AR 31-3

Datum jjjj-mm-dd

bindendverklaring

Approval requirement 31-3

Sealing materials for metallic threaded joints
Part 3: Unsintered PTFE

kiwa

GASTEC Qa

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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

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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 sealing materials for metallic threaded joints in contact with 1st, 2nd and 3rd family gases and hot water; unsintered PTFE.

This GASTEC QA Approval requirements replace the GASTEC QA Approval Requirements 31-3, Sealing materials for metallic threaded joints in contact with 1st, 2nd and 3rd family gases and hot water – Part 3: Unsintered PTFE, dated March 2012.

List of changes:

- Requirements added for resistance to high temperatures
- 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
- Update of list of referenced documents

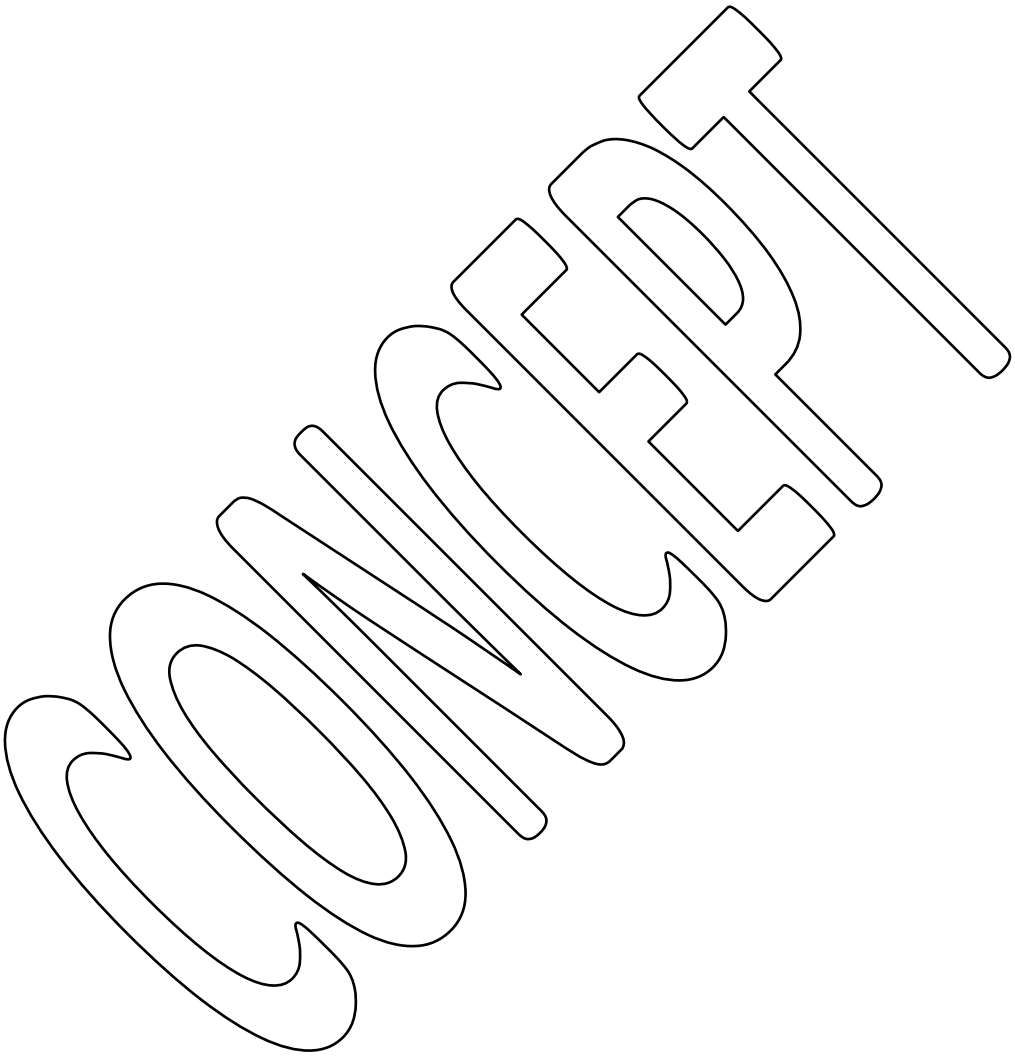
1.2 Scope

These approval requirements apply to unsintered PTFE sealing tapes and twines for metallic threaded joints according to EN 10226-1. The sealing materials are suitable for use in gas installations for 2nd family gases (natural gas) and 3rd family gases (liquefied petroleum gas- LPG) according to NEN-EN 437 and for hot water heating systems.

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 product shall comply with the requirements described in NEN-EN 751-3.

Supplementary to that stated in NEN-EN 751-3 the product shall comply with the following product requirements.

3.2 Classification of sealing materials

Sealing materials shall be suitable for both fine (Frp) and course (Grp) threads. The materials shall meet the requirements for both classes Frp and Grp.

In contrast to EN 751-3 article 4 following classification shall be used.

