scheme;
- assessment on the presence and functioning of the remaining procedures.

3.2 Granting the product certificate

After finishing the pre-certification tests, the results are presented to the Decision maker (see 9.2) deciding on granting the certificate. This person evaluates the results and decides whether the certificate can be granted or if additional data and/or tests are necessary.

3.3 Investigation into the product and/or performance requirements

Kiwa will investigate the to be certified products against the certification requirements as stated in the certification requirements.

The necessary samples will be drawn by or on behalf of Kiwa.

3.4 Production process assessment

When assessing the production process, it is investigated whether the producer is capable of continuously producing products that meet the certification requirements. The evaluation of the production process takes place during the ongoing work at the producer.

The assessment also includes at least:

- The quality of raw materials, half-finished products and end products;
- Internal transport and storage.

3.5 Contract assessment

If the supplier is not the producer of the products to be certified, Kiwa will assess the agreement between the supplier and the producer.

This written agreement, which is available for Kiwa, includes at least:

Accreditation bodies, scheme managers and Kiwa will be given the opportunity to observe the certification activities carried out by Kiwa or on behalf of Kiwa at the producer.

4 Requirements

4.1 General

This chapter contains the requirements that Close coupled suites have to fulfil.

4.2 Regulatory requirements

4.2.1 *Requirements to avoid deterioration of the quality of drinking water*

To prevent harmful effects on the quality of drinking water, the following government imposed provisions apply.

Products and materials which (may) come into contact with drinking water or warm tap water, shall not release substances in quantities which can be harmful to the health of the consumer, or negatively affect the quality of the drinking water.

Therefore, the products or materials shall meet toxicological, microbiological and organoleptic requirements as laid down in the currently applicable "Ministerial Regulation materials and chemicals drinking water and warm tap water supply", (published in the Government Gazette). Consequently, the procedure for obtaining a recognised quality declaration, as specified in the currently effective Regulation, has to be concluded with positive results.

Products and materials with a quality declaration¹, e.g. issued by a foreign certification institute, are allowed to be used in the Netherlands, provided that the Minister has declared this quality declaration equivalent to the quality declaration as meant in the Regulation.

Note

Close coupled suite configured with a float operated valve complying with BRL-K615 are deemed to comply with this requirement

4.3 Product requirements

The functional requirements related to the product is stipulated in:

Standard	Title
EN997	"WC pans and WC suites with integral trap"

Regarding the products there are additional material and functional requirements mentioned in this Kiwa Standard (BRL-K).

4.4 Material requirements

4.4.1 *Material flushing cistern*

Flushing cisterns shall be made from sanitary porcelain or plastic. The visible portion of the sanitary porcelain cistern shall be glazed.

Sanitary porcelain and glaze shall satisfy the "Standards" of the "Fédération Européenne des Céramistes Sanitair". See article 5.6.

¹ A quality declaration issued by an independent certification institute in another member state of the European Community or another state party to the agreement to the European Economic Area, is equivalent to a recognized quality declaration, to the extent that, to the judgment of the Minister of the first mentioned quality declaration, is fulfilled the at least equivalent requirements as meant in the Regulation materials and chemicals drinking water- and warm tap water supply.

4.4.1.1 *Other materials*

Materials other than those indicated may be used. These shall:

- be of at least comparable quality;
- be corrosion proof or be protected against corrosion;
- not give rise to Electro-chemical corrosion (contact corrosion);
- be impervious to drinking water.

4.4.1.2 *Rubber*

Rubber used shall comply with the requirements mentioned in the Kiwa Evaluation guideline BRL-K17504, with regards to the influence of upon potable water and the physical and mechanical properties. The BRL-K17504 is not applicable in cases of sealing parts, e.g. valve sealing or membranes, produced from rubber. Natural rubber (NR) and isoprene rubber (IR) is not permitted.

4.4.2 *Material WC-pan*

WC-pans shall be produced of sanitary porcelain or stainless steel. Manifolds and compatible outlets may be manufactured from other suitable materials.

4.4.2.1 *Sanitary porcelain and glaze*

Sanitary porcelain and glaze must be resistant to:

- acids;
- alkalis;
- chemicals;
- stains;
- high temperature;
- temperature *changes*.

Note

The text from the "FECS-Standards, 1961 issue" specifications, referred to below, is given in the appendix to these requirements. The decimal classification used in the appendix is that of the FECS-Standards. The manufacturers of ceramic sanitary ware, associated in the "Fédération Européenne des Céramistes Sanitaires" (FECS), have assumed the responsibility of supplying only crystal porcelain (Sanitary Porcelain; Vitreous China) that, tested according to methods stated in "FECS-Standards, 1961 issue", shall meet the various demands.

4.5 **Additional requirements**

4.5.1 **Additional requirements WC-pan**

In addition to the requirements mentioned in article 4.3, the following requirements apply for WC-pans of type 1 and type 2.

4.5.1.1 *Holes in closed flush rim*

The smallest dimension of a hole in a closed rim of a WC-pan shall be at least 7 mm.

Notes

The holes in a closed flush rim shall be of such shape and size that the appearance of limestone or soiling will not in any significant way, hinder the flow.

4.5.1.2 *Flatness*

The upper surface of the WC-pan upon which the toilet seat rests may, at no place, deviate more than 4 mm with reference to a flat plate.

Besides the upper cross-surface of a pedestal WC-pan shall not lean more than 3 mm per 100 mm of the width of the WC-pan.

