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Cevovodi iz kovinskih gibljivih cevi in cevi iz plastomerov za podzemne napeljave za bencinske servise

Thermoplastic and flexible metal pipework for underground installation at petrol filling stations

Thermoplastische und flexible metallene Rohrleitungen für erdverlegte Installationen für Tankstelle

Tuyauteries enterrées thermoplastiques et en métaux flexibles pour stations-service

Ta slovenski standard je istoveten z: **EN 14125:2013**

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23.040.10	Železne in jeklene cevi	Iron and steel pipes
75.200	Oprema za skladiščenje nafte, naftnih proizvodov in zemeljskega plina	Petroleum products and natural gas handling equipment
83.140.30	Cevi, fitingi in ventili iz polimernih materialov	Plastics pipes, fittings and valves

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EUROPEAN STANDARD

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Thermoplastic and flexible metal pipework for underground installation at petrol filling stations

Tuyauteries enterrées thermoplastiques et tuyauteries métalliques flexibles pour stations-service

Thermoplastische und flexible metallene Rohrleitungen für erdverlegte Installationen für Tankstellen

This European Standard was approved by CEN on 1 May 2013.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This document (EN 14125:2013) has been prepared by Technical Committee CEN/TC 393 “Equipment for storage tanks and for filling stations”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2013, and conflicting national standards shall be withdrawn at the latest by December 2013.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 14125:2004.

Compared with the 2004 edition and the amendment dated 2006 the following fundamental changes are given:

— new definitions included;

— new types of secondary containment included;

— multilayer pipes included;

— requirements for static electricity revised;

— new test fuels added;

— test procedures revised;

— A-deviation for the Netherlands added.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

The purpose of this document is to ensure the suitability of underground pipework for conveying liquid fuels and their vapours at petrol filling stations.

Pipework should have a designated means of fitting specified by the manufacturer or supplier.

Pipework for underground installation at petrol filling stations generally has a diameter less than 100 mm and is therefore outside the scope of the Pressure Equipment Directive (PED) 97/23/EC. Pipework with an internal diameter greater than or equal 100 mm could be within the scope of the PED.

1 Scope

This European Standard specifies requirements for underground pipework systems used to transfer liquid fuels and their vapours at petrol filling stations. Minimum performance requirements covering fitness for purpose, safety and environmental protection are given.

This European Standard applies to pipework made from thermoplastics, which may include some degree of reinforcement, and to flexible metal pipework. It does not apply to fibre reinforced thermosets, commonly referred to as glass fibre reinforced plastic (GRP), nor to rigid metals.

This document applies to:

— delivery pipes from tanks to dispensers, including positive pressure, vacuum suction and siphon modes;

— fill pipes from road tankers to tanks;

— vapour recovery and vent pipework;

— pipework for secondary containment;

— fittings.

It does not apply to pipework for use with liquefied petroleum gas.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1555-1, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 1: General*

EN 1555-2, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 2: Pipes*

EN 1555-3, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 3: Fittings*

EN 1555-4, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 4: Valves*

EN 1555-5, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 5: Fitness for purpose of the system*

EN 12201-1, *Plastics piping systems for water supply, and for drainage and sewerage under pressure — Polyethylene (PE) — Part 1: General*

EN 12201-2, *Plastics piping systems for water supply, and for drainage and sewerage under pressure — Polyethylene (PE) — Part 2: Pipes*

EN 12201-3, *Plastics piping systems for water supply, and for drainage and sewerage under pressure — Polyethylene (PE) — Part 3: Fittings*

EN 12201-4, *Plastics piping systems for water supply, and for drainage and sewerage under pressure — Polyethylene (PE) — Part 4: Valves*

EN 12201-5, *Plastics piping systems for water supply, and for drainage and sewerage under pressure — Polyethylene (PE) — Part 5: Fitness for purpose of the system*

EN 12294, *Plastics piping systems — Systems for hot and cold water — Test method for leaktightness under vacuum*

