



KE 201
April 2013



GASTEC QA

Approval Requirements 201

for the GASTEC QA product certificate for
Gas service lines to residences and buildings



Foreword

These GASTEC QA Approval requirements have been accepted by the Board of Experts of the GASTEC QA Quality Mark, wherein all the relevant parties in the field of gas related products are represented. This Board of Experts also supervises the certification activities and where necessary require the GASTEC QA Approval Requirements to be revised. All references to Board of Experts in these GASTEC QA Approval requirements pertain to the above mentioned Board of Experts.

These GASTEC QA Approval requirements will be used by Kiwa Nederland B.V. in conjunction with the “Kiwa regulations for carrying the GASTEC QA Quality mark”. This regulation details the method employed by Kiwa Nederland B.V. for conducting the necessary investigations prior to issuing the (technical approval-with) product certificate and the method of external control. The inspection frequency is determined by the above mentioned Board of Experts.

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Summary of changes

Paragraph	Change
	Previous edition: KE 201 date June 1, 2010
	The previous edition has undergone a major overhaul. Both structure and content have been changed at many points.
1.1	A general introduction is included
1.2	The MOP has been changed from 100 mbar to 200 mbar. The maximum outside diameter has been changed from 114 mm to 114,3 mm. The scope has been changed: included are complete service lines (from main line to main valve inside the building), as well as parts of the service line. Examples of types of service lines are included. Includes former paragraph 3.2.
1.3	A clause regarding the acceptance of test reports provided by the supplier is included
1.4	(formerly ch.2) Terms, definitions and symbols. A definition of Point of Delivery has been added.
2.1	A general introduction to the product requirements is included
2	Formerly chapter 3, with changes
2.2	Added is the demand (underlined): The product is intended for ground temperatures between -10°C and 30°C, provided not permanently frozen <u>and not permanently above 23 °C</u> .
2.4	Formerly chapter 4 (4.1), with changes
2.5	Formerly chapter 4.2, with changes
2.6	Formerly chapter 4.3, with changes
2.7	Formerly chapter 5, with changes
2.7.3	Formerly paragraph 5.3 and 8.5. Testing of the welds is separated in testing welds for gas bearing parts and for testing welds for not-gas bearing parts.
2.8	Formerly chapter 7, with changes
3	Formerly chapter 8, with changes
3.12	Formerly paragraph 8.12: the impact resistance test relates only to the gas bearing pipes.
3.13 & 3.14	Formerly chapter 6, with changes
4	New: Quality system requirements
5	Summary of tests and inspections included
6	Agreements on the performance of certification included
7	List of referenced documents included
Appendix A	Model of IQC-scheme included
Appendix B	Model Certificate included

1 Introduction

1.1 General

These GASTEC QA Approval requirements replace the GASTEC QA Approval Requirements 201, Service lines for the connection of residences and buildings, dated June 2010.

During the execution of the certification work, Kiwa Nederland B.V. is bound to the “Kiwa regulations for carrying the GASTEC QA Quality mark”.

1.2 Scope

These criteria apply to gas service lines with a maximum outside diameter of 114,3 mm for the connection of residences and buildings with a standard use function. In particular, the area of application also includes systems intended for use in subsiding ground (differential subsidence up to the maximum given in the classification of 2.4) and below the ground water level.

The service lines described in these Approval requirements can be used for new construction and/or renovation. This depends on the construction.

The service lines are not intended for use under special high-risk conditions (for example contaminated soil, very high ambient temperatures, increased fire hazard or in case of horizontal ground movement); additional requirements may be necessary for this.

The maximum operating pressure (MOP) is 200 mbar.

The specific requirements for installation are described in NEN 7244-6, NEN 7244-10 and NEN 2768.

These service lines can be provided as a complete (prefab) product or in parts, such that the system can be custom built on site.

If connections are part of a component, then the connections fall under the scope of these Approval Requirements.

The product requirements are relevant to complete service lines, starting at (but excluding) the tapping saddle at the main line to as far as (but no further than) the point of delivery to the customer, or parts of the service line, but at least including the fastening point.

Figure 1 to figure 3 show three typical situations of service lines.

REMARK: In figures 1,2 and 3 the service line ends at a point of delivery above the ground. Not excluded but not drawn are situations where the service line ends at a point of delivery in the basement or in an underground meter pit.

1.2.1 Situation 1: none or very limited ground subsidence, product class 0/0a. No movable element B

Tube A is a normal gas tube, not intended for ground subsidence, class 0, or for very limited ground subsidence, class 0a (see paragraph 2.4). Gas tube C is mounted in a casing tube. The casing tube and gas tube C can be one item, but not necessarily. The following items, supplied as single items or in combination, fall under the scope of these Approval Requirements:

- tube C (casing tube included if integrated with tube C).
- combination of tube A and tube C.

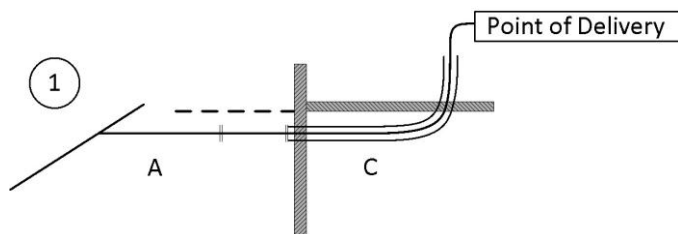


Figure 1: Example of situation 1: service line for class 0 / 0a.

REMARK: The service line (part C) can also run under the exterior beam.

1.2.2 Situation 2: ground subsidence, movable element buried in soil, product class 0/0a, 1 or 2

The service line has a buried movable element B, see figure 2. The movable element is connected with a gas tube C which runs through the façade, under the floor. Gas tube C is mounted in a casing tube. The casing tube and gas tube C can be one item, but not necessarily. Tube A is a normal gas tube, not intended for ground subsidence.

The following items, supplied as single items or in combination, fall under the scope of these Approval requirements:

- movable element B
- combination of tube A and movable element B
- combination of movable element B and tube C (casing tube included if integrated with tube C)
- combination of tube A, movable element B and tube C. In this situation the movable element B should be suitable for ground subsidence, tubes A and C not.

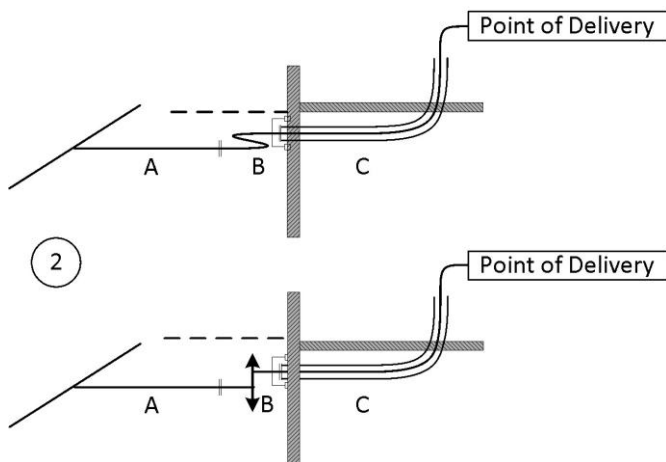


Figure 2: Example of situation 2: service lines for class 0, 1 or 2, with buried movable element

REMARK: The service line (part C) can also run under the exterior beam.

