AR 6

Datum jjjj-mm-dd

bindendverklaring

Approval requirement 6

Pluming fittings with ends for capillary soldering and/ or threaded connections

kiwa

GASTEC Qa

Trust
Quality
Progress

Foreword

This GASTEC QA Approval requirement has been approved by the Board of Experts product certification 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 GASTEC QA Approval requirement will be used by Kiwa Nederland BV in conjunction with the GASTEC QA general requirements and the KIWA regulations for product certification. This regulation details the method employed by Kiwa during product certification.

Approved by Board of Experts : xxx

Accepted by Kiwa Nederland B.V. : xxx

Kiwa Nederland B.V.
Wilmersdorf 50
Postbus 137
7300 AC Apeldoorn

Tel. 088 998 33 93
Fax 088 998 34 94
info@kiwa.nl
www.kiwa.nl

Contents

1 Introduction

1.1 General

This GASTEC QA approval requirement in combination with the GASTEC QA general requirements include all relevant requirements, which are adhered by Kiwa as the basis for the issue and maintenance of a GASTEC QA certificate for Plumbing fittings with ends for capillar soldering and/or thread connections.

This GASTEC QA approval requirements replace the GASTEC QA approval requirements 6, Plumbing fittings with ends for capillar soldering and/or thread connections, dated March 2012.

List of changes:

- Requirements for resistance to high temperatures added
- Update to the new format for GASTEC QA approval requirements
- These approval requirements have been fully reviewed textually.
- All general requirements have been deleted and included in the GASTEC QA general requirements document
- Change of paragraphs