EN 12295, *Plastics piping systems — Thermoplastics pipes and associated fittings for hot and cold water — Test method for resistance of joints to pressure cycling*

EN 13160-1, *Leak detection systems — Part 1: General principles*

EN 13160-2, *Leak detection systems — Part 2: Pressure and vacuum systems*

EN 13160-7, *Leak detection systems — Part 7: General requirements and test methods for interstitial spaces, leak protecting linings and leak protecting jackets*

EN 13463-1, *Non-electrical equipment for use potentially explosive atmospheres — Part 1: Basic method and requirements*

EN 14214, *Liquid petroleum products — Fatty acid methyl esters (FAME) for use in diesel engines and heating applications — Requirements and test methods*

EN 15376, *Automotive fuels — Ethanol as a blending component for petrol — Requirements and test methods*

EN 28510-1, *Adhesives — Peel test for a flexible-bonded-to-rigid test specimen assembly — Part 1: 90° peel (ISO 8510-1)*

EN ISO 1167-1, *Thermoplastics pipes, fittings and assemblies for the conveyance of fluids — Determination of the resistance to internal pressure — Part 1: General method (ISO 1167-1)*

EN ISO 1167-2, *Thermoplastics pipes, fittings and assemblies for the conveyance of fluids — Determination of the resistance to internal pressure — Part 2: Preparation of pipe test pieces (ISO 1167-2)*

EN ISO 1167-3, *Thermoplastics pipes, fittings and assemblies for the conveyance of fluids — Determination of the resistance to internal pressure — Part 3: Preparation of components (ISO 1167-3)*

EN ISO 1167-4, *Thermoplastics pipes, fittings and assemblies for the conveyance of fluids — Determination of the resistance to internal pressure — Part 4: Preparation of assemblies (ISO 1167-4)*

EN ISO 4892-2:2013, *Plastics — Methods of exposure to laboratory light sources — Part 2: Xenon-arc sources (ISO 4892-2:2013)*

EN ISO 8510-2, *Adhesives — Peel test for a flexible-bonded-to-rigid test specimen assembly — Part 2: 180 degree peel (ISO 8510-2)*

EN ISO 11306, *Corrosion of metals and alloys — Guidelines for exposing and evaluating metals and alloys in surface sea water (ISO 11306)*

EN ISO 11339, *Adhesives — T-peel test for flexible-to-flexible bonded assemblies (ISO 11339)*

EN ISO 16871, *Plastics piping and ducting systems — Plastics pipes and fittings — Method for exposure to direct (natural) weathering (ISO 16871)*

ISO 11922-1, *Thermoplastics pipes for the conveyance of fluids — Dimensions and tolerances — Part 1: Metric series*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
pipework system
pipes and fittings used to convey or retain liquid fuels and their vapours

3.2
fittings
in-line connector, elbow, reducer, tee or cap, or flange or other component supplied to connect one pipe to another or pipework to equipment

3.3
flexible pipe
pipe that can be bent by hand to any radius above a set minimum without any change in performance

3.4
primary delivery pipework
pipework designed to convey liquid fuels by positive pressure or vacuum suction

3.5
fill pipework
pipework designed to convey liquid fuels from a delivery tanker to an underground storage tank by gravity discharge

3.6
multilayer pipe
pipe where more than one identified layer is present

3.7
vent pipework
pipework designed to convey vapour from a storage tank to the atmosphere

3.8
vapour recovery pipework
pipework designed to convey vapour (or condensate) to or from a storage tank

3.9
liquid fuel
commercially available petrol and diesel fuel comprising biofuels and biofuels blends

3.10
leakage containment
system which is designed to prevent leakage from a primary system entering the environment and which enables the detection of leakage

3.11
secondary containment
system which is designed to achieve leakage containment

3.12
design pressure
P_d
maximum effective pressure of the fluid in the piping system, expressed in bar, which is allowed in continuous use

4 Classes and dimensions

4.1 Classes of pipework

Pipes for underground fuel distribution shall conform to one of the following two classes:

— **Class 1** — Double wall pipework capable of containing and facilitating the detection of leakage from a primary delivery pipe.

