AR 8
February 2022

Approval requirement 8

Polyethylene pipes for carrying gaseous fuels

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 certification.

Approved by Board of Experts : month, day/date, year

Accepted by Kiwa Nederland B.V. : month, day/date, year

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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 polyethylene pipes for carrying gaseous fuels.

This GASTEC QA Approval requirements replace the GASTEC QA Approval Requirements 8, polyethylene pipes for carrying gaseous fuels, dated May 2011.

List of changes:

- These approval requirement have been fully reviewed textually;
- Specification of the scope in line with EN 1555-2;
- Test matrix has been updated;

The product requirements have not been changed.

1.2 Scope

These approval requirements specify the requirements for pipes made of polyethylene (PE) used in piping systems for the supply of gaseous fuels of the 2nd and 3rd family according to EN 437 with a maximum operation pressure of 10 bar and an operating temperature of 20°C as reference temperature.

In EN 1555-2:2021 the SDR 17,6 class is removed. Contrary to EN 1555-2: 2021, in approval requirement 8 it remains the possible to certify pipes in SDR 17,6.

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: maximum pressure that a component is capable of withstanding continuously in service under normal operating conditions.

Operating temperature: Temperature or temperature range for which the product is designed to operate.

3 Product requirements

3.1 General

The product shall comply with the requirements as specified in EN 1555-2 "Plastics piping systems for the supply of gaseous fuels – Polyethylene (PE) – Part 2: Pipes".

In addition to these requirements the below mentioned requirements shall be met.

3.2 SDR class 17,6 pipes

Contrary to EN 1555-2:2021 it is possible to certify pipes with class SDR 17,6. These pipes shall comply with the requirements as specified in EN 1555-2: 2010.

3.3 Identification stripes

identification stripes (On all SDR classes) are applied on a pipe, there shall be at least 4 stripes. The depth of the stripe shall not exceed 25 % of e_{min} with a maximum of 2 mm. At least half of the number of test bars required for determining the elongation at break, as specified in Table 4 of EN 1555-2, shall be chosen in such a way that the transition from colour to black material is present in the test bar, and that the centre of the colour stripe coincides with the centre of the test bar.

4 Marking

4.1 Marking

Supplementary to the required marking stated in EN 1555-2, clause 11, the polyethylene pipes shall be permanently marked with GASTEC QA, GASTEC QA word mark or logo.

5 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.

6 Summary of tests

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

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

6.1 Test matrix

Description of requirement	Clause (EN 1555-2)	Test within the scope of		
		Initial product assessment	Product verification	
			Verification	Frequency
Material				
Compound	5.1	X		
Compound for identification stripes	5.2	X		
Identification stripes	AR 8: 3.2	X		
External reprocessable and recyclable material	5.3	X		
General Characteristics	6 (including all sub clauses)	X	X	1x/ year
Geometrical characteristics	7 (including all sub clauses)	X	X	1x/ year
Mechanical characteristics				
Hydrostatic strength 20 ºC, 100 h	8.2	X		
Hydrostatic strength 80 ºC, 165 h	8.2	X		
Hydrostatic strength 80 ºC, 1000 h	8.2	X	X	1x/ year
Elongation at break	8.2	X	X	1x/ year
Resistance to slow crack PE80 and PE100 (NPT)	8.2	X		
Resistance to slow crack PE100RC (SHT)	8.2	X		1x/ 2 years
Resistance to slow crack PE100RC (ANPT)	8.2	X		1x/ 2 years
Resistance to slow crack PE100RC (CRB)	8.2	X		1x/ 2 years
Resistance to rapid crack propagation (RCP)	8.2	X		
Physical characteristics				
Oxidation induction time (thermal Stability)	9.2	X		
Melt mass-flow rate (MFR)	9.2	X	X	1x/ year
Longitudinal reversion	9.2	X	X	1x/ year
Performance requirements	10			
Marking	11	x	X	1x/ year
Additional marking GASTEC QA	AR 8 : 4.1	X	X	1x/ year

Pipes with co-extruded layers				
General	A.1	X		
Material	A.2	X		
Geometrical characteristics	A.3	X	X	1x/ year
Mechanical characteristics				
Resistance to slow crack	A.4	X		
Resistance to rapid crack propagation	A.4	X		
Physical characteristics				
Oxidation induction time (thermal Stability)	A.5	X		
Melt mass-flow rate (MFR)	A.5	X	X	1x/ year
Marking	A.6	X	X	1x/ year
Delamination	A.7	X	X	1x/ year
Integrity of the structure	A.8	X		
Pipes with peelable layer				
Geometrical characteristics	B.2	X	X	1x/ year
Mechanical characteristics	B.3	X		
Physical characteristics	B.4	X		
Melt mass-flow rate (MFR)	B.4	X	X	1x/ year
Oxidation induction time (thermal Stability)	B.4	X		
Coating adhesion	B.5	X		
Marking	B.6	X	X	1x/ year

7 List of referenced documents

7.1 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: 2021	Test gases- test pressure – appliance categories
EN 1555-2:2021	Plastics piping systems for the supply of gaseous fuels - Polyethylene (PE) - Part 2: Pipes