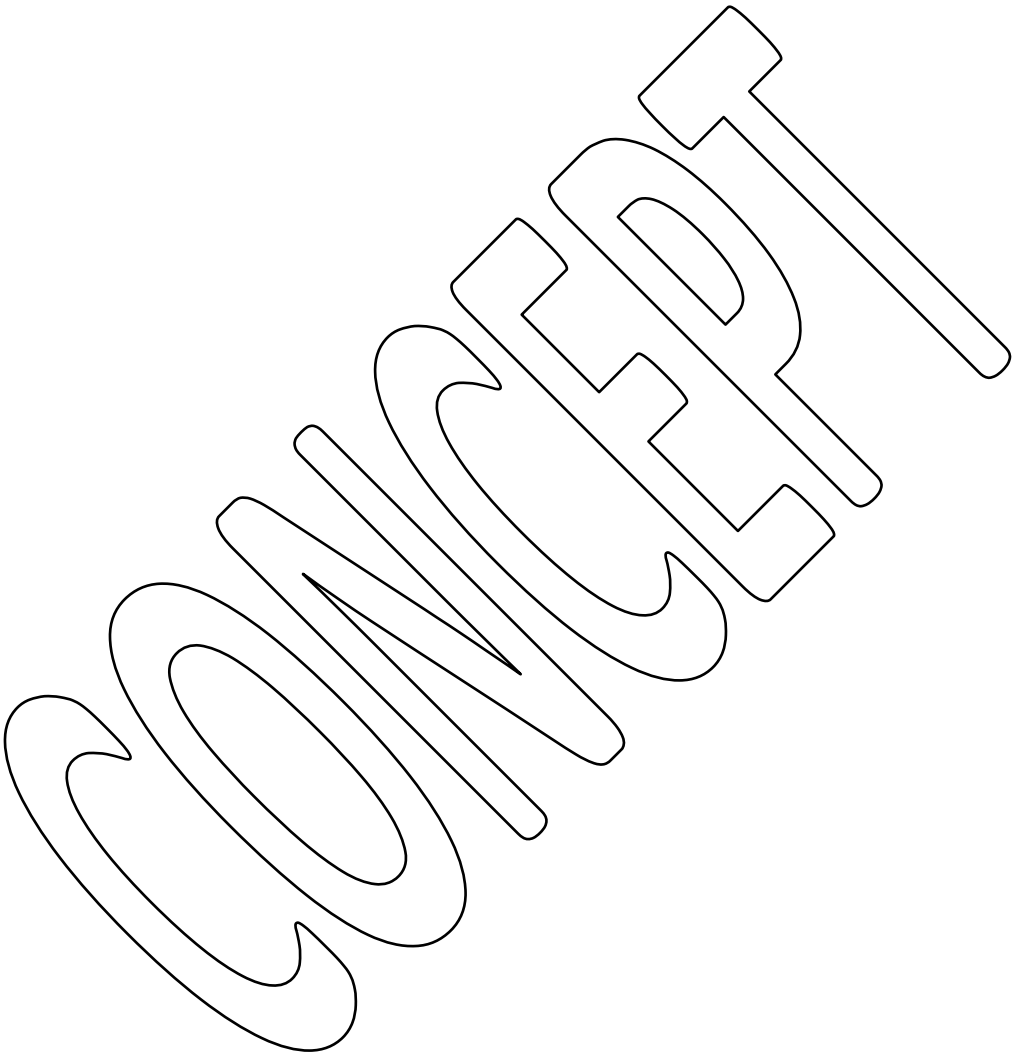
1.2 Scope

These approval requirements specify the requirements for copper and copper alloy fittings with ends for capillary soldering or capillary brazing to copper tubes according to the GASTEC QA approval requirements 5 and/or thread connections for the transport of gas.

2 Definitions

In this approval requirement, the following terms and definitions are applicable:

Board of Experts: The Board of Experts Gastec QA.



3 Product requirements

3.1 General

The requirements to be met for these fittings, as well as accompanying testing methods, are based on the following standards:

NEN-EN 1254-1	Copper and copper alloys – Plumbing fittings – Part 1 : Fittings with ends for capillary soldering or capillary brazing to copper tubes.	February 1998
NEN-EN 1254-4	Copper and copper alloys – Plumbing fittings – Part 4 : Fittings combining other end connections with capillary or compression ends	March 1998
NEN-EN 1254-4/C1	Copper and copper alloys – Plumbing fittings – Part 4 : Fittings combining other end connections with capillary or compression ends	August 1999

Supplementary to that stated in NEN-EN 1254-1, NEN-EN 1254-4 and NEN-EN 1254-4:1998/C1 the following requirement shall be met:

3.2 Nominal diameter

Contrary to EN 1254-1, table 2, only the following nominal diameters for capillary soldering and thread connections are a part of the scope of this approval requirement:

DN 10 – DN 12 – DN 15 – DN 18 – DN 22 – DN 28 – DN 35 – DN 42 – DN 54

For fittings for thread connections and capillary brazing the following nominal diameters are also applicable in this approval requirement:

DN 64 – DN 76,1 – DN 88,9 – DN 108

3.3 Performance of internal soldering-ends

The inlet of the soldering-end shall be rounded or chamfered in such way that no burrs are visible.

3.4 Across flats

The width of across flats shall be in accordance to ISO 272.
If the across flat width is greater than 46 mm the nut may also be octagonal. The height of the across flats shall be at least equal to the values of table 1.

Across flat width (mm)		Height across flat (mm)
Greater than	Less than	
	22	4
22	27	5
27	32	6
32	41	7
41	50	8
50	75	9
75		10

Table 1: across flat height

3.5 Reducer fittings

For reducer fittings and connections the transition shall be gradually made. The angle with the axis of the fitting part shall not be at most 45°.

3.6 Corners

In addition to EN 1254-1, clause 4.3.5, the angle between the axis and branch, ongoing ends of a T-piece and the angle of the axis of a bore in knees and elbows shall be 90°. It is possible for elbows to produce the angle of the axis of the bores at 45°.

3.7 Connection threads

Fitting threads shall meet the requirements of NEN-EN 10226-1.

3.8 Screwed union connections

Screwed union connections shall be in accordance to:

NEN 2550 – male screw union piece
NEN 2551 – female screw union piece
NEN 2542 – flange – thread connection
NEN 2541 – flange - capillary solder connection.
NEN 2545 - gasket ring
NEN 2544 – union nut
NEN 2549 - capillary solder union piece

3.9 Rubber seals

Rubber seals shall comply with EN 549. The temperature class according to EN 549 shall be at least A2.

4 Performance requirements and test methods

4.1 Resistance to high temperatures

The steel pipes (including protection/isolation) shall be resistant to a radiation heat of 10 kW/m^2 during 30 minutes. The leakage shall be ≤ 5 l/h after testing.

Test method
The test shall be performed at a temperature of 20 °C ± 5 °C. The test samples shall be conditioned at least 24h before testing at a temperature of 20 °C ± 5 °C and a 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 to Annex A of EN 1775:2007.