REMARK: If the movable element B is not supplied in combination with tube C, movable element B should be supplied with a fastening point to attach it to the façade or exterior beam of the building. If the movable element B and tube C are supplied as a combination, either B or the gas bearing tube C should be supplied with a fastening point.

1.2.3 Situation 3: ground subsidence, movable element on top of soil in crawl space, product class 0/0a, 1 or 2

The service line has a tube D with a movable part placed under the building on top of the subsiding soil in the crawl space, see figure 3. The casing tube is not drawn in this picture. The casing tube can be part of the tube D. Tube A is a normal gas tube, not intended for ground subsidence.

The following items, supplied as single items or as combination, fall under the scope of these Approval Requirements:

- tube D
- combination of tube A and tube D

The movable part of tube D shall be placed on top of the subsiding soil in the crawl space, so no soil forces due to subsiding ground are applied to the movable part.

REMARK:

In case the same tube can be used for situation 1 (tube C) and for situation 3 (tube D), then the tube shall be marked with two product classes: the product class for situation 1 and the product class for situation 3. Behind each product class marking shall follow an explanation or drawing of the intended use.

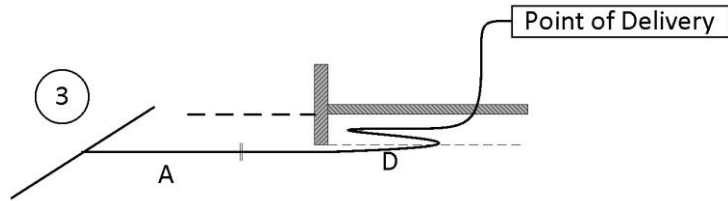


Figure 3: Example of situation 3: service lines for class 0, 1 or 2, with movable element on top of soil

1.2.4 Terms used

Figure 4 shows an example of a service line and the terms used.

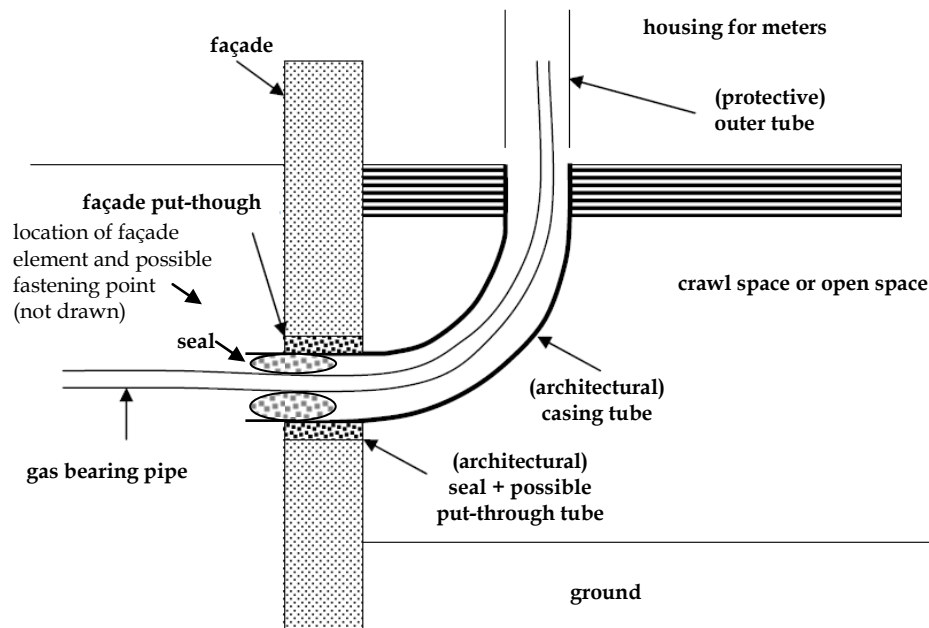


Figure 4: Indication of terms used (construction drawn is a non-normative example)

REMARK: The fastening point can coincide with the seal in the façade element, but the fastening point can also be located further along.

REMARK: The service line can also run under the exterior beam, like in situation 3. In that case the architectural put-through and architectural seal can be omitted.

1.3 Acceptance of test reports provided by the supplier

The rules for acceptance of test reports provided by the supplier are laid down in the Regulations for Product Certification for carrying the GASTEC QA quality mark.

1.4 Terms, definitions and symbols

1.4.1 Service line

Gas pipe from the main line to the point of delivery for the end user. The service line may consist of several parts.

REMARK: The product to be certified may be a complete service line or parts of it, according to the scope of these Approval Requirements (see paragraph 1.2).

REMARK: The main shutoff valve required under NEN 7244-6 is not part of the service line.

REMARK: The tapping saddle referred to in 7244-6 does not fall under the scope of these Approval Requirements.

1.4.2 Casing tube

Non-gas bearing tube installed around a gas pipe.

REMARK: The functional requirements to be set for the casing tube depend on the position and application.

1.4.3 Architectural casing tube

Tube intended to facilitate pushing the service line through the façade of a building.

REMARK: The architectural casing tube referred to in this standard is an architectural provision. This casing tube is usually installed in the foundation and can run as far as the housing for meters.

1.4.4 Movable element

The part of the service line that serves to limit the negative effects of ground subsidence on the correct and safe functioning of the service line to an acceptable level.

1.4.5 Tension-resistant connection

A connection between two pipes or other gas-bearing elements of the pipe system that is at least as strong in the axial direction as the pipe with the lowest tensile strength to be connected.

REMARK: When a tension-resistant connection is used, the strength of the service line is not determined by the connection but by the mechanical properties of the weaker of the two connected pipes or elements.

1.4.6 Ground subsidence

The greatest vertical movement of the ground in which the service line is placed and/or extended, relative to the fastening point.

1.4.7 Fastening point

The furthest upstream point anchored in the building to which the service line downstream from this point can be considered to be connected with no mechanical tension.

1.4.8 Façade element

If present, the part of the service line that is intended to be installed between the (architectural) casing tube and the gas bearing tube.

REMARK:

- The gas-obstructing seal between the gas-bearing tube and the (architectural) casing tube is a necessary part of the façade element.
- The gas-obstructing seal between façade element and the façade does not fall under the scope of these Approval Requirements.
- The fastening point may be part of the façade element.

1.4.9 Façade insert point

Architectural provision intended as an insert point for the service line.

REMARK: In general, the façade insert point will be provided with a casing tube that runs to the metering cupboard in the building. The connection between façade insert point and casing tube is gas obstructing.

1.4.10 Point of delivery

Point of a gas network where the gas is transferred to the user.

1.4.11 Product class

An indication of the resistance against the effects of ground subsidence. See paragraph 2.4.

2 Product Requirements

2.1 General

These Approval requirement includes the functional and constructional requirements and test methods for service lines supplied as a prefab product or a construction package, insofar as these fall within the scope of application of these Approval requirement.

2.2 Local conditions for the application of the product

This product is intended for use in sandy ground, clay and peat, possibly with a limited presence of point loads (stones), installed according to the requirements, soil improvement methods and work methods allowed under NEN 7244-6 or according to a method explicitly described by the manufacturer and assessed in the inspection. The construction is not intended for use in a rock bed. The construction shall be accessible in case of a leak indication and is therefore not intended for use in a situation that is permanently inaccessible.

The product is intended for a initial position no more than 1.7 m below the ground surface and the possible associated groundwater pressure of 17 kPa.