The mounting surface for floor or wall fixing must be sufficiently flat to prevent staggering and shall, at no place, deviate more than 2 mm with reference to a flat plate.

4.5.1.3 Fixing

The fixing of toilet bowls, to floor or wall, shall be carried out in a sound manner. Holes in WC-pans intended for the fixing to floor or wall shall be, as far as possible, perpendicular to the mounting surface. The fixing holes of pedestal WC-pans shall be at least two in number.

The diameter of the holes for floor mounting shall be 10 ± 1.5 mm.

An alternative construction is only allowed in case this construction can be regarded as a suitable equivalent construction and is only than permitted if all the necessary parts are delivered together.

4.5.1.4 Dimensions

The connection dimensions of the Close coupled suites depending of the type shall satisfy EN 33 or EN 34. Moreover, the dimensions shown in figure 1 must prevail.

Deviation from the dimensions given in figure 1 is only permitted if the toilet seat is supplied together with the bowl.

Adapted outlets are permitted if the bowl/outlet combination can, with dimension "d5", at the minimum satisfy the quality requirements mentioned in EN norms and are only permitted if the adapted outlets are supplied together with the bowl.

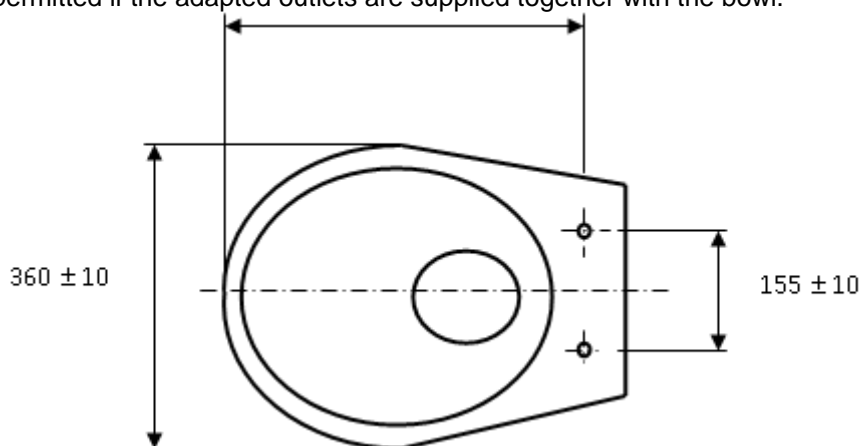


Figure 1
(Dimensions are in mm)

4.5.1.5 Water on the dish of a wash out WC-pan

After each flush, water must be left remaining on the dish of a wash-out WC-pan. Preferably, this must measure at least 160 mm x 120 mm x 5 mm. (l x w x d); d is to be measured at the deepest point of the dish).

4.5.1.6 Renewal of the water trap

The water inside the water trap of the WC-pans shall be adequately renewed after each flush.

This shall be established according to 5.3, to which the principle of the test is to compare the colour intensity between the water out of the water trap after an initiated full flush with that of the reference fluid. The renewal of the water trap is considered sufficient when the colour intensity of the water in the water trap after a full flush equal or lighter is that the colour intensity of the reference fluid.

4.5.1.7 *Finish*

The finishing of the surface of the WC- pan and associated components must be satisfactory and suitable for the purpose.

All parts of the WC-pan which are made from sanitary porcelain and which are visible must be glazed. Also in cases of a WC-pan designed with a closed flushing rim, the rim underneath shall also be properly glazed. No hair-cracks, rough protrusions or granules, large stains or glaze faults may appear on visible places. The other surfaces of the WC-pan including the associated components shall be sound, smooth, well cleaned and free from burrs.

4.5.2 Additional requirements for flushing cisterns of type 1

In addition to clause 4.3 the following requirements are to be met.

4.5.2.1 *Overflow device*

Cisterns shall be provided with a device by which sufficient excess water can be removed.

This shall be established according to clause 5.1. Thereby, the cistern water level may not be allowed to rise more than 20 mm above the overflow level.

4.5.2.2 *Waterline*

The cistern has to be provided with a clearly visible, irremovable waterline, lying at least 20 mm below the over flow level.

4.5.2.3 *Flush volume*

The flush volume indicated by the waterline(s) must meet the values given in the Standard EN 997 clause 5.9. In the flushing cisterns extra waterlines can be given, which indicates other flush volumes. This evaluation guideline refers to all waterlines indicating the flush volumes.

4.5.2.4 *Holes and openings*

With the exception of the overflow device, other holes and openings shall be positioned at such a height that, with a water level, which is 20 mm above overflow level, no leakage occurs from the cistern. This requirement also applies to the holes needed for the fitting of float valves.

4.5.2.5 *Float operated valve*

Float operated valves of Close coupled suites (type 1) shall satisfy Kiwa evaluation guideline BRL K615 "Float operated valves for cisterns". The float operated valve shall be attachable to the cistern and adjustable to all indicated waterlines.

4.5.2.6 *Supply piping*

The portion of pipe upstream of the float operated valve may come into direct contact with the water in a high level and a low level type cistern. The part of the supply piping upstream of the float operated valve however shall:

- not contain any detachable joints on that part, which passes through the water in the cisterns;
- be made of a material, which guarantees a durable protection against the impact of the water in the cisterns.

4.5.2.7 *Cover*

If the cistern is furnished with a cover, this cover shall be attached in an efficient manner to the cistern.