“Klasse 0,2” materials shall meet the requirements for Class B of NEN-EN 751-2.
“Klasse 8” materials shall meet the requirements for Class AR_p of NEN- EN 751-2.
“Klasse 20” materials shall meet the requirements for Class C of NEN-EN 751-2.

3.3 Thickness

In contrast to EN 751-3 article 5.1.2.3 the PTFE tape shall have a minimum thickness of 0,10 mm.
Determinate the dimensions of the tape in accordance to clause 4.6 of this approval requirement.

3.4 Density

In contrast to EN 751-3 article 5.1.3 the minimum relative density of the PTFE tape shall be 1,0 g/cm³ at 20 °C. The density of twines shall comply with the specification of the manufacturer.
Determinate the density of the tape in accordance to clause 4.6 of this approval requirement.

4 Performance requirements

4.1 General

The product shall comply with the requirements described in NEN-EN 751-3.

Supplementary to that stated in NEN-EN 751-3 the product shall comply with the following performance requirements.

4.2 Leak tightness

In contrast to article 7.2.1.2 of NEN-EN 751-3 the test pressures shall be according to table 2.

Test method
The test samples shall be tested during 15 minutes at a test pressure in accordance with table 1. Leakage shall be determined over the last 5 min of the prescribed test time.

Class	Test pressure in bar during 15 ± 1 min.
Klasse 0,2 bar	0,3 ± 0,015
Klasse 8 bar	12 ± 0,3
Klasse 20 bar	30 ± 1,5

Table 1

4.3 Leak tightness after adjustment

All classes of non-hardening jointing compounds shall be tested for “limited turn back” properties according to chapter article 7.2.1.3 of NEN-EN 751-3.
Leak tightness shall be determined according to chapter 4.2 of this approval requirement.

4.4 Resistance to a pressure blast

The test assemblies in accordance to EN 751-2, clause 7.2, shall be leak tight after subjected to a pressure blast.

Test method
The test assemblies shall be subjected to a pressure blast in accordance with table 2. After being subjected to the pressure blast the test assemblies are tested according to chapter 4.2 of this of these approval requirement.

Class	Pressure blast in bar during 10 -0/+5 sec.
Klasse 0,2 bar	1± 0,01
Klasse 8 bar	16 ± 0,5
Klasse 20 bar	N.A.

Table 2

4.5 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 assembled in accordance to EN 751-3, clause 7.2. 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.

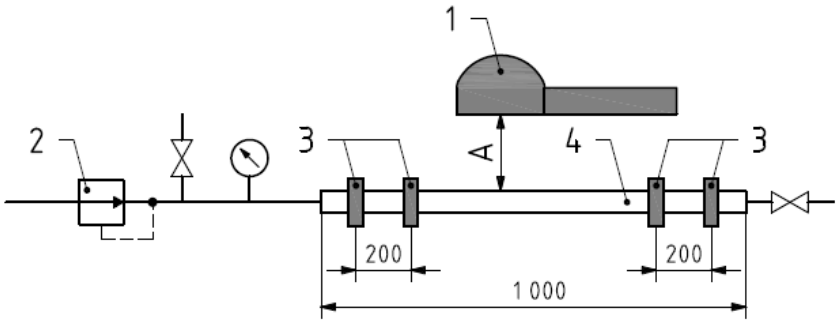


Figure 1

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).

4.6 Dimensions

Test method

1. Perform the measurement at 20± 5 °C.
2. Measure the thickness of the PTFE tape in accordance to EN 751-3, article 7.1.2.3, with an accuracy of ± 0.0025 mm on 60 points spread over the length of the tape. Disregard the first and last 500 mm of the PTFE length.
3. Calculate the average of the 60 measurements (result A, in cm).
4. Measure the width of the PTFE tape with the help of a measure microscope with an accuracy ± 0.01 mm on the beginning, middle and end of the tape. Disregard the first and last 500 mm of the PTFE length.
5. Calculate the average of the 3 measurements (result B, in cm).
6. Measure the length of 3 pools of tape with an accuracy of ± 5 mm (result C, in cm).
7. Measure the weight of this 10 m tape with an accuracy of ± 0,1 mg (result D in g).
8. Calculate the relative density in g/cm^3 as following; D / (A x B x C).

5 Marking and instructions

5.1 Marking

In addition to that stated in NEN-EN 751-3, Article 8, each spool carrying PTFE tape or twine shall be marked to with the following information;