The product is intended for a position in the vicinity of a façade and in ground that is moving relative to the foundation (to a maximum subsidence further specified in this approval requirement, see 2.4). The product is intended for application with a traffic load of "field" conditions (0.5 x curve II of NEN 3650-1 figure C.17). The product is intended for ground temperatures between -10°C and 30°C, provided not permanently frozen and not permanently above 23 °C.

The product is intended for gas supply 1) through a façade that is non-permeable or 2) for gas supply that enters the building under the façade.

The façade should be in acceptable structural and architectural condition, for example for mounting the fastening point, the façade element and/or the architectural gas-obstructing seal.

2.3 Conditions for use of the product

The product is intended for distribution of natural gas (2nd gas family, groups L and H, according to EN 437).

The product is intended for connection to 30 mbar, 100 mbar and 200 mbar networks.

The construction is intended for the gas supply for standard gas appliances. The construction has a capacity and minimum supply pressure (pressure drop) as further specified in this approval requirement.

The product is intended for maintenance free use for a period of at least 30 years. The possibility of bringing the product back up to its intended position ("raising") is not considered to be part of maintenance in this regard.

REMARK: a procedure and associated precautions for bringing the construction back up to its intended position may be further specified by the manufacturer; this is however not tested in this approval requirement.

A service line may be constructed from a number of elements. The class of the element that is connected to the fastening point (the "last" element) determines the maximum subsidence that the total service line can withstand.

REMARK: it is therefore not permitted to add up the allowable subsidence per element.

2.4 General functional requirements

1. The construction shall remain externally gas-tight under nominal operating conditions during the reasonably expected lifespan.
2. The product may not show water infiltration under nominal operating conditions during the reasonably expected lifespan.
3. The product shall, depending on the product class, be resistant against the effects of the maximum ground subsidence specified for the product class in the following table:

Product class	Max. ground subsidence
0	0.05 m
0a	0.20 m
1	0.50 m
2	1 m

4. The maximum allowable pressure drop specified by the manufacturer at maximum capacity may not be exceeded (not even at maximum ground subsidence).

5. If the fastening point is part of the façade element, the façade element shall be secured in a façade without compromising the gas-obstructing properties of the façade, and in case a casing tube is not supplied, have such an external form that standard sealing technology is applicable and sufficient.
6. Regarding connections of the service line:
 - a) In case tube A is included (see figure 1 to figure 3): The product shall be able to be connected to the main line via at least one connection that is specified as standard for The Netherlands, according to NEN 7244-6 Annex B or be provided with a spigot end of standard diameter.
 - b1) In case a movable element B is included (see figure 2): The movable element shall be able to be connected to other parts of the service line (tubes A and C) via connections that are specified as standard for The Netherlands, according to NEN 7244-6 Annex A.
 - b2) In case a combination of a movable element B and tube C is included (see figure 2): The movable element B shall be able to be connected to other parts of the service line (tube A) via connections that are specified as standard for The Netherlands, according to NEN 7244-6 Annex A. The connection between B and C may have a deviating design. Tube C shall be able to be connected to the gas meter assembly via a permissible connection method (see NEN 7244-6 art. 6.1.4 and Annex A).
 - c) In case tube D is included (see figure 3): The tube D shall be able to be connected to other parts of the service line (tube A) via connections that are specified as standard for The Netherlands, according to NEN 7244-6 Annex A. Tube D shall be able to be connected to the gas meter assembly via a permissible connection method (see NEN 7244-6 art. 6.1.4 and Annex A).
7. The gas bearing parts of the product shall be made of materials that are allowable and standardised for gas distribution, or of materials with an equivalent tensile strength, leak tightness and expected lifespan.
8. In case tube C or D is included (see figure 1 to figure 3): If tube C or D is not provided with a casing tube itself, it shall at least facilitate a gas-obstructing feed of the tube into the casing tube.
9. The product shall be resistant against the gas compositions and pressures as described in paragraph 2.3. With regard to the pipe materials used, this can be considered to have been fulfilled with the use of permissible materials under table 1 of NEN 7244-6.
10. The product shall provide for the diversion of (residual) (tension) forces exerted outside the façade to a suitable point on the building or another fixed point relative to the building (fastening point). These forces should remain limited due to the function of a movable element (if present).
In case the movable element B is supplied as a sole component, the movable element B should be supplied with a fastening point in order to divert the forces to the building.
11. If the product is delivered with a corresponding casing tube, the seal between the exterior of the gas bearing pipe and the casing tube shall be gas-obstructing. At the other end of the casing tube (in the meter cupboard), (leakage) gas shall be able to escape freely from the casing tube.
12. If the product provides for bending during installation, the formable part shall be made of materials tested for this and the formable part may not be subject to permanent mechanical forces.

2.5 Composition

Service lines shall be made of plastic components as much as possible. Any metal parts used shall be made of stainless steel, or at least have comparable corrosion resistance.

For copper pipes, see 2.6.6.

Plastic corrugated pipes are not permitted. Metal corrugated pipes are only permitted for product class 0.

REMARK: to be able to allow corrugated plastic for this application, there shall be more insight into the long-term strength and the impact resistance (damage from manual digging with a shovel) of the pipe. Tests for this are conceivable; however their development falls outside the scope of these Approval Requirements.

2.6 Materials

2.6.1 General

The materials used shall be resistant against the gas distributed (see 2.4-7) for an intended lifespan of 30 years (see 2.4-1). Materials shall maintain their function at temperatures between -10°C and 30°C.

2.6.2 Rubber

Rubber seal materials that come into contact with gas shall be resistant against the interaction with the gas compositions as described in paragraph 2.3 and the components that can separate from the gas. These rubber seal materials shall fulfil EN 682, types GAL or GBL.

Rubber seal materials that come into contact with water shall fulfil EN 681-1 Type WK, WC, WG according to the water resistance test from table 2 for 7 days at 70°C.

2.6.3 PE pipes and components

The materials of PE pipe and components shall meet the GASTEC QA Approval Requirement 8 and GASTEC QA Approval Requirement 200 (NEN-EN 1555-2 and NEN-EN 1555-3).

In case a PE casing tube is integrated in the product, the PE casing tube shall meet the EN 1555-2 requirements in articles 4, 5.1, 6.3.2 and table 4 (elongation at break). The casing tube shall have a minimal wall thickness of 1.5 mm.

2.6.4 Impact resistant PVC pipes and components

The materials of impact resistant PVC pipes and components shall meet the materials requirements as stated in GASTEC QA Approval Requirement 10 (NEN 7230) and GASTEC QA Approval Requirement 53 (NEN 7231).

2.6.5 POM components

POM material used in components shall meet ISO 10838-3 Annex A.

2.6.6 Copper pipes

Copper pipes shall meet the GASTEC QA Approval Requirement 5. Copper pipes with a reduced wall thickness shall not be used.

2.6.7 Stainless steel

Corrosion resistant steel shall meet the requirements of EN 10088-3 and contain at least 16% chrome. For corrugated steel pipes, the material shall meet 1.4306, 1.4541, 1.4404, 1.4401 or 1.4571 according to EN 10028-7.

REMARK: copied from EN 15266.

2.6.8 Brass

Brass that comes into contact with the soil shall be resistant against dezincification and meet NEN-EN 12164 CW602N, taking into account the stated temperature limits in case of possible heat treatment.