4.5.2.8 *Fixing and fixing means*

Cisterns shall be equipped with fixing means for connecting the cistern to the WC-pan. Before final attachment of the cistern to the WC-pan takes place, it shall be possible to connect to the cisterns these fixing means on a watertight manner. After fixing, the connection between cisterns and WC-pans shall be watertight and free of play.

The necessary materials shall be delivered together. The use of sealing mastic is not permitted.

4.5.2.9 *Operation and working*

With a cistern, which is filled to the highest waterline, the force needed to operate the flush shall not exceed:

- hand operated: 25N;
- foot operated: 100N.

4.5.3 *Items affecting and interruption device*

4.5.3.1 *Items affecting*

Components that are supplied loose and components which are not an integral part of the cistern, and whose purpose is to affect the volume flow, are not permitted.

4.5.3.2 *Interruption device*

A device for the interruption of the volume flow shall be made such that:

- After the necessary operation to initiate the working of the cistern, another operation shall be carried out whereby the interruption of the water discharge is achieved. The volume of discharged water shall be within the value of 3 to 4 litres, established according to 5.2;

or that:

- After operation of the cistern, in order to achieve an interrupted flush, the water discharge is automatically interrupted after at least 3 but not more than 4 litres of water has been discharged. This to be established according to clause 5.2.

4.5.4 *Flushing mechanism*

By delivery cisterns shall be fitted with a flushing mechanism. After the complete flush operation of the cisterns, the flushing mechanism shall close within 4 seconds after finishing the flush.

The flushing mechanisms shall close at a pressure of 1 kPa (10 cm water column).

4.5.5 *Finish*

Cisterns and associated components shall be sound, smooth, well cleaned and free from burrs.

4.6 **Additional requirements Close coupled suites type 2**

The WC suites delivered with a matching flushing cistern shall comply with the requirements mentioned in EN 997 clause 6. In addition to what is stated in clause 4.3 the following requirements applies for Close coupled suites type 2.

4.6.1 *Product requirements close coupled suites with pressure flush valve*

The pressure flush valve of a WC- suite shall comply with the NEN-EN12541 "Pressure flush valves". The WC-pan of the WC-suite shall comply with the requirements mentioned in the EN 997 clause 6 in combination with a pressure flush valve.

5 Test methods

5.1 Test method for determining the volume flow Determination of the discharge of excess through an overflow device

5.1.1 Apparatus

A testing apparatus is required in order to establish the discharge of excess water via an overflow device, whereby water can be added to the cistern and water which flows from the overflow device can be discharged.

5.1.2 Procedure

- Install the Close coupled suite as described in the installation manual.
- Fill the cistern until water just flows from the overflow device.
- Note the water level at which water just begins to flow from the overflow device (overflow level).
- Add water to the cistern at a rate of 0.3 l/s (approx. 1100 l/h).
- When the water in the cistern ceases to rise, note the difference between this water level when it is stabilised and the previously established overflow level.

5.2 Determination of the interrupted flush

5.2.1 Test piece

A complete Close coupled suite of which the flushing cistern is equipped with the float operated valve and the flushing mechanism as mentioned in clause 5.3.2. During the test, no water may be added after the cistern has been brought into operation.

5.2.2 Procedure

5.2.2.1 Procedure for interrupted flush when additional operation is required for discharge

- Install the Close coupled suite according to the installation instructions.
- Fill the cistern up to the highest waterline.
- Operate the cistern and after 1.5 seconds, carry out the extra operation necessary to achieve interruption.
- Refill the cistern up to the applicable waterline and record the volume of water necessary for this operation.

5.2.2.2 Procedure for interrupted flush when discharge can automatically be interrupted

- Install the Close coupled suite according to the installation instructions.
- Fill the cistern up to the highest waterline.
- Activate an interrupted flush.
- Refill the cistern up to the highest waterline and record the volume of water necessary for this.

5.3 Determination renewal of the water trap

5.3.1 Apparatus and necessary equipment

For determination of the renewal of the water trap the WC-pan shall be connected to a suitable flushing device, as mentioned in Annex C of the EN 997, so that it can deliver the required flush volume.

The following items are required:

- 2 vessels of the same shape, each with a volume of at least 1 Litre.
- A pipette capable of dosing drops.
- A precision balance (0.01 grams accuracy).
- A bucket or a watertight cistern with a volume of approx. 12 litres.
- A measurement vessel of 1 litres (indication 10 ml).
- Sufficient quantity of water used for flushing in the test facility.
- A mixture of colouring dye Basacid Blue 756 (earlier product code 1034) with a concentration in water of 150 gr/L.

This dye should be stored in bottle(s) on a cool and dark place. The dye should be stirred / shaken just before use.

Note

Other method(s) for determination of the renewal of the water trap is permissible (i.e. Spectro photo meter), under the condition that the method applied gives the same or a more precise accuracy in the results.

Preparation of test fluid

The coloured fluid to be used for the actual water trap renewal test shall be prepared by making a solution of 5 drops (\pm 0.20 gram) of the dye, diluted into 10 Litres of drinking water.

Remark

It is preferable to prepare the coloured test fluid on the same day as the water trap renewal tests are conducted. This to prevent ageing of the fluid and as result of this in fading of the colour intensity.

5.3.2 Test piece

The same Close coupled suite which is used for other functional examinations.

5.3.3 Procedure

- Connect the Close coupled suite according to the installation instruction on a levelled horizontal plane or vertical plane.
- Clean the WC-pan of the Suite with water including the water trap. Empty the WC-pan and after that, dry the surface of the WC-pan with a clean towel or sponge.
- Fill one beaker with 990 ml water, and include 10 ml of the prepared test fluid, making 1000 ml (1 % solution) in total. Mark the vessels with the letter "R" (= reference fluid)
- Carefully fill the water trap with the coloured test fluid until it starts to overflow via the outlet of the WC-pan.

