AR 31-1
August 2024

Approval requirement 31-1

Sealing material for metallic threaded joints.
part 1: anaerobic jointing compounds

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Foreword

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: 16/08/2024

Accepted by Kiwa Nederland B.V.: 05/09/2024

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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 sealing material for metallic threaded joints - anaerobic jointing compounds.

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 version of September 2019.

List of changes:

- This approval requirement is fully reviewed textually.
- The scope has been revised.
- Update of chapters and sub paragraphs.
- Update of list of referenced documents.

The product requirements have not changed.

1.2 Scope

This approval requirement is applicable on anaerobic jointing compounds for metallic threaded joints according to EN 10226-1.

The sealing material is suitable for use in gas installations for gases from the 2nd and 3rd family gases according to EN 437, for pressures up to and including 8 bar.

Note: The anaerobic sealing material for metal threaded connections according to EN 10226-1 is also suitable for hot water heating systems up to and including 8 bar, but this application is not covered by the GASTEC QA quality mark.

2 Definitions

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

Board of Experts: The Board of Experts GASTEC QA.

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

The product shall comply with the requirements as described in EN 751-1.

Supplementary to EN 751-1 the product shall comply with the requirement of paragraph 3.2.

3.2 Classification of jointing compounds

Anaerobic jointing compounds shall be suitable for both fine (I) and course (H) threads. The materials shall meet the requirements for both classes I and H according to EN 751-1.

4 Performance requirements and test methods

In addition to the requirements according to EN 751-1, the product shall comply with the performance requirements in the following paragraphs.

4.1 Leak tightness

4.1.1 Test method

The soundness test described in EN 751-1, paragraph 7.2.1.2 shall be performed with the following changes. After assembly, the samples shall be left for 30 minutes to 1 hour.

The samples shall be pressurized for 15 minutes at a pressure of 12 ± 0.3 bar. During the last 5 minutes the samples are visually inspected for leakage.

4.2 Leak tightness after adjustment

A test assembly according to EN 751-1, paragraph 7.2 shall be leak tight after adjustment.

4.2.1 Test method

The threaded joints of two new test assemblies (2 x ¼ and 2 x 1 ½) according to EN 751-1, paragraph 7.2 are turned back for 45 ± 2° C immediately after assembly. The test assemblies shall be allowed to cure during the by the manufacturer prescribed curing time. After curing the leak tightness test according to paragraph 4.1 of this AR shall be performed.

4.3 Resistance to a pressure blast

The test assemblies shall be leak tight after applying a pressure blast on the assembly.

4.3.1 Test method

The test assemblies according to EN 751-1, paragraph 7.2 shall be allowed to cure during the by the manufacturer prescribed curing time and then subjected for 10 -0/+0.5 seconds to a pressure blast of 16 ± 0.5 bar with air followed by the leak tightness test according to paragraph 4.1 of this AR.

4.4 Resistance to high temperatures

The sealed metallic threaded joint shall be resistant to a radiation heat of 10 kW/m^2 for 30 minutes. The leakage shall be ≤ 5 liters per hour after testing.

4.4.1 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 and a relative humidity of 60 ± 20 %. The test samples shall be assembled according to EN 751-1, clause 7.2 and cure during the by the manufacturer prescribed curing time.

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.

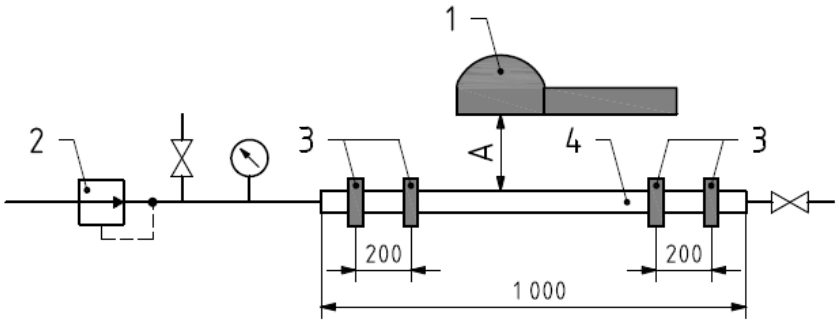

Figure 1

Legend:
1 heat cup
2 measuring system as described in appendix A of EN 1775
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 for 5 minutes. Record the leakage value (l/h).

Expose the test sample for 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 instructions

5.1 Marking

In addition to EN 751-1, chapter 8, each package of jointing compound shall be additionally marked with the following information;

- GASTEC QA, GASTEC QA logo or GASTEC QA wordmark;
- Pressure class “Klasse 8”
- A note that the anaerobic jointing compound can be used on metallic pipe joints only.
  In Dutch: “Alleen voor metalen pijpschroefdraadverbindingen”

5.2 Instructions

The manufacturer shall provide instructions according EN 751-1, chapter 8 in the language of the country of its intended destination and in the Dutch language.

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 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 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 EN 751-1	Test within the scope of		
		Initial product assessment	Product verification	
			Verification	Frequency
Requirements to be met by the jointing compound as received	5.1			
Visual quality	5.1.1	X	X	Once a year
Chemical stability	5.1.2	X		
Corrosive properties	5.1.3	X		
Storage properties	5.1.4	X		
Requirements to be met by the jointing compound after assembly	5.2			
Sealing properties	5.2.1	X		
Leak tightness	5.2.1.1	X	X	Once a year
Resistance to gas condensates	5.2.1.2	X		
Resistance to hot water	5.2.1.3	X		
Resistance to temperature cycling	5.2.1.4	X	X	Once a year
Resistance to vibration	5.2.1.5	X		
Compatibility with foam forming leak testers	5.2.2	X		
Re-test	5.3	X		
Additional GASTEC QA approval requirements 31-1				
Classification of jointing compounds	3.2	X		
Leak tightness	4.1	X		
Leak tightness after adjustment	4.2	X	X	Once a year
Resistance to a pressure blast	4.3	X	X	Once a year
Resistance to high temperatures	4.4	X		
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 751-1: 1997	Sealing materials for metallic threaded joints in contact with 1st, 2nd and 3rd family gases and hot water -part 1: anaerobic jointing compounds
EN 1775: 2007	Gas supply - Gas pipework for buildings - Maximum operating pressure less than or equal to 5 bar - Functional recommendations

8.2 Source of informative documents

EN 437: 2021	Test gases- test pressure – appliance categories
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: 2024	Supply for gas with an operating pressure up to and including 500 mbar - Performance requirements - New estate
General requirements GASTEC QA	