2.6.9 Multilayer pipes and fittings

Multilayer pipes and associated fittings shall meet NEN-ISO 18225.

2.6.10 PEX pipes and fittings

PEX pipes and fittings shall meet ISO 14531-1, ISO 14531-2 and ISO 14531-3.

2.6.11 Thread sealant

The thread sealant for the threaded connections shall meet GASTEC QA Approval Requirement 31.

2.7 Connections and finishing

2.7.1 Connections

If the inlet and outlet ends of the product are provided with connections, these connections shall be according to NEN 7244-6 Annex A. The connections shall meet the relevant Gastec QA Approval Requirements, or if these are not applicable, the relevant international standards, or if these are not applicable, the requirements as specified by the certification authority. For example:

- Pipe threads where pressure tight joints are made on the threads according to NEN-EN 10226-1.
- Compression fittings for connections of copper pipes according to GASTEC QA Approval Requirement 35.
- Fittings, connectors and components for solder and screw connections according to GASTEC QA Approval Requirement 6.
- Tension resistant connection for PE pipes according to GASTEC QA Approval Requirement 70 (NEN-EN 1555-3).
- Clamped joint according to GASTEC QA Approval Requirement 186.
- PE fittings according to GASTEC QA Approval Requirement 200 (NEN-EN 1555-3).
- PVC tension resistant unions for PE piping systems GASTEC QA Approval Requirement 96 (NEN 7240).

2.7.2 Connections for renovation purposes

Constructions for renovation purposes shall have connections on the inlet and outlet side suitable for pipes as specified by the manufacturer according to standard sizes and standard grades (see 2.6). In case of deviating

materials and deviating sizes, the manufacturer shall indicate the allowable tolerances of the pipe to be connected in the installation instructions.

2.7.3 Welding

If the product consists (partly) of gas bearing parts of PE with welds made by butt welding, these welds shall meet the requirements of NEN 7200.

If the product consists (partly) of parts of PE - not gas bearing, like the casing tube - with welds made by butt welding, these welds shall meet the requirements of the elongation test according to NEN 7200, article 6.2, by elongating a specimen in accordance with ISO 527-2. The visual test of NEN 7200, article 6.1, as mentioned in NEN 7200, article 6.2, shall not be performed. Dirt, cracks or other damages shall not be visible in the welding area. The shapes of the weld beads shall be uniform.

Welding in PEX is not allowable.

2.7.4 Exterior and finishing

The finishing and the exterior of the product shall be visually assessed for the following aspects:

The external surfaces of plastic components shall be free of grooves, pitting, blisters, and indications of burning or cold flow. Transitions in form shall flow smoothly. Spigot and socket ends shall be perpendicular. Metal components shall be free of burrs.

In case of moving connections, the penetration of dirt and sand shall be countered with suitable structural measures.

REMARK: for example using a labyrinth seal.

2.7.5 Constructions that are reshaped upon installation

The following materials for formable pipes are permitted:

- Copper pipe according to GASTEC QA Approval Requirement 5. Copper pipes with a reduced wall thickness shall not be used.
- PE according to GASTEC QA Approval Requirement 8.
- PEX pipe according to ISO 14531-1.
- Multilayer pipe according to ISO/DIS 18225.
- Stainless steel according to NEN-EN 15266 (above-ground only, for class 0 service lines).

2.8 Functional requirements

2.8.1 Dimensions

The product shall satisfy the dimensions as indicated in the drawings from the manufacturer and the stated tolerances at a temperature of 23 ± 2 °C.

The dimensions of the service line connections and/or the gas bearing pipe at the inlet and the outlet of the product shall meet the normative standard dimensions prescribed for the pipe material.

The outside diameter and wall-thickness of any casing tube that is provided shall meet the dimensions specified by the manufacturer. If a façade element is supplied, the outside dimension of the façade element shall meet the dimensions specified by the manufacturer.

Test according to paragraph 3.2.

2.8.2 Gas tightness of the assembled product

The product shall be able to withstand an internal air pressure of 25 ± 2 mbar, 200 ± 15 mbar and 1.5 ± 0.1 bar for at least 15 minutes at 23 ± 2 °C and at -10 ± 2 °C.

Leakage may be a maximum of $50 \text{ cm}^3/\text{h}$ and shall be measured with an accuracy of $\pm 5 \text{ cm}^3/\text{h}$.

Test according to paragraph 3.3.

2.8.3 Gas barrier-effectiveness and water infiltration-resistance of the façade element

If the manufacturer supplies a casing tube, then the façade element shall form a gas barrier between the gas bearing pipe and casing tube at an external pressure of 100 ± 10 mbar. The testing shall be done at 23 ± 2 °C and -10 ± 2 °C. After this test, no leakage may be visible.

Test according to paragraph 3.9.

2.8.4 Strength of welds in PE components

Butt welding shall meet the requirements as specified in paragraph 2.7.3.

Electro fusion connections and corresponding sleeves shall meet the requirements as specified in EN 1555-3.

Welds in gas bearing PEX components are not permitted.

Test according to paragraph 3.4.

2.8.5 Pressure drop

The test is performed according to EN 1555-3 (EN 12117), at the maximum intended deformation of the product. The pressure drop may not be greater than specified by the manufacturer.
Test according to paragraph 3.5.

2.8.6 Resistance against installation forces

After performing the actions described in paragraph 3.6, the product may not be unintentionally deformed or be damaged during installation.

2.8.7 Resistance against ground subsidence

This paragraph is applicable for situation 2 service lines (see figure 2).

After the exposure described in paragraph 3.7, the following shall apply/be determined for the product:

- that the integrity of the product is maintained up to the maximum ground subsidence applicable for the product class;
- what forces are exerted at the fastening point and possible other positions and/or moments that are critical in the opinion of the inspecting institution.

Due to the safety-critical aspect of this product characteristic and the construction-specific character of the characteristic, **a more detailed test protocol** shall be drawn up by the manufacturer of the product. The following items will be described in this test protocol:

- the soil conditions under which the product is exposed to subsidence;
- the geometry around the fastening point;
- the position, direction and axes of the forces and moments to be measured;
- the rate of subsidence, the number of any interim stops and the degree and way in which the soil covering is added.

The test protocol is assessed and approved by the certification institute.

After completion of the tests, the product may not show visible damage or have unforeseen deformations. The fastening point shall be intact.

The maximum residual force on the fastening point may not exceed the specification of the manufacturer (X Y Z direction, any moments, as specified in the protocol).

2.8.8 Long-term strength of the mechanical connections present in the product

This paragraph is applicable for situation 2 service lines (see figure 2).

The fastening point and any other positions that are considered to be critical by the inspecting institution shall be tested for their long-term strength. This is determined by exposure for 1000 h at a temperature of 23 ± 2 °C to tension and/or bending load with a force and moments that are determined in the test according to 3.7.

The tested components shall be undamaged after testing and still perform their mechanical function properly. The gas bearing part shall be gas-tight in accordance with 3.3.

2.8.9 Long-term resistance against soil conditions

If the product includes unprotected metal components or metal components that are protected with a metallic or plastic coating, the product shall be subjected to the test according to paragraph 3.10.