Note

The coloured test fluid should be poured into the WC-pan from the level and centre of the flush rim of the WC-pan. In case of washout WC-pans the test fluid shall be poured into the WC-pan via the centre of dish.

- Execute a full flush with water from the flushing device at the required flush volume.
- Empty the WC-pans (renewed) water trap content into a bucket or cistern. Stir the water until a homogeneous colour is established.
- Fill the other vessel, marked "M", with 1 Litre of the collected water from the bucket.

- Determine the result of the renewal by comparison of the colour intensity of the liquids in the beakers "R" en "M". If necessary with use of a photo-spectrometer.
- Repeat the procedure steps b. up to and including g two times more.

5.4 Determination of the area of splashing

For establishing the area of splashing the WC-pan shall be connected to a suitable flushing device, as mentioned in Annex C of the EN 997. The flushing device must be adjusted for the highest flush volume (water line).

5.4.1 Apparatus and necessary equipment

Furthermore a board or carton plate is necessary which shows surface changes when wet or allows visual determination of drops of water. This plate shall be furnished with a hole equal to the internal shape of the flushing rim. The plate is to be placed on the WC pan to blank off the flushing rim up to at least 200 mm outside the rim (See figure 2).

5.4.2 Test piece

The same Close coupled suite as mentioned in article 5.2.1, which is used for other functional examinations.

5.4.3 Procedure

- Connect the WC-pan to the required flushing device.
- Adjust the flushing volume to highest water level (if applicable).
- Conduct a full flush in order to fill the water trap.
- Place the board or plate on the WC-pan.
- Conduct a full flush.
- Assess if any splashes are to be seen inside the sectors given in Figure 2.

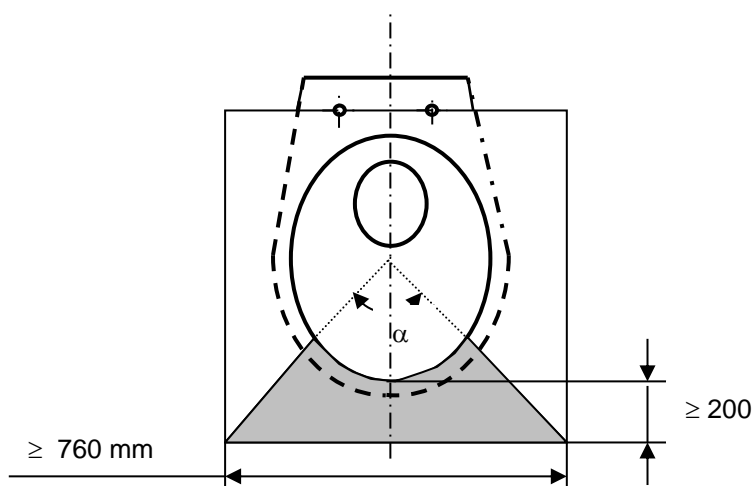


Figure 2

5.5 Clean flush test

5.5.1 Apparatus and necessary equipment

For establishing the clean flushing the WC-pan shall be connected to a suitable flushing device, as mentioned in Annex C of the EN 997.

5.5.2 Test piece

Sample as mentioned in clause 5.3.2, which is used for other functional examinations.

5.5.3 Devices

In order to establish the clean flush performance per full flush operation 20 grams of dry sawdust, (grain dimensions max. 4 x 4 x 2 mm) is necessary.

5.5.4 Procedure

- Connect the WC-pan according to the installation requirements to a flushing device.
- Adjust the required flushing volume (6, 7 or 9 Litres).
- Perform a full flush
- Clean and moister the internal surfaces above the water trap of the WC-pan.
- Sprinkle these surfaces with 20 grams of sawdust.
- Perform a full flush.
- Determine the un-flushed area (to an accuracy of 1.0 cm²)
- Repeat the procedure steps c. up to and including g. 5 times.

5.6 Resistance of the glaze

(FECS= Fédération Européenne des Ceramistes Sanitaires – Publishing date 1961)

5.6.1 General prescription for tests

- a) Drawing of the samples: The samples needed for the single tests are made of the same materials destined for the product of the supply.
- b) Preparation of the test pieces: The test pieces, the shape and dimensions of which are specified under the single tests, are being submitted to such firing conditions as to obtain a ceramic material as much as possible identical to that of the ware of the supply in question.
The surfaces of the test pieces may or may not be coated with glaze according to the specifications of the single tests.

5.6.2 Physical and chemical tests

5.6.2.1 Acid resistance of the glaze

- a) Purpose
The purpose of this test is to check the capacity of the glaze to resist to the action of strong acids without showing alteration of brilliancy.
- b) Preparation of the Test Piece and Execution of the Test:
The test sample is taken from any glazed part of a sanitary fixture and should have the dimensions 75 x 25 x 6 to 10 mm. In case of porous bodies, to prevent the results being affected by the absorption of the body, the test can be carried out on especially prepared samples coated with glaze on all their surfaces. The samples are partially immersed for 16 hours at room temperature in diluted HCl (1 part water - 1 part conc. HCl Sp. Gr. 1.18).
- c) Evaluation of the results:
Note the appearance of each sample. If attack is suspected, the sample should be submitted to the pencil test according to the American Standard ASTM C 282-53.)