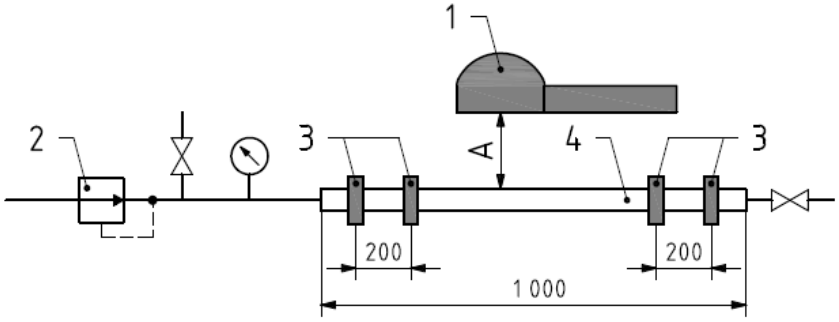


Figure 1

Legend:
1 heat cup
2 measuring system as described in appendix A of NEN-EN 1775:2007
3 mounting brackets
4 to be tested sample
A distance between heat cup and surface of the assembled component (for example the outside of a casing)

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 during 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)

5 Marking and documentation

5.1 Marking

In addition to article 7 of NEN-EN 1254-1, the fitting shall be permanently marked with:

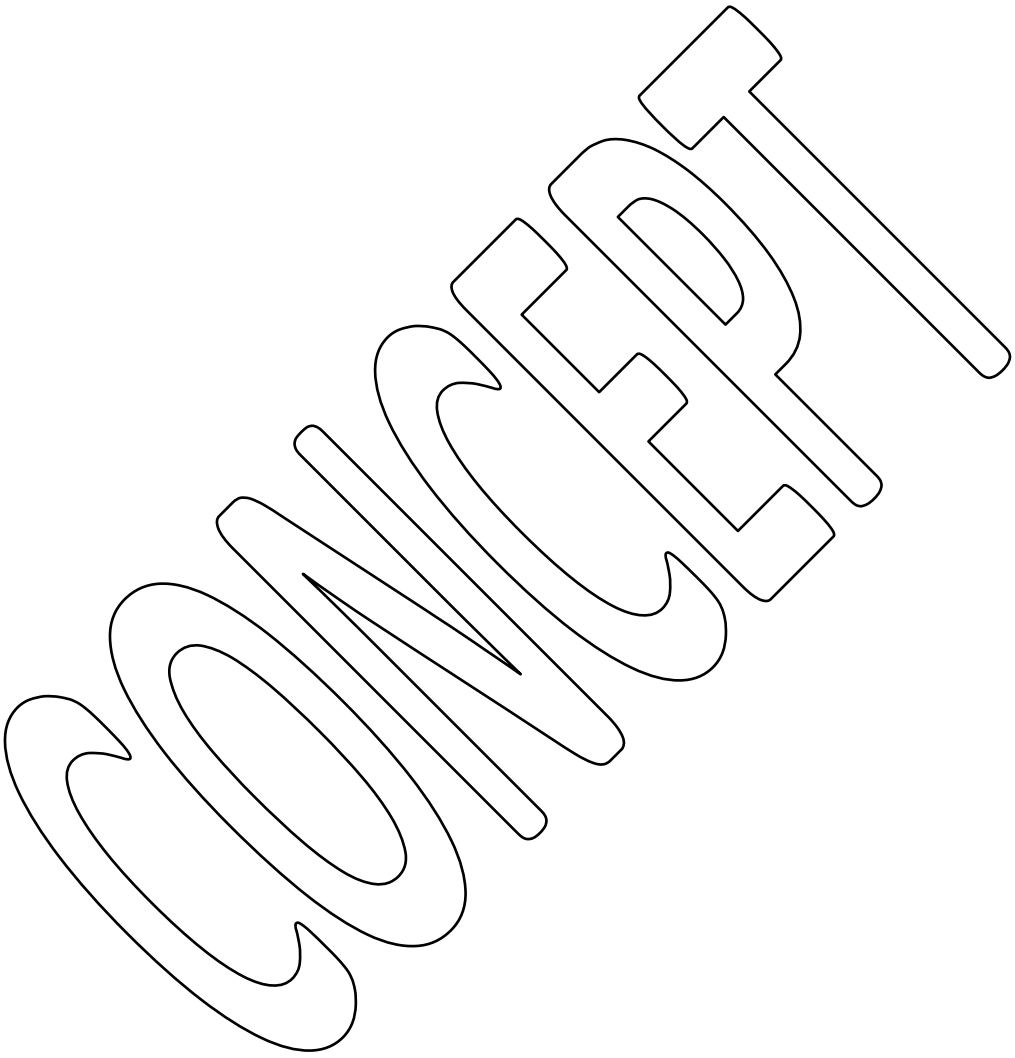
- the GASTEC QA word mark, logo or punch mark;

