Version
May 2026

English version

Approval requirement 197

Corrugated stainless steel piping systems for indoor gas installations

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GASTEC

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Preface Kiwa

This approval requirement (AR) is approved by the Board of Experts (BoE) GASTEC QA, in which relevant parties in the field of gas related products are represented. This Board of Experts supervises the certification activities and where necessary require the GASTEC QA approval requirement to be revised. All references to Board of Experts in this GASTEC QA approval requirement pertain to the above-mentioned Board of Experts.

This AR will be used by Kiwa Nederland BV in conjunction with the GASTEC QA general requirements and the KIWA regulations for certification.

In this AR is established which requirements a product and the requestor/ certificate holder of the GASTEC QA product certificate should meet and the matter to which Kiwa evaluates this.

Kiwa has a method which is established in the certification procedure for the execution of:

- The investigation for provisioning and maintaining a GASTEC QA product certificate based on this AR.
- The periodic evaluations of the certified products for the purpose of maintaining a provided GASTEC QA product certificate based on this AR.

Approved by the Board of Experts: 01/05/2026

Accepted by Kiwa Nederland B.V.: 04/05/2026

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1 Introduction

1.1 General

This GASTEC QA approval requirement (AR) in combination with the GASTEC QA general requirements, is applied by Kiwa as the basis for the issuing and maintaining the GASTEC QA product certificate for corrugated stainless steel piping systems for indoor gas installations.

With this product certificate, the certificate holder can demonstrate to his or her customers that an expert independent organization monitors the production process of the certificate holder, the quality of the product and the related quality assurance.

Next to the requirements established in this AR and the general requirements, Kiwa has additional requirements in the sense of general procedural requirements for certification, as laid down in the internal certification procedures.

This GASTEC QA approval requirement replaces the version of September 2020.

List of changes:

- The approval requirement is fully textually reviewed.
- The MOP has been adjusted in line with EN 15266.
- The diameter range has been adjusted in line with EN 15266.
- The chapter division has been adjusted.
- The list of reference standards has been adjusted.

The product requirements have not changed.

1.2 Scope

This approval requirement relates to plastic-coated flexible and pliable corrugated stainless-steel pipes and matching tensile resistant fittings for gas installations in residences and buildings for the transport of gaseous fuels of the 1st, 2nd and 3rd family of gasses according to EN 437. The products are provided in the diameter range of DN 10 up to and including DN 50. The maximum admissible operating pressure is 2 bar for DN 10 to DN 25 (Class 2), the maximum admissible operating pressure is 0.5 bar for DN 10 to DN 50 (Class 1). The system is intended for indoor use at operating temperatures ranging from -20 °C to 60 °C.

2 Definitions

In this approval requirement, the following definitions are applicable:

Board of Experts (BoE): The Board of Experts GASTEC QA.

End-load resistance: Combination of component and joint design and characteristics such that the connection has a minimum strength, in accordance with the standard/approval requirement appropriate to that kind of connection technique.

Full-end-load resistance: Combination of component and joint design and characteristics such that under any load the plastic pipe will fail first.

Maximum operating pressure (MOP): Maximum pressure that a component is capable of withstanding continuously in service under normal operating conditions.

See also the definitions mentioned in the GASTEC QA general requirements.

3 Material and product requirements

This chapter contains the material and product requirements that the raw materials, materials and products used shall meet.

3.1 General

Corrugated stainless steel piping systems shall meet the requirement of EN 15266: “Stainless steel pliable corrugated tubing kits for gas installation pipework with an operating pressure up to 0,2 MPa (2 bar)”. In addition, the requirements below shall be met.

3.2 Appearance

The surface of the stainless-steel pipe shall be smooth both internally and externally and shall not show any mill scale, pitting, loose oxide layers or acid residues. The pipe ends shall be smooth and flat.

3.3 Tensile-resistant couplings

The surfaces of the full-end-load-resistant couplings shall be smooth both internally and externally and shall show no blisters, pitting, notches or other defects. Sharp transitions that may have a notching effect shall be avoided. When assembling the tensile-resistant coupling, the stainless-steel pipe and in particular the welded seam shall not tear. Fitting tools and aids shall not damage the pipe and tensile-resistant fitting.

3.3.1 Dimensions tensile-resistant couplings

No requirements are laid down for the dimensions of the connection of the full-end-load-resistant couplings with the corrugated stainless-steel pipe. The dimensions of the tensile-resistant couplings and the admissible tolerances shall be in accordance with the manufacturer’s specifications and shall be given on drawings.

If the fitting features any spanner faces, these shall comply with ISO 272. Moreover, the height of the spanner face shall comply with the values given in table 1.