5.6.2.2 *Alkali resistance of the glaze*

- a) Purpose
The purpose of the test is to check the capacity of the glaze to resist to the action of strong alkali without showing alteration of brilliancy.
- b) Preparation of the Test Piece and Execution of the Test:
The test sample is taken from any glazed part of a sanitary fixture and should have the dimensions 75 x 25 x 6 to 10 mm. In case of porous bodies, to prevent the results being affected by the absorption of the body, the test can be carried out on especially prepared samples coated with glaze on all their surfaces. The samples are partially immersed in a 5% NaOH solution at 60°C for 30 minutes.
- c) Evaluation of the results:
Note the appearance of each sample. If attack is suspected, the sample should be submitted to the pencil test according to the American Standard ASTM C 282-53.

5.6.2.3 *Resistance of the glaze to various chemical agents*

- a) Purpose:
The purpose of the test is to check the capacity of the glaze to attack by chemical agents.
- b) Preparation of the Test Piece and Execution of the Test:
The test sample is taken from any glazed part of a sanitary fixture and should have the dimensions 75 x 25 x 6 to 10 mm. In case of porous bodies, to prevent the results being affected by the absorption of the body, the test can be carried out on especially prepared samples coated with glaze on all their surfaces. The equipment consists of glass receptacles for the solutions and dry cloths to wipe the samples. All water solutions should be prepared starting from freshly distilled water.

The chemical agents serving as reactives for the tests are as follows:

- Ethyl Alcohol 95%
- Ethyl Alcohol 50%
- Aceton (2-propanon, di-methylketon)
- Trichloroethylene
- Sodium Chloride 10%
- Hydrogen Peroxide 3%
- Citric Acid 10%

The samples are placed each in a separate receptacle containing about 50 cm³ of liquid.

They are dipped to half their length and left therein at room temperature for 7 days.

In the case of water solutions, the samples are rinsed in cold running water and dried with dry cloth. In the other cases, they are simply dried with a dry cloth.

- c) Evaluation of the results:
Note the appearance of each sample. If attack is suspected, the sample should be submitted to the pencil test according to the American Standard ASTM C 282-53.

5.6.2.4 *Spot resistance of the glaze*

- a) Purpose:
The purpose of the test is to check the resistance of the glaze towards solutions having oxidizing or colouring actions, without showing alteration of brilliancy or permanent spots.

- b) Preparation of the Test Piece and Execution of the Test:
The test sample is taken from any glazed part of a sanitary fixture and should have the dimensions 75 x 25 x 6 to 10 mm. In case of porous bodies, to prevent the results being affected by the absorption of the body, the test can be carried out on especially prepared samples coated with glaze on all their surfaces.

The test solutions are respectively:

- Water solution of Potassium Permanganate (10 g/Litre)
- Water solution of Silver Nitrate (10 g/Litre)
- Water solution of Methylene Blue (5 g/Litre)
- Jodine Tincture (13 g/Litre)
- Waterman type blue ink

For each test a few drops of above mentioned solutions are left drying on the spot and then washed off.

- c) Evaluation of the results:
Note the appearance of each sample. If attack is suspected, the sample should be submitted to the pencil test according to the American Standard ASTM C 282-53.

5.6.2.5 *Resistance of the glaze to superheated steam*

- a) Purpose:
The purpose of the test is to check the resistance of the glaze to attack by high temperature water and steam without showing alteration of brilliancy.
- b) Preparation of the Test Piece and Execution of the Test:
The test sample is drawn from any glazed part of a sanitary fixture. It is partially immersed in distilled water in a vessel, which is introduced into an autoclave and then submitted to a steam pressure of 8 kg/cm³ for two hours.
- c) Evaluation of the results:
The glaze should not show any visible loss of brilliancy. If attack is suspected, it should be submitted to the pencil test according to the American Standard ASTM C 282-53.

5.6.2.6 *Resistance of the glaze and body to thermal shocks*

- a) Purpose:
The purpose of the test is to check the capacity of both glaze and body to resist to the action of a specified cycle of thermal shocks without the glaze showing visible signs of crazing and peeling and the body visible cracks.
- b) Preparation of the Test Piece and Execution of the Test:
The minimum number of the test piece should be 5.
The test samples are drawn from any glazed part of a sanitary fixture and should each have the dimensions 10 x 10 cm.
The samples are dipped in oil. The oil is heated up to 130 °C for the vitrified products and up to 110 °C for the porous products and kept at these temperatures for 20 minutes after which they are taken out and immediately put in cold water of about 5 °C temperature. This thermal cycle is repeated 4 times under the same conditions. After each cycle the samples are examined visually or dipped in a solution of 5 g/Litre of Methylene Blue Dye to detect crazing or peeling in the glaze and/or cracks in the body.

- c) Evaluation of the results:
At the end of the test the glaze should not show any crazing or peeling and the body any signs of cracking

6 Marking

6.1 General

The products shall be marked with following indelible marks and indications:

- name or logo of the manufacturer;
- type indication.

or:

For indications and markings see product standard EN997.

6.2 Certification mark

After concluding a Kiwa certification agreement, the certified products shall be indelible marked with the certification mark "KIWA".

6.3 Low consumption

Products with a nominal flush volume of ≤ 6 litres are in relation to this guideline permitted to be indicated with a Kiwa low consumption label. The indication is permitted to be fixed besides on the product also on the packaging



6.4 Regulatory marking

The product is to be marked with the specification as outlined in the European Standard EN997. The markings are permitted to be specified on a removable label.