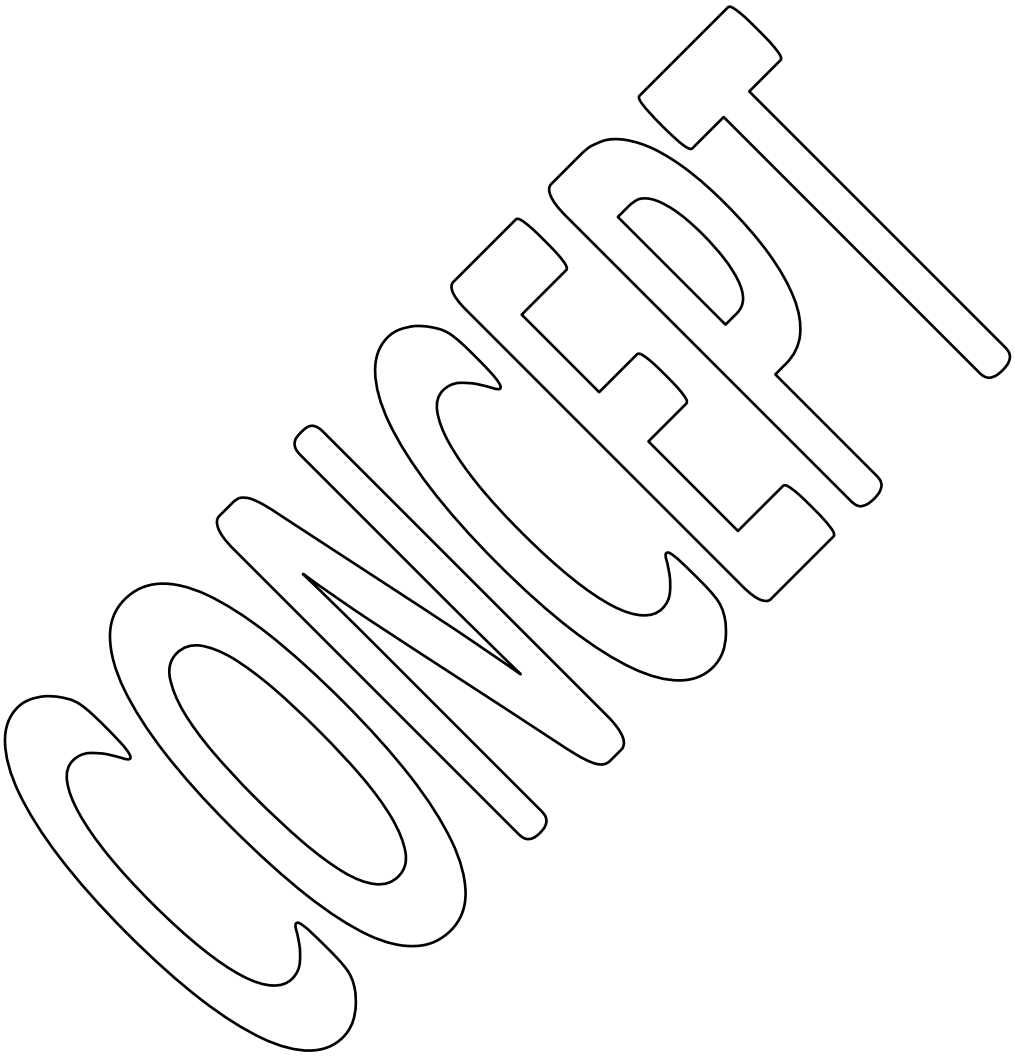
- The GASTEC QA word mark or logo.
- Pressure class “Klasse 0,2”, “Klasse 8” or “Klasse 20”.

5.2 Instructions

In addition to that stated in NEN-EN 751-3, Article 8 the instructions shall be supplied in the Dutch language.

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 NEN-EN 751-3	Test within the scope of		
		Initial product assessment	Product verification	
			Verification	Frequency
Requirements to be met by the PTFE tape as received	5.1			
General	5.1.1	X		Once a year
Tolerances on tape dimensions	5.1.2			
Length	5.1.2.1	X	X	Once a year
Width	5.1.2.2	X	X	Once a year
Thickness	5.1.2.3	X		
Tolerances on mass per area	5.1.3	X		
Residual lubricant content	5.1.4	X		
Wrapping properties	5.1.5	X		
Requirements to be met by the PTFE tape after assembly	5.2			
Sealing properties	5.2.1	X		
Leak tightness	5.2.1.1	X		
Leak tightness after adjustment	5.2.1.2	X	X	Once a year
Resistance to temperature cycling	5.2.1.3	X	X	Once a year
Resistance to vibration	5.2.1.4	X	X	Once a year
Dismantling	5.2.2	X		
Re-test	5.3	X		
Additional GASTEC QA approval requirements				
Classification of sealing materials	3.2	X		
Thickness	3.3	X	X	Once a year
Density	3.4	X	X	Once a year
Resistance to pressure blast	4.2	X	X	Once a year
Leak tightness	4.3	X	X	Once a year
Resistance to high temperatures	4.4	X	X	Once a year
Marking	5.1	X	X	Once a year
Instructions	5.2	X	X	Once a year

8 List of referenced documents

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.

EN 437: 2003+A1: 2009	Test gases- test pressure – appliance categories
EN 751-3: 1996	Sealing materials for metallic threaded joints in contact with 1st, 2nd and 3rd family gases and hot water -part 3: unsintered PTFE tapes
EN 10226-1: 2004	Pipe threads where pressure tight joints are male on the treads – Part 1 taper external threads and parallel internal threads.
NEN 1078: 2018	Supply for gas with an operating pressure up to and including 500 mbar - Performance requirements - New estate