Spanner width (in mm)	Up to 22	24 and 27	30 and 34	36 and 41	46 and 50	55 up to and incl. 75
Minimum height of spanner face (in mm)	4	5	6	7	8	9

Table 1: heights of spanner faces

3.4 Connections

It is permitted to provide one end of the end-load or full-end-load-resistant fitting with one of the following connections. The connection shall comply with the relevant requirements or standards.

- Gas treads according to ISO 7-1 type R or Rp. The threads shall be smooth and have rounded crests and roots.
- Compression fittings for joining copper pipes according to GASTEC QA approval requirement 35.
- Press fittings for joining copper pipes according to GASTEC QA approval requirement 186.
- Plumbing fittings with ends for capillar soldering and/or thread connections according to GASTEC QA approval requirement 6.
- Union couplers according to NEN 2541, 2543, 2544, 2545 and NPR 7028.

3.5 Sealing materials

3.5.1 Rubber sealings

If rubber sealings are used, they shall comply with EN 549. The seals shall be minimally of temperature class A2 according to EN 549.

3.5.2 Other sealing materials

Other sealing materials used shall be in accordance with GASTEC QA approval requirement 31-1, 31-2 or 31-3 (anaerobic sealing, non-hardening sealing or PTFE tape).

4 Performance requirements and test methods

In addition to the requirements of EN 15266 the following requirement shall be met.

4.1 Resistance to high temperatures

The corrugated stainless steel piping system (including protection/isolation) should be resistant to a radiation heat of 10 kW/m^2 for 30 minutes. The leakage shall be ≤ 5 l/h after testing.

4.1.1 Test method

The test shall be performed at a temperature of 20 ± 5 °C. The test samples shall be conditioned at least 24h before testing at a temperature of 20 ± 5 °C en humidity of 60 % ± 20 %.

The test is performed in a horizontally test equipment as shown in figure 1. The leakage shall be measured in accordance with Annex A of EN 1775: 2007.

The test sample shall be mounted in the test equipment without stress or tension on the test sample, see figure 1.

Before the start of the high temperature test, the sample is tested on leakage at 200 mbar for 5 minutes. Record the leakage value (l/h).

Expose the test sample during 30 minutes to a heat radiation of 10 kW/m^2. The distance between the heating cup and the sample shall be calculated with the data on the calibration file of the heating cup.

Determine the leakage after the high temperature test during 5 minutes at 200 mbar. Record the value (l/h).

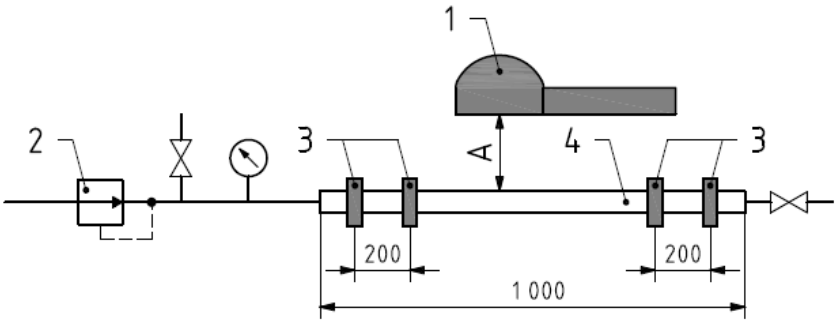

Figure 1: test equipment for high temperature test

1 heat cup
2 measuring system as described in appendix A of EN 1775
3 mounting brackets
4 test sample
A distance between heat cup and surface of the assembled component (for example the outside of a casing)

In case of fittings the test shall be performed with the use of a pipe which fit the fitting according to the installation manual of the manufacturer. The pipe is mounted on both ends of the fitting.

5 Marking and instructions

5.1 Marking

The marking of the pipe and fittings shall be in accordance with EN 15266 paragraph 6.2 and shall additionally be marked with:

- GASTEC QA, GASTEC QA logo or punch mark.

5.2 Instructions

The supplier shall provide user instructions in the Dutch language and in the language of the country in which the product will be used in accordance with EN 15266, paragraph 6.1. These instructions shall have the following additional information included:

- A confirmation stating which combination of coated corrugated stainless-steel pipe and tensile-resistant fitting can be used.
- The fitness for repeated assembly of the fitting.
- The minimum bending radius.
- A curve describing the relation between airflow and pressure loss per meter pipe.
- A curve describing the relation between airflow and pressure loss of a pipe system containing a straight fitting, one meter pipe and an elbow 90° fitting.

6 Quality system requirements

The requirements for the quality system are described in the GASTEC QA general requirements. An important part of this are the requirements for drawing up a risk analysis (e.g., an FMEA) of the product design and the production process in accordance with chapters 3.1.1.1 and 3.1.2.1. This risk analysis shall be available for inspection by Kiwa.