7 Requirements in respect of the quality system

This chapter contains the requirements which have to be met by the supplier's quality system.

7.1 Manager of the quality system

Within the supplier's organizational structure, an employee who will be in charge of managing the supplier's quality system must have been appointed.

7.2 Internal quality control/quality plan

The supplier shall have an internal quality control scheme (IQC scheme) which is applied by him.

The following must be demonstrably recorded in this IQC scheme:

- which aspects are checked by the supplier;
- according to what methods such inspections are carried out;
- how often these inspections are carried out;
- in what way the inspection results are recorded and kept.

This IQC scheme should at least be an equivalent derivative of the model IQC scheme as shown in the Annex.

7.3 Control of test and measuring equipment

The supplier shall verify the availability of necessary test and measuring equipment for demonstrating product conformity with the requirements in this evaluation guideline.

When required the equipment shall be kept calibrated (e.g recalibration at interval).

The status of actual calibration of each equipment shall be demonstrated by traceability through an unique ID.

The supplier must keep records of the calibration results.

The supplier shall review the validity of measuring data when it is established at calibration that the equipment is not suitable anymore.

7.4 Procedures and working instructions

The supplier shall be able to submit the following:

- procedures for:
 - dealing with products showing deviations;
 - corrective actions to be taken if non-conformities are found;
 - dealing with complaints about products and/or services delivered;
- the working instructions and inspection forms used.

7.5 Other requirements

The supplier shall be able to submit the following:

- the organisation's organogram;
- qualification requirements of the personnel concerned.

8 Summary of tests and inspections

This chapter contains a summary of the following tests and inspections to be carried out in the event of certification:

- **initial investigation:** tests in order to ascertain that all the requirements recorded in the evaluation guideline are met;
- **inspection test:** tests carried out after the certificate has been granted in order to ascertain whether the certified products continue to meet the requirements recorded in the evaluation guideline;
- **inspection of the quality system of the supplier:** monitoring compliance of the IQC scheme and procedures.

8.1 Test matrix

Description of requirement	Article no. of BRL	Tests within the scope of:	
		Pre-certification	Inspection by Kiwa after granting of certificate a,b)
Material			
Material requirements flushing cisterns	4.3.3	X	X
Material requirements WC-pan	4.3.4	X	X
Sanitary porcelain and glaze	4.3.5	X	X
Deviating requirements			
Splashing	4.4.2.1	X	X
Clean flushing	4.4.2.2	X	X
Additional requirements flushing cistern type 1			
Overflow device	4.3.8.1	X	X
Waterline	4.3.8.2	X	X
Flush volume	4.3.8.3	X	X
Holes and openings	4.3.8.4	X	X
Float operated valve	4.3.8.5	X	X
Supply piping	4.3.8.6	X	X
Cover	4.3.8.7	X	X
Fixing and fixing means	4.3.8.8	X	X
Operation and working	4.3.8.9	X	X
Items affecting and interruption device	4.3.9	X	X
Flushing mechanism	4.3.10	X	X

Description of requirement	Article no. of BRL	Tests within the scope of:	
		Pre-certification	Inspection by Kiwa after granting of certificate a,b)
Finish	4.3.11	X	X
Additional requirements type 2 products			
Product requirements close coupled suites with pressure flush valve	4.4.1	X	X
Additional requirements WC-pans			
Holes in a closed rim	4.3.7.1	X	X
Flatness	4.3.7.2	X	X
Fixing	4.3.7.3	X	X
Dimensions	4.3.7.4	X	X
Water on the dish ^{b)}	4.3.7.5	X	X
Renewal water trap	4.3.7.6	X	X
Finish	4.3.7.7	X	X
Marking			
Certification mark	6.2	X	X

Description of requirement	Article no. of EN997	Tests within the scope of:	
		Pre-certification	Inspection by Kiwa after granting of certificate a,b)
Functional requirements type 1 products			
Depth of seal	5.1	X	X
Wash of bowl ^{a)}	5.2.2	X	X
Flushing of toilet paper	5.2.3	X	X
Flushing of 50 small plastic balls ^{b)}	5.2.4	X	X
Over splashing ^{a)}	5.2.5	X	X

Description of requirement	Article no. of EN997	Tests within the scope of:	
		Pre-certification	Inspection by Kiwa after granting of certificate ^{a,b)}
After flush volume	5.2.6	X	X
Water absorption	5.3	X	X
Static load b)	5.4	X	X
Leak tightness	5.5	X	X
Valve reliability	5.6	X	X
Durability class 1 products	5.7	X	X
Functional requirements type 2 products			
Inlet valve	6.1	X	X
Back flow prevention	6.2	X	X
Marking of flushing cistern	6.3	X	X
Warning pipe and overflow provision	6.4	X	X
Flush volume	6.5	X	X
Flush rate	6.6	X	X
Physical endurance and leakage	6.7	X	X
Chemical endurance	6.8	X	X
Solid discharge	6.9	X	X
Paper discharge	6.10	X	X
Liquid contaminant dye retention	6.11	X	X
Wash bowl	6.12	X	X
Depth of seal	6.13	X	X
Static load test ^{b)}	6.14	X	X
Water absorption	6.15	X	X
Durability class 2 products	6.16	X	X

- a) In case the product or production process changes significantly, it must be determined whether the performance requirements are still met.
- b) All product characteristics that can be determined within the visiting time (maximum 1 day) are determined by the inspector or by the supplier in the presence of the inspector. In case this is not possible, an agreement will be made between the certification body and the supplier about how the inspection will take place. The frequency of inspection visits is defined in chapter 9.6 of this evaluation guideline.