After this test, the product shall be visually inspected for the absence of the following faults:

- corrosion at the location of the seals
- severe corrosion or pitting
- flaking of the covering layer or coating

2.8.10 Resistance against forming

For the part of the product that needs to be reshaped during installation, the material properties of the outer and gas bearing pipes shall meet the following requirements:

For gas bearing copper pipe

Expose the component to the test according to paragraph 3.11.1. After the test, the material properties of the copper pipe with regard to tensile strength, elongation to break and flaring shall meet the GASTEC QA Approval Requirements for annealed copper pipes (KE 5).

After testing, no buckling phenomena may have occurred in the copper pipe or the casing tube. The ovality of the copper pipe may not be greater than 10%.

For gas bearing PE, PEX or multilayer pipe

Expose the component to the test according to paragraph 3.11.2.

During the test, the gas pipe and the casing tube, if present, may not buckle. After completing the test, the part may not show visible cracks or discolouration.

2.8.11 Impact resistance of the gas bearing construction

This requirement relates to the parts of the service line outside the façade of the building. It relates only to the gas bearing pipes. It does not relate to the couplings (or fittings) and telescopic constructions.

Expose the most sensitive parts of the above mentioned components, in the opinion of the certification institute, to an impact test according to paragraph 3.12.

After completion of the test, the gas bearing construction shall be gas tight according to paragraph 2.8.2.

3 Testing methods

3.1 General

Measurements shall be performed at 23 ± 2 °C and/or -10 ± 2 °C, unless otherwise stated.
 Pressures shall be measured using a precision manometer according to NEN 927, class 1.
 The tests shall be done following the scheme below:

Product class	0	0a	1	2
3.2	x	x	x	x
3.3	x	x	x	x
3.4	x	x	x	x
3.5	x	x	x	x
3.6	x	x	x	x
3.7	-	x	x	x
3.8	-	x	x	x
3.9	x	x	x	x
3.10	x	x	x	x
3.11	x*	x*	x*	x*
3.12	x	x	x	x

x = mandatory
 o = optional, at the discretion of the certifier
 - = optional
 *: only for products to be shaped

3.2 Determining correct dimensioning

The dimensions are determined according to prEN ISO 3126 at 23 ± 2 °C, after conditioning for at least 4 hours.
 The determination is not allowed to be done within 24 hours of manufacture.
 Perform the test on 3 specimens.

3.3 Gas tightness of the assembled product

Perform 6 tests on 3 specimens.
 Apply air pressure to the gas bearing part of each specimen of 25 ± 2 mbar, 200 ± 15 mbar and 1.5 ± 0.1 bar respectively. Condition the test pieces for the leakage measurement for 1 h at 23 ± 2 °C. At this temperature, determine the leakage over 15 minutes. The leakage during this period may not exceed $50 \text{ cm}^3/\text{h}$ in any of the three specimens, measured to an accuracy of $5 \text{ cm}^3/\text{h}$.
 Also perform this test at -10 ± 2 °C.

3.4 Strength of welds

Assess the butt welds in PE components according to paragraph 2.7.3.
 Assess the electro fusion weld connections in PE components according to the requirements in table 4 of NEN-EN 1555-3 for decohesive resistance.

3.5 Pressure drop

Determine the pressure drop according to EN 12117 at the flow specified by the manufacturer.
 The resistance factor $\lambda = \Delta P/Q^2$ from the pressure drop and the associated flow Q may not be higher than the resistance factor that follows from the specified $\Delta P(Q)$ from the manufacturer and that is stated in the documentation for the product.

3.6 Resistance against installation forces

Install the product according to the installation instructions in a test façade (if the product is intended for a façade put-through) and secure the product in the prescribed way to the fastening point. Perform the operations specified in the instructions for the verification of the correct and safe installation.
 If the product includes removable connections, perform the operations for the removal and installation of the connections for the maximum allowable number of times indicated by the manufacturer.
 After this is done, the product may not have any unintended deformation or damage.

3.7 Resistance against ground subsidence

This test is applicable for situation 2 service lines (see figure 2).

The product, including fastening point, shall be exposed to subsidence in the heaviest soil conditions that are relevant in the opinion of the certification institute. The conditions under which testing shall be done vary per product. A test protocol will be drawn up by the manufacturer for each product and be presented to the certification institute for approval.

The product shall be secured as specified in the installation instructions with its fastening point to a yoke that is displaced vertically.

REMARK: The deformation is applied by displacing the fastening point relative to the tapping saddle in the ground or relative to another starting point that is equivalent to this according to the protocol. This fastening point is part of a hydraulically movable yoke that travels the maximum vertical displacement according to the classification of the product. Deformation rates will be dependent to an important degree on the type of ground in which the product may be used.

The fastening point shall be provided with the force and moment sensors that are relevant according to the protocol, that continuously measure the forces and moments in the prescribed directions and axes.

REMARK: If the fastening point offers insufficient space to place the sensors, the protocol may prescribe an alternative fastening.

If, in the opinion of the certification institute, there are other critical positions as well, force or moment sensors and possibly displacement or deformation sensors shall be installed.

The test protocol for the specific product shall describe the following items:

1. Deformations and forces

- The deformation to be applied (in terms of direction, speed, maximum length and phasing) between the fastening point and the start point of the product (e.g. the connection at the tapping saddle).
- The forces and moments to be measured at the fastening point.
- How the system of the fastening point, ground and product shall be laid out in detail.

EXAMPLE: If the fastening point is positioned at the façade put-through, the yoke shall be provided with a flat vertical plate that fills the function of the façade or foundation beam. The part of the product that functions as the movable element is placed into a ground bed, possibly together with the fastening point and the yoke.

2. Soil and coverage

- The ground type and method and amount of ground raising that shall be applied at each step of the test.
- The minimum ground coverage to be present above the product.
- What characteristics shall be fulfilled by the soil in terms of density, deformability and strength.
- In any case the yoke shall be lifted at the prescribed speed over the applicable maximum vertical displacement according to the classification of the product in steps of no more than 0.25 m, such that the ground bed is raised by a maximum of 0.25 cm between the steps each time.

3. Methods of inspection the product before, during and after the test

- The methods of inspection the product before, during and after the test shall be described.
- In any case, the product will be dug up after the gas-tightness test and no buckles or inadmissible deformation may be visible.
- After completion of applying the displacement, the gas bearing pipe in the product is tested for gas-tightness at 23 ± 2 °C according to 3.3.

4. Frequency of tests

- How often and what combinations of the conditions described above shall be tested to be able to determine whether the product is adequate with sufficient accuracy.

5. Method of registering and reporting the observed phenomena

- The coordinate system to be used is orthogonal, such that one axis is oriented along the centre line of the gas bearing pipe at the position of the fastening point.
- The forces shall at least be continuously measured during the movement.
- The maximum average forces and moments exerted for a maximum time period of 1 minute are determined as well as the conditions (displacement) at which they occur.

After the test, the product shall meet the requirements stated in paragraph 2.8.7.

3.8 Long-term strength of the mechanical connections present in the product

This test is applicable for situation 2 service lines (see Figure 2).

This test is performed once for each component of the product.

If the component includes the fastening point, the product is secured to the fastening point in the way specified in the installation instructions.

Install the component to be tested in a stable frame and evenly apply a tension and/or bending load with a force that is determined in paragraph 3.7 for 1000 ± 24 h.

The maximum allowable residual force is applied in the most critical direction(s). This is to be assessed by the certification institute.