7 Summary of evaluation

This chapter contains a summary of the evaluation to be carried out during:

- The initial product assessment;
- The periodic product verification;

7.1 Evaluation matrix

Description of requirement	Clause EN 15266	Investigation within the scope of		
		Initial product assessment	Product verification	
			Inspection	Frequency
Product requirements	**4**			
General	4.1	X	X	Once a year
Materials	4.1.2	X	X	Once a year
Cover, PLT fittings and PLT supports	4.1.3	X	X	Once a year
Nominal size DN, wall thickness and pressure drop	4.2	X	X	Once a year
Threads	4.3	X	X	Once a year
PLT fittings	4.4			
General	4.4.1	X	X	Once a year
Stress corrosion	4.4.2	X		
Dezincification	4.4.3	X		
Seals	4.5	X	X	Once a year
Supports	4.6	X	X	Once a year
Electrical conductivity requirements	4.7	X	X	Once a year
Cover	4.8	X	X	Once a year
Additional protection	4.9	X		
Environment	4.10	X		
Performance requirements	**5**			
Tightness test	5.2	X	X	Once a year
Dimensional check	5.3	X	X	Once a year
Bending performance	5.4	X	X	Once a year
Crushing resistance	5.5	X	X	Once a year
Stability under pressure	5.6	X		
Wear resistance of the outer cover	5.7	X		
Structural strength	5.8	X	X	Once a year
Impact resistance	5.9	X		
Penetration resistance	5.10	X		
Resistance to pull out	5.11	X	X	Once a year
Chemical resistance	5.12	X		
Low temperature resistance	5.13	X		
Ageing	5.14	X		
Tightness in case of fire	5.15	X		
Reaction to fire	5.16	X		
Electrical conductivity	5.17	X	X	Once a year
Pressure drop	5.18	X		
Maximum load for admissible deformation	5.19	X		

Description of requirement	Clause EN 15266	Investigation within the scope of		
		Initial product assessment	Product verification	
			Inspection	Frequency
Marking and instructions	**6**			
Instructions	6.1	X	X	Once a year
Marking, labelling and packaging	6.2	X	X	Once a year
Additional GASTEC QA requirements				
General	3.1	X	X	Once a year
Appearance	3.2	X	X	Once a year
Tensile resistant fittings	3.3	X	X	Once a year
Connections	3.4	X	X	Once a year
Sealing material	3.5	X	X	Once a year
Resistance to high temperatures	4.1	X		
Marking	5.1	X	X	Once a year
Instructions	5.2	X	X	Once a year

8 List of referenced documents and source

8.1 Standards/ normative documents

Number	Title	Version *
EN 549	Rubber materials for seals and diaphragms for gas appliances and gas equipment	2019 + A2 2024
EN 1775	Gas supply - Gas pipework for buildings - Maximum operating pressure less than or equal to 5 bar - Functional recommendations	2007
EN 15266	Stainless steel pliable corrugated tubing kits in buildings for gas with an operating pressure up to 0,2 MPa (2 bar)	2025
ISO 7-1	Pipe threads where pressure-tight joints are made on the threads, dimensions, tolerances and designation	1994 / Corr 2007
ISO 272	Fasteners: widths across flats for hexagon products	1982
NEN 2541	Fittings and connections for gas conduits	1967
NEN 2543	Fittings for soldering gas conduits	1967
NEN 2544	Coupling nuts for fittings for gas and water conduits	1967
NEN 2545	Packing rings for fittings with gas conduits	1967
NPR 7028	Gasmeters – Dimensions and connections	2022
GASTEC QA Approval requirement 6	Plumbing fittings with ends for capillar soldering and/or thread connections	
GASTEC QA Approval requirement 31-1	Sealing material for metallic threaded joints. part 1: anaerobic jointing compounds	
GASTEC QA Approval requirement 31-2	Sealing materials for metallic threaded joints. Part 2: Non-hardening jointing compounds	
GASTEC QA Approval requirement 31-3	Sealing materials for metallic threaded joints Part 3: Unsintered PTFE tapes and PTFE strings	
GASTEC QA Approval requirement 35	Compression fittings for joining copper pipes	
GASTEC QA Approval requirement 186	Press fittings for joining copper pipes	

*) If no date of issuance is specified in this column, the current version of the document applies.

8.2 Source of informative documents

Number	Title	Version *
EN 437	Test gases- test pressure – appliance category	2021
NEN 1078	Supply for gas with an operating pressure up to and including 500 mbar – Performance	2024
General requirements GASTEC QA		

*) If no date of issuance is specified in this column, the current version of the document applies.