8.2 Inspection of the quality system of the supplier

The quality system of the supplier will be checked by Kiwa on the basis of the IQC scheme.

The inspection contains at least those aspects mentioned in the Kiwa Regulations for Product Certification.

9 Agreements on the implementation of certification

9.1 General

Beside the requirements included in these evaluation guidelines, the general rules for certification as included in the Kiwa Regulations for Product Certification also apply. These rules are in particular:

- the general rules for conducting the pre-certification tests, in particular:
 - the way suppliers are to be informed about how an application is being handled;
 - how the test are conducted;
 - the decision to be taken as a result of the pre-certification tests.
- the general rules for conducting inspections and the aspects to be audited,
- the measures to be taken by Kiwa in case of Non-Conformities,
- the measures taken by Kiwa in case of improper use of Certificates, Certification Marks, Pictograms and Logos,
- terms for termination of the certificate,
- the possibility to lodge an appeal against decisions of measures taken by Kiwa.

9.2 Certification staff

The staff involved in the certification may be sub-divided into:

- Certification assessor (**CAS**): in charge of carrying out the pre-certification tests and assessing the inspectors' reports;
- Site assessor (**SAS**): in charge of carrying out external inspections at the supplier's works;
- Decision maker (**DM**): in charge of taking decisions in connection with the pre-certification tests carried out, continuing the certification in connection with the inspections carried out and taking decisions on the need to take corrective actions.

9.2.1 Qualification requirements

The qualification requirements consist of:

- qualification requirements for personnel of a certification body which satisfies the requirements EN ISO / IEC 17065, performing certification activities
- qualification requirements for personnel of a certification body performing certification activities set by the Board of Experts for the subject matter of this evaluation guideline

Education and experience of the concerning certification personnel shall be recorded demonstrably.

Basic requirements	Evaluation criteria
Knowledge of company processes Requirements for conducting professional audits on products, processes, services, installations, design and management systems.	<i>Relevant experience: in the field</i> SAS, CAS : 1 year DM : 5 years inclusive 1 year with respect to certification Relevant technical knowledge and experience on the level of: SAS : High school CAS, DM : Bachelor

Basic requirements	Evaluation criteria
Competence for execution of site assessments. Adequate communication skills (e.g. reports, presentation skills and interviewing technique).	SAS: Kiwa Audit training or similar and 4 site assessments including 1 autonomic under review.
Execution of initial examination	CAS: 3 initial audits under review.
Conducting review	CAS: conducting 3 reviews

Technical competences	Evaluation Criteria
Education	General: Education in one of the following technical areas: <ul style="list-style-type: none"> • Civil Engineering; • Engineering.
Testing skills	General: <ul style="list-style-type: none"> • 1 week laboratory training (general and scheme specific) including measuring techniques and performing tests under supervision ; • Conducting tests (per scheme).
Experience - specific	CAS <ul style="list-style-type: none"> • 3 complete applications (excluding the initial assessment of the production site) under the direction of the PM • 1 complete application self-reliant (to be evaluated by PM) • 3 initial assessments of the production site under the direction of the PM • 1 initial assessment of the production site self-reliant (witnessed by PM) SAS <ul style="list-style-type: none"> • 5 inspection visits together with a qualified SAS • 3 inspection visits conducted self-reliant (witnessed by PM)
Skills in performing witnessing	PM Internal training witness testing

Legenda:

- Certification assessor (**CAS**)
- Decision maker (**DM**)
- Product manager (**PM**)
- Site assessor (**SAS**)

9.2.2 Qualification

The qualification of the Certification staff shall be demonstrated by means of assessing the education and experience to the above mentioned requirements. In case staff is to be qualified on the basis of deflecting criteria, written records shall be kept.

The authority to qualify staff rests with the:

- **PM:** qualification of **CAS** and **SAS**;
- management of the certification body: qualification of **DM**.

9.3 Report initial investigation

The certification body records the results of the pre-certification tests in a report.

This report shall comply with the following requirements:

- completeness: the report provides a verdict about all requirements included in the evaluation guideline;
- traceability: the findings on which the verdicts have been based shall be recorded and traceable;
- basis for decision: the **DM** shall be able to base his decision on the findings included in the report.

9.4 Decision for granting the certificate

The decision for granting the certificate shall be made by a qualified Decision maker which has not been involved in the pre-certification tests. The decision shall be recorded in a traceable manner.

9.5 Layout of quality declaration

The product certificate shall be in accordance with the model included in the Annex.

9.6 Nature and frequency of third party audits

The certification body shall carry out surveillance audits on site at the supplier at regular intervals to check whether the supplier complies with his obligations. The Board of Experts decides on the frequency of audits.

At the time this BRL entered into force, the frequency of audits amounts 2 audit(s) on site per year for suppliers with a quality management system in accordance with ISO 9001 for their production, which has been certified by an acknowledged body (in accordance with ISO/IEC 17021) and where the IQC scheme forms an integral part of the quality management system.

In case the supplier is not in possession of any product certificate (issued by Kiwa or any other accredited certification body), the frequency is increased to 3 visits for the duration of one year.

The audit program on site shall cover at least:

- the product requirements;
- the production process;
- the suppliers IQC scheme and the results obtained from inspections carried out by the supplier;
- the correct way of marking certified products;
- compliance with required procedures;
- handling complaints about products delivered.