After exposure, apply air pressure to the tested parts of 25 mbar and 200 mbar. Condition the test pieces for the leakage measurement for 1 h at 23 ± 2 °C. Determine the leakage at this temperature over 15 minutes. During this period, the leakage may not exceed $50 \text{ cm}^3/\text{h}$.

The components tested may not show damage.

After 24 hours the components tested may not show visible deformations that indicate permanent weakening of the components.

3.9 Gas barrier-effectiveness and water infiltration-resistance of the façade element

This test shall be preceded by tests 3.8 (if applicable).

Perform the test on 3 specimens.

Place the test piece in a fluid bath with a temperature of 23 ± 2 °C and -10 ± 2 °C. The test piece shall be fully submerged and shall be positioned at a maximum of 10 cm below the fluid surface. The effective test pressure is obtained by applying to the test piece a partial vacuum of -100 mbar relative to the atmosphere. Maintain this under pressure for 120 ± 5 minutes.

The façade element may not show any leakage. Inspection is done visually (by pouring out any water that may have penetrated).

3.10 Long-term resistance against soil conditions

Expose the product or the metal to the Neutral Salt Spray Test (NSS) according to NEN-EN ISO 9227. The test duration is 168 h.

After completion of the exposure, the component shall be visually inspected. The following deficiencies may not be visibly present:

- corrosion at the location of the seals
- severe corrosion or pitting
- flaking of the covering layer or coating

3.11 Resistance against forming

For the part of the product that shall be reshaped during installation, the material properties of the outer and gas bearing pipe shall meet the following requirement.

3.11.1 For gas bearing copper pipe

Bend the casing tube within the annealed copper part of the pipe by hand over $135 \pm 10^\circ$ over a form with the minimum bend radius indicated by the manufacturer and do this for the number of bends indicated by the manufacturer plus 2. If the length of the annealed part is not sufficient, the available annealed part of the pipe will suffice.

After the test, the copper pipe or the casing tube may not have buckled. The ovality of the copper pipe may not be larger than 10%. Test the pipe for tensile strength, elongation and break and flaring according to the GASTEC QA Approval Requirement 5.

3.11.2 For gas bearing PE, PEX or multilayer pipe

Bend the casing tube within the PE, PEX or multilayer pipe by hand 20 times over $90 \pm 10^\circ$ over a form with the minimum bend radius indicated by the manufacturer. If the length of the pipe is not sufficient, the available part of the pipe will suffice.

After the test, the PE, PEX or multilayer pipe or the casing tube may not have buckled and may not show visual cracks or discolouration upon visual inspection. The ovality of the PE, PEX or multilayer pipe may not be larger than 10%.

3.12 Impact resistance of the gas bearing construction

This test relates to the parts of the service line outside the façade of the building. It relates only to the gas bearing pipes. It does not relate to the couplings (or fittings) and telescopic constructions. In case gas-bearing tubes are provided with a casing tube, the casing tube shall not be removed.

Expose the most sensitive parts of the above mentioned components, in the opinion of the certification institute, to the following impact test:

Condition the component for at least 1 hour in a space at 23 ± 2 °C. Place the component on two V-shaped blocks (apex angle between $145 \pm 30^\circ$). The distance between the blocks ('gap') is 3 cm..

Allow a falling body with a blade with a length of at least 0.1 m and the osculating circle of the blade edge of 0.7 ± 0.2 mm to fall onto the most sensitive part of the component with the blade across the axis of the component. The falling body shall have a weight of 4.75 ± 0.25 kg and a free-fall height of 2.0 ± 0.1 m (intended impact is 95 J).

After completion of the test, the gas bearing construction shall be gas tight according to the gas-tightness test as described in paragraph 3.3 .



Figure 5: Possible designs of test setup for impact resistance.

3.13 Marking

The production year or code, the name of the manufacturer and the Gastec QA word mark, logo or punch mark shall be clearly and permanently inscribed.

REMARK: If NEN 1555-3 or another material-related standard for fittings is applicable, the markings specified therein shall also be inscribed.

The maximum allowable ground subsidence for which the product is classified shall be stated on the product. In case the same tube can be used for situation 1 (tube C in figure 1) and for situation 3 (tube D in figure 3), then the tube shall be marked with two product classes: the product class for situation 1 and the product class for situation 3. Behind each product class marking shall follow an explanation or drawing of the intended use.

At the ends of the product, the dimensioning of the pipes to be connected shall be stated.

REMARK: this applies to the product as delivered. After shortening, the marking of the dimensions may be lost.

REMARK: the marking of the dimensions is preferably a clear, normative indication of dimensions (for example PE 125 SDR 11) or, alternatively, and external diameter plus wall thickness in mm.

3.14 Documentation

Written documentation shall be available for the product. At least the following shall be stated in the documentation:

1. The range of application of the product with statement of the maximum ground movement for which it is suitable.
2. The maximum pressure drop (in Pa or mbar) in the construction, taking into account the possible effect of ground subsidence, at a given maximum capacity selected by the manufacturer (in m³/h).
3. The diameter and the type of the unions and pipe material to be connection to be used.
4. The diameter of the façade put-through in which the construction may be placed or, in the case that no casing tube is provided, the inside diameter and maximum out-of-roundness of the casing tube in which the product may be placed.
5. The minimum length of the façade put-through in which the construction may be placed (see figure 4).
6. The maximum force and moments that will be exerted by the construction on the fastening point.
7. That the product shall be positioned such that the rotation or displacement of movable or flexible parts is not hindered by the presence of underground protrusions of the foundation or otherwise.
8. What connections are not or may be removable and the tools and/or skills that are needed in that case.
9. In case of renovation applications, the requirements that the gas line shall meet in the residence shall be clearly described (dimensions, quality of material, quality and bonding of possible cladding, brackets and play).
10. Installation instructions, in which the necessary actions for installation and their sequence is clearly and unambiguously explained. If special tools or training (possibly certificate) is necessary, this shall be stated in both the documentation and the installation instructions.
11. Whether the product is suitable for being brought back up to the original level ("raising") and if yes, how often and how the unique procedure for this is carried out.
12. That the installation shall meet the requirements of NEN 7244-6.
13. How the correct and safe installation of the product in the field is to be verified.
14. Whether and how the product is to be brought to size or reshaped on site, and if relevant, with what shape ground subsidence is correctly cared for.

Points 13 and 14 shall be documented in installation instructions that are supplied together with each product.

4 Quality system requirements

4.1 General

This chapter contains the requirements that have to be fulfilled by the manufacturer's quality system.

4.2 Manager of the quality system

Within the manufacturer's organisational structure an employee shall be appointed who is in charge of managing the quality system.

4.3 Internal quality control/quality plan

As part of the quality system the manufacturer shall implement an internal quality control schedule (IQC-scheme).

In this IQC-scheme the following shall be demonstrably recorded:

- which aspects are inspected by the manufacturer;
- according to which methods these inspections are carried out;
- how often these inspections are carried out;
- how the inspection results are registered and stored.

This IQC-schedule shall be in the format as shown in the annex. The schedule shall be detailed in such a way that it provides Kiwa sufficient confidence that requirements will be continuously fulfilled.

4.4 Procedures and work instructions

The manufacturer shall be able to submit:

- Procedures for:
 - the handling of non-conforming products;
 - corrective actions in case non-conformities are found;
 - the handling of complaints regarding the products and / or services supplied;
 - the work instructions and inspection sheets in use
- instructions for packaging and closing off of products during storage and transport.

