**AR 136**
February 2019

# Approval requirement 136

Polyethylene (PE) valves for plastic piping systems for the supply of gaseous fuels

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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 : February 10, 2019

Accepted by Kiwa Nederland B.V. : February 10, 2019

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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 valves for plastic piping systems for the supply of gaseous fuels.

This GASTEC QA Approval requirements replace the GASTEC QA Approval Requirements 136, polyethylene valves for plastic piping systems for the supply of gaseous fuels, dated January 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
- Specification of the scope in line with EN 1555-4
- Chapter 3.3; changed to a reference to GASTEC QA approval requirement 70.
- Chapter 4; requirements for instructions have been added.
- Chapter 5; quality system requirements have been added.

The product requirements have not been changed.

## 1.2 Scope

These approval requirements specify the requirements for polyethylene (PE) valves 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 1555-4: "Plastics piping systems for the supply of gaseous fuels – Polyethylene (PE) – Part 4: Valves"

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

## 3.2 Elastomers

Contrary to EN 1555-4 article 4.2.3, elastomeric sealing components shall conform to the requirements of EN 682, type GAL or GBL.

## 3.3 Mechanical fittings

In addition to EN 1555-4 article 5.3.1, the valves may be provided with mechanical fittings as described in GASTEC QA approval requirement 70.

# 4 Marking and instructions

## 4.1 Marking

Additional to the marking as required per EN 1555-4, the valves shall be durably marked with the GASTEC QA word mark or logo.

## 4.2 Instructions

Additional to EN 1555-4 paragraph 7.1 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.

# 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 1555-4) | Test within the scope of | | |
|---|---|---|---|---|
| | | Initial product assessment | Product verification | |
| | | | verification | Frequency |
| **Material** | 4 (including all sub clauses) | X | | |
| Elastomers | AR 136: 3.2 | X | | |
| **General Characteristics** | | | | |
| Appearance | 5.1 | X | X | Each year |
| Colour | 5.2 | X | X | Each year |
| Design - General | 5.3.1/AR 136: 3.3 | X | | |
| Design – Valve body | 5.3.2 | X | | |
| Design – Operating device | 5.3.3 | X | | |
| Design - Seals | 5.3.4 | X | | |
| **Geometrical Characteristics** | | | | |
| General | 6.1 | X | X | Each year |
| Dimensions of spigot ends | 6.3 | X | | |
| Dimensions of electro fusion sockets | 6.4 | X | | |
| Dimensions of the operating device | 6.5 | X | | |
| **Mechanical Characteristics** | | | | |
| General | 7.1 | X | | |
| Hydrostatic strength - 20°C, 100h | 7.2 | X | | |
| Hydrostatic strength - 80°C, 165h | 7.2 | X | | |
| Hydrostatic strength - 80°C, 1000h | 7.2 | X | X | Each year |
| Leak tightness of seat and packing – 25 mbar | 7.2 | X | X | Each year |
| Leak tightness of seat and packing – 1.5 MOP | 7.2 | X | X | Each year |
| Pressure drop | 7.2 | X | | |
| Operating torque | 7.2 | X | X | Each year |
| Stop resistance | 7.2 | X | | |
| Actuation mechanism resistance | 7.2 | X | X | Each year |
| Resistance to bending between supports | 7.2 | X | | |
| Thermal cycling resistance – DN > 63 mm | 7.2 | X | | |
| Leak tightness under bending with thermal cycling - DN≤ 63 mm | 7.2 | X | | |
| Leak tightness under tensile loading | 7.2 | X | | |
| Leak tightness under and after bending the operating mechanism | 7.2 | X | | |

| | | | | |
|---|---|---|---|---|
| Impact loading resistance | 7.2 | X | | |
| Multiple test<br>1. Resistance to long term internal pressure<br>2. Leak tightness of seat and packing<br>3. Operating torque<br>4. Impact loading resistance | 7.2 | X | | |
| **Physical Characteristics** | | | | |
| Oxidation induction time (OIT) | 8.2 | X | | |
| Melt mass-flow rate (MFR) | 8.2 | X | X | Each year |
| **Performance requirements** | | | | |
| Fitness for purpose | 9/AR 136: 3.3 | X | | |
| **Marking** | | | | |
| Marking | 10 | X | X | Each year |
| **Delivery conditions** | | | | |
| Delivery conditions | 11 | X | | |
| Documentation | 7.1 | X | | |
| **Additional GASTEC QA Approval requirement 136** | | | | |
| Marking | 4.1 | X | X | Each year |
| Instructions | 4.2 | X | | |

# 7 List of referenced documents and source

## 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 1555-4: 2011 | Plastic piping systems for the supply of gaseous fuels – Polyethylene (PE) – part 4: valves |
| EN 10226-1: 2004 | Pipe threads where pressure tight joints are male on the treads – Part 1 taper external threads and parallel internal threads. |