5.2 Documentation

Documentation is drawn up according to article 8 of NEN-EN 1254-1.

6 Quality system requirements

The supplier shall make a risk assessment of the product and production process according to chapter 3.1.1.1 and 3.1.2.1 of the GASTEC QA general requirements. The risk assessments shall be available to Kiwa for review.



7 Summary of tests

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

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

7.1 Test matrix

Description of requirement	Clause	Test within the scope of		
		Initial product assessment	Product verification	
			Verification	Frequency
NEN-EN 1254-1 requirements to be met:				
General	4.1	X		
Materials	4.2	X	X	Once a year
Dimensions and tolerances	4.3	X	X	Once a year
Design and manufacture	4.4	X	X	Once a year
Production test requirements	4.5	X	X	Once a year
Type test requirements	4.6	X		
Leak tightness under internal hydrostatic pressure	4.6.1	X		
Resistance to stress corrosion	4.6.2	X	X	Once a year
Designation	6	X	X	Once a year
Marking	7	X	X	Once a year
Documentation	8	X	X	Once a year
NEN-EN 1254-4 requirements to be met:				
Material tests	4.1	X	X	Once a year
Screwed union connections pressure test	4.2	X	X	Once a year
Thread dimensions Table 2 and 4, NEN-EN 10226-1	4.3	X	X	Once a year
Tightening systems	4.4	X		
Minimum wall thickness	4.5	X	X	Once a year
Minimum bore for unequal ended fittings	4.6	X		
Minimum outside diameter of sealing face	4.7	X		
Flange-type fittings	4.8	X		
Additional GASTEC QA approval requirements				
Nominal diameter	3.2	X	X	Once a year
Performance of internal soldering-end	3.3	X	X	Once a year
Across flats	3.4	X	X	Once a year
Reducer fittings	3.5	X		
Corners	3.6	X		
Connection threads	3.7	X	X	Once a year
Screwed union connections	3.8	X	X	Once a year
Rubber seals	3.9	X	X	Once a year
Resistance to high temperatures	4.1	X	X	Once a year
Marking	5.1	X	X	Once a year
Documentation	5.2	X	X	Once a year

8 List of referenced documents and source

8.1 Standards / normative documents

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

BRL-K623/03: 2012	Evaluation guideline for the Kiwa product certificate for Plumbing fittings for capillary soldering and/or thread connections to copper tubes
EN 549: 1995	Rubber materials for seals and diaphragms for gas appliances and gas equipment
EN 45011:1998	General requirements for bodies operating product certification systems
NEN 2541: 1967	Fittings and connections for gas conduits
NEN 2542:1967	Fittings and connections with outside thread for gas conduits
NEN 2544: 1967	Coupling nuts for fittings for gas and water conduits
NEN 2545: 1967	Packing rings for fittings for gas conduits
NEN 2549 : 1968	capillary solder union piece
NEN 2550: 1968	Male screw piece, one side outside thread, for three-piece unions for gas- and water conduits
NEN 2551 : 1968	Female screw union piece
NEN-EN 1254-1: 1998	Copper and copper alloys – Plumbing fittings – Part 1 : Fittings with ends for capillary soldering or capillary brazing to copper tubes
NEN-EN 1254-4: 1998	Copper and copper alloys – Plumbing fittings – Part 4 : Fittings combining other end connections with capillary or compression ends
NEN-EN 1254-4:1998/C1	Copper and copper alloys – Plumbing fittings – Part 4 : Fittings combining other end connections with capillary or compression ends
NEN-EN 10226-1: 2004	Pipe threads where tight joints are made on the threads
NEN 1078: 2018	Supply for gas with an operating pressure up to and including 500 mbar - Performance requirements - New estate

8.2 Source

Parts of the text of this approval requirement have been based on BRL K623/03.