For suppliers with a private label certificate the frequency of audits amounts to one audit per two years. These audits are conducted at the site of the private label certificate holder. The audits are conducted at the site of private label holder and focussed on the aspects inserted in the IQC scheme and the results of the control performed by the private label holder. The IQC scheme of the private label holder shall refer to at least:

- the correct way of marking certified products;
- compliance with required procedures for receiving and final inspection;
- the storage of products and goods;
- handling complaints.

The results of each audit shall be recorded by Kiwa in a traceable manner in a report.

9.7 Non conformities

When the certification requirements are not met, measures are taken by Kiwa in accordance with the sanctions policy as written in the Kiwa Regulation for Certification.

The Sanctions Policy is available through the “News and Publications” page on the Kiwa website ["Kiwa Regulation for Certification"](#).

9.8 Report to the Board of Experts

De certification body shall report annually about the performed certification activities.

In this report the following aspects are included:

- mutations in number of issued certificates (granted/withdrawn);
- number of executed audits in relation to the required minimum;
- results of the inspections;
- required measures for established Non-Conformities;
- received complaints about certified products.

9.9 Interpretation of requirements

The Board of Experts may record the interpretation of requirements of this evaluation guideline in one separate interpretation document.

9.10 Specific rules set by the Board of Experts

By the Board of Experts the following specific rules have been defined. These rules shall be followed by the certification body.

10 Titles of standards

10.1 Public law rules

BJZ2011048144
29 juni 2011

Regeling van de Staatssecretaris van Infrastructuur en Milieu¹

10.2 Standards / normative documents

Number	Title
EN ISO/IEC 17020	Conformity assessment - General criteria for the operation of various types of bodies performing inspection
EN ISO/IEC 17021	Conformity assessment - Requirements for bodies providing audit and certification of management systems
EN ISO/IEC 17024	Conformity assessment - General requirements for bodies operating certification of persons
EN ISO/IEC 17025	General requirements for the competence of testing and calibration laboratories
EN ISO/IEC 17065	Conformity assessment - Requirements for bodies certifying products, processes and services
EN 997	WC pans with integral trap
EN 33	Pedestal W.C. Pans with close-coupled flushing cistern – Connecting dimensions
EN 34	Wall hung W.C. Pans Close coupled cistern Connecting dimensions
EN 12541	Pressure flush valves
NEN 3215	Drainage systems inside buildings – Requirements and determination methods
EN 45011	General requirements for certification bodies operating product certification
BRL-K 615	Float operated valves
BRL-K 17504	Vulcanised rubber products for cold and hot drinking water applications
FECS; 1961	Fédération Européenne des Céramistes Sanitaires

Note

In this BRL is referred to the version in force, unless otherwise mentioned.
When no date of issue has been indicated, the latest version of the document is applicable.

¹ Valid from 1 July 2017

I Model certificate (informative)



CERTIFICATE

Product certificate
Kxxxxx/xx

Issued Date

Replaces Kxxxxx/xx

Page 1 of 2

Close coupled suites

STATEMENT BY KIWA

With this product certificate, issued in accordance with the Kiwa Regulations for Certification, Kiwa declares that legitimate confidence exists that the products supplied by

Name supplier

as specified in this product certificate and marked with the Kiwa®-mark in the manner as indicated in this product certificate may, on delivery, be relied upon to comply with Kiwa evaluation guideline

BRL-K621 "Close coupled suites" dated 01.09.2024

which covers the requirements of

EN 997: 2018 "WC pans with integral trap".

Ronald Karel
Kiwa

Publication of this certificate is allowed.

Advice: consult www.kiwa.nl in order to ensure that this certificate is still valid.

Kiwa Nederland B.V.
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Tel. +31 88 998 44 00
Fax +31 88 998 44 20
info@kiwa.nl
www.kiwa.nl

Company
Name supplier
Address
Zip code City
Country
Telephone number
email
internet site

Certification process
consists of initial and
regular assessment of:

- quality system
- product

II Model IQC-scheme (informative)

Inspection subjects	Inspection aspects	Inspection method	Inspection frequency	Inspection registration
Receiving inspection <ul style="list-style-type: none"> •raw materials •fastening material •packing material 7 •purchased articles •Flushing mechanism •Float operated valve 	<ul style="list-style-type: none"> •material •supplier •material •dimensions •material •dimensions •material •dimensions and appearance •supplier •specification •Specification 			
Process control <ul style="list-style-type: none"> •Vitreous China •Glaze •Ceramic pour •Casting products •Dried products •Glaze and marking •Kiln plates •Kiln temperature •Casted products •Mounting surface •Assembly 	<ul style="list-style-type: none"> •FECS Standard •water absorption •resistance acid & alkaline •chemicals and stains •high temperature •temperature fluctuations •viscosity •mixture •appearance •cleanness •Cracks •appearance •completeness •Flatness •temperature / position •Finish •flatness •equality •correct parts used for assembly 			
End product control <ul style="list-style-type: none"> •Appearance •Marking •Flushing cistern •Waterline of flushing cistern •Dimensions •Functional properties 	<ul style="list-style-type: none"> •finish (smooth/ clean) •correctness •location •specification •assembly flush mechanism •assembly float operated valve •overflow level •appearance •method of placing •flush volume •according to European standard •upper surface •holes in the rim •attachment holes •flatness •water on the dish •EN 997 •splashing •clean flushing •renewal water trap 			

Measuring and testing equipment •test equipment •calibration •appliances for testing	• EN 997			
Logistics •internal transport •storage •packaging •preservation •identification or marking of manufactured and semi manufactured products				