— **Class 2** — Single wall pipework.

The primary pipe of Class 1, and pipes of Class 2, shall conform to one of Types A or B. The secondary pipe of Class 1 shall conform to one of Types C1 or C2.

a) **Type A.** Plastic systems.

Pipes shall be principally made of thermoplastic polymers, with some metal or fibre reinforcement optional.

b) **Type B.** Flexible metal systems.

Pipes shall comprise a fluid tight primary pipe made of a metal.

c) **Type C.** Secondary containment.

1) **Type CS.** System with continuous 360° separation between the primary containment and secondary containment.

i) **Type CS1:** A pipe system designed to contain any leakage from the primary pipe. The system is at atmospheric pressure.

ii) **Type CS2:** A pipe system designed to contain any leakage from the primary pipe. The system is designed to conform to the performance criteria of Class I leak detection systems in accordance with EN 13160-1, EN 13160-2 and EN 13160-7.

2) **Type CP:** System without continuous 360° separation between the primary containment and secondary containment.

i) **Type CP1:** A pipe system designed to contain leakage from the primary pipe. The system is at atmospheric pressure.

ii) **Type CP2:** A pipe system designed to contain leakage from the primary pipe. The system is designed to conform to the performance criteria of Class I leak detection systems in accordance with EN 13160-1, EN 13160-2 and EN 13160-7.

4.2 Fittings

All pipework shall include fittings to provide leak-tight attachment to other systems, terminations, branches and changes of direction.

4.3 Dimensional tolerances

The external diameter and wall thickness shall be stated by the manufacturer. For plastic pipework the tolerance on the external diameter shall be in accordance with ISO 11922-1, Grade B, and the out-of-roundness shall be in accordance with ISO 11922-1, Grade N.

5 Physical properties

5.1 Pressure

5.1.1 General

Operating and test pressures shall be in accordance with Table 1 according to the application.

All pressures in Table 1 are gauge pressures.

Table 1 — Operating and test pressures for pipework

Application	Operating pressure bar	Test vacuum bar	Lower test pressure bar	Higher test pressure bar
Primary delivery pipework: positive pressure	+3,5	—	+5,0 ± 0,1	+30,0 ± 1,0
Primary delivery pipework: vacuum suction including siphons	-0,6	-0,9 ± 0,05	+5,0 ± 0,1	
Vents and vapour recovery pipework	1,0	-0,9 ± 0,05	+5,0 ± 0,1	
Fill pipework	1,0	—	+5,0 ± 0,1	
Secondary containment Type CP1 and CS1	+0,5	—	+1,0 ± 0,02	+5,0 ± 0,1
Secondary containment Type CP2 and CS2	-0,5 to +4,5	-0,6 ± 0,05	+5,0 ± 0,1	+10 ± 0,2

5.1.2 Hydrostatic pressure

This requirement applies to all pipes and fittings.

When tested in accordance with 7.2.1.1, all pipes and fittings, sampled in accordance with 7.1.2 and connected together as one or more assemblies, shall:

— withstand the lower test pressure in Table 1 for no less than 5 min with no signs of leakage.

When tested in accordance with 7.2.1.2, all pipes and fittings, sampled in accordance with 7.1.2 and connected together as one or more assemblies, shall:

— withstand the lower test pressure in Table 1 for no less than 5 min with no signs of leakage;

— withstand the higher test pressure in Table 1 for no less than 1 min with no signs of leakage.

5.1.3 Vacuum

This requirement applies to all pipes and fittings intended for vacuum suction, including siphons, vent and vapour recovery and secondary containment, Type CP2 and CS2.

When tested in accordance with 7.2.2, all pipes and fittings, sampled in accordance with 7.1.2, shall:

— withstand the vacuum specified in Table 1 for no less than 30 min. The loss of vacuum shall not exceed 0,05 bar and there shall be no signs of collapse.