4.5 Other Quality system requirements

The quality system of the production location shall be ISO 9001 certified. The ISO 9001 quality system may be combined with the IQC scheme.

5 Summary of tests and inspections

This chapter contains a summary of tests and inspections to be carried out during:

Initial evaluation: the investigation necessary in order to determine whether all requirements of the evaluation guideline are fulfilled,

Inspection visit: the surveillance inspections carried out after issue of the certificate in order to determine whether the certified products continuously fulfil the requirements of this evaluation guideline. The inspections are carried out according to the frequency indicated.

Inspection of the quality system: inspection with regard to the correct implementation of the IQC-schedule and procedures.

5.1 Test matrix

Description of requirement	Clause guideline or standard	Test within the scope of		
		Initial evaluation tests	Surveillance by CI after issue of the certificate ¹⁾	
			Inspection ²⁾	Frequency
Materials	2.6			
Rubber	2.6.2	X Statement/certificate manufacturer	X	Every visit
PE pipes and components	2.6.3	X Statement/certificate manufacturer	X	Every visit
Impact resistant PVC pipes and components	2.6.4	X Statement/certificate manufacturer	X	Every visit
POM components	2.6.5	X Statement/certificate manufacturer	X	Every visit
Copper pipes	2.6.6	X Statement/certificate manufacturer	X	Every visit
Stainless steel	2.6.7	X Statement/certificate manufacturer	X	Every visit
Brass	2.6.8	X Statement/certificate manufacturer	X	Every visit
Multilayer pipes and fittings	2.6.9	X Statement/certificate manufacturer	X	Every visit
PEX pipes and fittings	2.6.10	X Statement/certificate manufacturer	X	Every visit
Thread sealant	2.6.11	X Statement/certificate manufacturer	X	Every visit
Connections and finishing	2.7			
Connections	2.7.1	X Statement/certificate manufacturer	X	Every visit
Connections for renovation purposes	2.7.12.7.2	X Statement/certificate manufacturer	X	Every visit
Welding	2.7.3	X	X	Every visit
Exterior and finishing	2.7.4	X	X	Every visit
Constructions that are formed upon installation	2.7.5	X		
Functional requirements	2.8			
Dimensions	2.8.1	X	X	Every visit

Gas tightness of the assembled product	2.8.2	X	X	Every visit
Gas barrier-effectiveness and water infiltration-effectiveness	2.8.3	X		
Strength of the welds	2.8.4	X	X	Every visit
Pressure drop	2.8.5	X		
Resistance against installation forces	2.8.6	X	X	Once a year
Resistance against ground subsidence	2.8.7	X		
Long-term strength mechanical connections	2.8.8	X	X	Once a year
Long-term resistance against soil conditions	2.8.9	X		
Resistance against forming	2.8.10			
For gas bearing copper pipe	2.8.10	X	X	Once a year
For gas bearing PE, PEX or multilayer pipe	2.8.10	X	X	Once a year
Impact resistance of the gas bearing construction	2.8.11	X		
Marking	3.13	X	X	Every visit
Documentation	3.14	X	X	Every visit

- 1) In case the product or production process changes significantly, the performance requirements shall be determined again with respect to paragraph 13 of the "Kiwa regulations for product certification".
- 2) All product properties 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.

5.2 Evaluation of the quality system

During each inspection visit the quality system of the supplier shall be examined and evaluated.

5.3 Frequency of external audits

The frequency of external audits is set at 2 audits per year at the production location and/or supplier.

6 Agreements on the performance of certification

6.1 General

This chapter contains the by the Board of Experts elaborated agreements on the performance of certification by Kiwa.

6.2 Certification staff

The staff involved in the certification process is sub-divided into:

- Certification engineers: in charge of carrying out the pre-certification tests and assessing the reports of the inspectors;
- Inspectors: in charge of carrying out external inspections at the supplier's works;
- Decision-makers: in charge of taking decisions in connection with the pre-certification tests performed, continuing the certification in connection with the inspections performed and taking decisions with regard to corrective actions.

6.3 Qualification requirements for executive staff of CI that fulfil the requirements of EN 45011

The qualification of the executive staff of a CI shall fulfil the requirements of EN 45011.

The way qualification of the staff is performed shall be described in the quality manual of the CI.

EN45011	Auditor (A) pre-certification tests and inspections of companies	Inspector (B) factory, field & project visits and follow-up inspections	Decision maker (C) person deciding on granting of certificate
1 Education, general	Relevant tech. thinking and working level comparing to Bachelor Internal training in certification and Kiwa policies Training in audit skills	Tech. thinking and working level at vocational education (intermediate level) Internal training in certification and Kiwa policies Training in audit skills	Thinking and working at Bachelor level (2) Internal training in certification and Kiwa policies Training in audit skills
2 Education, specific	Training geared towards this guideline Specific courses and training (knowledge and skills)	Training geared towards this guideline Specific courses and training (knowledge and skills)	not applicable
3 Experience, general	1 year of relevant working experience with a minimum of 4 tests of which: 1 complete pre- certification test independently, under supervision	1 year of relevant working experience with a minimum of 4 tests, 1 of which independently, under supervision	4 years of working experience, with a minimum of 1 year of experience with certification
4 Experience, specific	Detailed knowledge of certification and 4 tests relating to this specific guideline or to guidelines which are related to each other.	Detailed knowledge of certification and 4 tests relating to the specific guideline or to guidelines which are related to each other	Basic knowledge of the specific certification

6.4 Qualification requirements for executive staff of a CI that are in addition set up by the Board of Experts for the subject of this evaluation guideline

No additional requirements are set up by the Board of Experts.

6.5 Qualification

Certification staff shall be demonstrably qualified by evaluation of education and experience of the above-mentioned requirements. In case qualification takes place on the basis of other criteria, then this has to be recorded in writing.

The authority for qualification rests with:

Decision-makers: qualification of the certification experts and inspectors;

Management of the certification body: qualification of the decision-makers.

7 List of referenced documents

7.1 Standards/ normative documents

All normative references in this Approval Requirements refer to the editions of the standards as mentioned in the list below.

Sorted by number:

