

AR 200
May 2019

Approval requirement 200

Electrofusion fittings and saddles made from Polyethylene (PE)



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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 certification.

Approved by Board of Experts : May 20th 2019

Accepted by Kiwa Nederland B.V. : May 20th 2019

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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 Electro fusion fittings and saddles made from Polyethylene (PE).

This GASTEC QA Approval requirements replace the GASTEC QA Approval Requirements 200, Fusion fittings and saddles made from Polyethylene (PE), dated March 2012.

List of changes:

- 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 & chapters
- Specification of the scope in line with EN 1555-3
- Chapter 4; requirements for instructions have been added.
- Chapter 5; quality system requirements have been added.
- Chapter 6; test matrix has been updated.

The product requirements have not been changed.

1.2 Scope

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

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 1555-3: 2010 + A1: 2012 "Plastics piping systems for the supply of gaseous fuels – Polyethylene (PE) – Part 3: Fittings".

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

3.2 Appearance

If electro fusion fittings are suitable to be welded on SDR 17,6 pipes the internal and external surfaces of the pipe and the fitting after fusion jointing shall be in accordance to 5.4 of EN 1555-3. Visual examination shall be done on pipe/fitting assemblies with SDR 17.6 pipes.

3.3 Decohesive resistance

Contrary to EN 1555-3 table 4, the requirements and test method of the decohesive resistance shall be in accordance to NTA 8828:2018 table 4.

3.4 Evaluation of ductility of fusion joint interface

Contrary to EN 1555-3 table 4, the requirements and test method of the evaluation of ductility of fusion joint interface shall be in accordance to NTA 8828:2018 table 4.

3.5 Elastomers

Contrary to EN 1555-3 article 4.2.3, elastomeric sealing components shall conform to the requirements of EN 682, type GAL or GBL.

4 Marking and instructions

4.1 Marking

Additional to the marking as required per EN 1555-3, the products shall be durably marked with the GASTEC QA word mark or logo.

4.2 Instructions

The supplier shall provide instructions in the Dutch language and shall contain information about:

- The use and installation of the product.
- The conditions under which it shall be used.
- How it can be determined if the product is correctly installed.
- The way the product shall be stored.
- Fusion compatibility; a list of compatible PE materials shall be stated

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. The risk assessments shall be available to Kiwa for review.

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 1555-3)	Test within the scope of		
		Initial product assessment	Product verification Verification	Frequency
Material	4			
PE compound	4.1	X		1x / year
Material for non-polyethylene parts	4.2	X		1x / year
General characteristics				
Appearance	5.1	X	X	1x / year
Colour	5.2	X	X	1x/ year
Design	5.3	X		
Appearance of factory made joints	5.4	X		
Electrical characteristics for electro fusion fittings	5.5	X	X	1x/ year
Geometrical characteristics	6 (including all sub clauses)	X	X	1x/ year
Mechanical characteristics				
General	7.1	X		
Requirements	7.2	X		
Hydrostatic strength (20°C, 100 h)	7.2	X		
Hydrostatic strength (80°C, 165 h)	7.2	X		
Hydrostatic strength (80°C, 1000 h)	7.2	X	X	1x/ year
Tensile strength for butt fusion	7.2	X	X	1x/ year
Impact resistance	7.2	X	X	1x/ year
Pressure drop	7.2	X		
Performance requirements				
Short term internal pressure resistance	7.3	X		
Resistance to tensile load	7.3	X		
Physical characteristics				
Oxidation induction time (OIT)	8.2	X		
Melt mass-flow rate (MFR)	8.2	X		
Performance requirements	9	X		
Marking	10	X		
General	10.1	X		
Minimum required marking of fittings	10.2	X		
Additional marking	10.3	X		
Fusion system recognition	10.4	X		
Additional GASTEC QA Approval Requirements 200				
Appearance	3.2	X		
Decohesive resistance	3.3	X		

Evaluation of ductility of fusion joint interface	3.4	X	X	1x/ year
Elastomers	3.5	X	X	1x / year
Marking	4.1	X	X	1x / year
Instructions	4.2	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: 2003+A1: 2009	Test gases- test pressure – appliance categories
EN 682: 2002 + A1: 2005	Elastomeric seals - Materials requirements for seals used in pipes and fittings carrying gas and hydrocarbon fluids
EN 1555-3: 2010 +A1: 2012	Plastic piping systems for the supply of gaseous fuels – Polyethylene (PE) – part 3: fittings
NEN 7244	Dutch edition on base of NEN-EN 12007 - Gas supply systems - Pipelines for maximum operating pressure up to and including 16 bar
NEN-EN 12007	Gas supply systems - Pipelines for maximum operating pressure up to and including 16 bar
NEN-EN 45011: 1998	General requirements for bodies operating product certification systems