Gastec QA KE 5: 2010	Copper pipes
Gastec QA KE 6: 2012	Plumbing fittings with ends for capillary soldering and/or thread connections
Gastec QA KE 8: 2012	Polyethylene Pipes for Carrying Gaseous Fuels
Gastec QA KE 31 -3: 2012	Sealing materials for metallic threaded joints in contact with 1st, 2nd and 3rd family gases and hot water – Part 3: Unsintered PTFE
Gastec QA KE 31 -2: 2012	Sealing materials for metallic threaded joints in contact with 1st, 2nd and 3rd family gases and hot water – Part 2: Non-hardening jointing compounds
Gastec QA KE 31 -1: 2012	Sealing materials for metallic threaded joints in contact with 1st, 2nd and 3rd family gases and hot water – Part 1: Anaerobic jointing compounds.
Gastec QA KE 35: 2012	Compression fittings for joining copper pipes
Gastec QA KE 70: 2012	Mechanical fittings for polyethylene piping systems for the supply of gaseous fuels. Thermoplastic fittings and metal fittings for pipes of nominal outside diameter less than or equal to 63 mm
Gastec QA KE 168: 2012	Zelfsluitende gaskleppen voor het gasloos aanboren en het gasloos plaatsen van gasblazen
Gastec QA KE 198: 2007	Multilayer pipe systems for indoor gas installations with a maximum operating pressure up to and including 5 bar
Gastec QA KE 200: 2012	Fusion fittings and saddles made from Polyethylene (PE)
NEN-EN 437:2002 + A1: 2009	Test gasses – test pressures – appliance categories
NEN-EN-ISO 527-2: 1993 + C1: 1994	Plastics. Determination of tensile properties. Part 2: test conditions for moulding and extrusion plastics
NEN-EN 682: 2002	Elastomeric seals – materials requirements for seals used in pipes and fittings carrying gas and hydrocarbon fluids
NEN 927: 1963	Pressure gauges, Testing and gauging
NEN-EN 1555-3: 2010	Plastics piping systems for the supply of gaseous fuels – Polyethylene (PE) – Part 3: Fittings
NEN-EN 1555-2: 2010	Plastics piping systems for the supply of gaseous fuels - Polyethylene (PE) - Part 2: Pipes
NEN 2768: 2005	Meter cupboards and their structural provisions into dwellings
NEN-EN-ISO 3126: 2005	Plastics piping systems : Plastics components - determination of dimensions
NEN 3650-1: 2003 + A1:2006	Requirements for pipeline systems – Part 1: General – Quire 1 to 6.
NEN-EN 7200: 2004	Plastic Pipelines for the transport of gas, drinking water and waste water – Butt welding of PE pipes and fittings of PE 63, PE 80 and PE 100.
NEN 7230: 2011	Plastic piping systems for gas supply – Pipes of high-impact poly(vinylchloride)(PVC-HI) – Requirements and test methods
NEN 7231: 2011	Plastic piping systems for gas supply – Pipes of modified poly(vinylchloride)(modified PVC) – Requirements and test methods
NEN 7244-10: 2010	Gas supply systems – Pipelines for maximum operating pressure up to and including 16 bar – Part 10: Specific functional requirements for housing for installations and housing for meters with a maximum inlet pressure of 100 mbar and a maximum design capacity of 650 mn 3/h
NEN 7244-7: 2005 + A1: 2009	Dutch edition on base of NEN-EN 12327 – Gas supply systems – Pipelines for maximum operating pressure up to and including 16 bar – Part 7: Specific functional requirements for strength- and tightness testing and for commissioning and decommissioning of gas distribution pipelines
NEN 7244-6: 2005	Gas supply systems - Pipelines for maximum operating pressures up to and including 16 bar - Part 6: Specific functional requirements for service lines

NEN 7244-1: 2003	Dutch edition on base of NEN-EN 12007-1 - Gas supply systems - Pipelines for maximum operating pressure up to and including 16 bar - Part 1: General functional recommendations
NEN 7240: 2011	Plastics piping systems for gas supply – Tensile resistant couplings of high-impact poly(vinylchloride) (PVC-HI) - Requirements and test methods
NEN-EN ISO 9227: 2006	Corrosion tests in artificial atmospheres – Salt spray tests
NEN-EN 10226-1: 2004	Pipe threads where pressure tight joints are made on the treads - Part1: Taper external threads and parallel internal threads - Dimensions, tolerances and designation
EN 12117:1997	Plastics piping systems - Fittings, valves and ancillaries - Determination of gaseous flow rate/pressure drop relationships
ISO 14531-1:2002	Plastics pipes and fittings -- Crosslinked polyethylene (PE-X) pipe systems for the conveyance of gaseous fuels -- Metric series -- Specifications -- Part 1: Pipes
NEN-EN 15266:2007	Stainless steel pliable corrugated tubing kits in buildings for gas with an operating pressure up to 0,5 bar
NEN-ISO 18225: 2008	Plastics piping systems - Multilayer piping systems for outdoor gas installations - Specifications for systems
EN 45011:1998	General requirements for bodies operating product certification systems
EN 681-1: 1996	Elastomeric seals. Material requirements for pipe joint seals used in water and drainage applications. Part 1: vulcanized rubber

7.2 Replacement(s) of standard/ normative documents

Sorted by number:

Old Document

Replaced by

Replacement's title

-

-

-

Appendix A: Model IQC-scheme or frame-IQC-scheme

Subject	Aspect	Method	Frequency	Registration
Incoming control supplied materials				
Metallic materials	Material data sheets Material Certificates (preferably to EN 10204 type 3.1) Appearance Dimensions			
Plastic materials	Material data sheets (preferably to EN 10204 type 3.1) Density Melt Flow Rate			
Rubber	Material data sheets (preferably to EN 10204 type 3.1) Shore hardness Appearance Dimensions			
Production process				
Procedures	Manufacture Applied inspection methods Inspection frequency Registration and Recording inspection results.			
Work instructions				
Used apparatus				
Finished product inspection				
	Applied inspection methods Inspection frequency Registration and recording inspection results.			
Status of measuring and test equipment				
	List of used measuring and test equipment Calibration and maintenance reports			
Logistics				
	Internal transport Package Storage Identification Marking			
Procedure non conforming				
	Registration and Recording Settlement			

Subject	Aspect	Method	Frequency	Registration
Complaints procedure	Registration and Recording Settlement			

Appendix B



Partner for progress

Number	Replaces	--
Issued	Scope	KE 201
Report number	Page	
Contract number		

Product Certificate

Service lines for the connection of residences and buildings

Based on pre-certification tests as well as periodic inspections by Kiwa Nederland B.V., the products referred to in this certificate and marked with the GASTEC QA mark, supplied by

Manufacturer

may, on delivery, be relied upon to comply with the GASTEC QA Approval Requirement 201, Gas service lines for connection of residences and buildings.

Bouke Meekma
Kiwa

This certificate is issued by Kiwa Nederland B.V. in conjunction with the "Kiwa Regulations for carrying the GASTEC QA quality mark".

This certificate consists of .. pages.
Publication of the certificate is allowed.

Company

.....
.....
.....
P.O. Box
.....
www.....

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F



Certificaat

Kiwa Nederland B.V.
Wilmersdorf 50
P.O. Box 137
7300 AC APELDOORN
The Netherlands
Tel.+31- 55 539 33 55
Fax +31- 55 539 36 76
www.kiwa.nl



Gas service lines for the connection of residences and buildings

PRODUCT SPECIFICATION

APPLICATION AND USE

Gas service lines for the connection of residences and buildings for low pressure natural gas distribution and suitable for stable and subsiding ground

MARKING

- The products are marked with the GASTEC QA word mark, logo or punch mark.
- Name of the manufacturer
- Production year or code
- Allowable ground subsidence at the location of the façade
- The dimensions of the pipes to be connected to the ends of the product.

Place of the mark:

- On the product.

Method of marking:

- Permanent marking.
-

RECOMMENDATIONS FOR CUSTOMERS:

1. Check at the time of delivery whether:
 - 1.1 the manufacturer or supplier has delivered in accordance with the agreement;
 - 1.2 the mark and the marking method are correct;
 - 1.3 the products show no visible defects as a result of transport etc.
2. If you should reject a product on the basis of the above, please contact:
 - 2.1 **Manufacturer**
and, if necessary,
 - 2.2 Kiwa Nederland B.V.
3. Consult the producer's processing guidelines for the proper storage and transport methods.
4. Check whether this certificate is still valid by consulting the Kiwa Nederland BV or the Kiwa website.