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LEKKE AVASTAMISE SÜSTEEMID. OSA 5: NÕUDED JA KATSE-/HINDAMISMEETODID TSISTERNISISESTELE MÕÕDIKSÜSTEEMIDELE JA SURVETORUSTIKE SÜSTEEMIDELE

Leak detection systems - Part 5: Requirements and test/assessment methods for in-tank gauge systems and pressurised pipework systems

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NATIONAL FOREWORD

See Eesti standard EVS-EN 13160-5:2016 sisaldab Euroopa standardi EN 13160-5:2016 ingliskeelset teksti.	This Estonian standard EVS-EN 13160-5:2016 consists of the English text of the European standard EN 13160-5:2016.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 06.07.2016.	Date of Availability of the European standard is 06.07.2016.
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ICS 23.020.10, 23.040.99

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13160-5

July 2016

ICS 23.020.10; 23.040.99

Supersedes EN 13160-5:2004

English Version

Leak detection systems - Part 5: Requirements and test/assessment methods for in-tank gauge systems and pressurised pipework systems

Systèmes de détection de fuites - Partie 5: Exigences et méthodes d'essai/d'évaluation des systèmes de détection de fuites en citernes et des systèmes de tuyauterie sous pression

Leckanzeigesysteme - Teil 5: Anforderungen und Prüf-/Bewertungsverfahren für Tankinhaltsmesssysteme und druckbeaufschlagte Rohrleitungen

This European Standard was approved by CEN on 8 April 2016.

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European foreword

This document (EN 13160-5:2016) 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of an identical text or by endorsement, at the latest by January 2017, and conflicting national standards shall be withdrawn at the latest by April 2018.

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 13160-5:2004.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

According to EN 13160-5:2004 the following fundamental changes are given:

— Requirement for a device for simulating a leak deleted;

— requirements from EN 13160-1:2003 included, which are no longer contained in EN 13160-1:2016;

— Pressure line leak detection kits included.

This European Standard, *Leak detection systems,* consists of 7 parts:

— *Part 1: General principles*

— *Part 2: Requirements and test/assessment methods for pressure and vacuum systems*

— *Part 3: Requirements and test/assessment methods for liquid systems for tanks*

— *Part 4: Requirements and test/assessment methods for sensor based leak detection systems*

— *Part 5: Requirements and test/assessment methods for in-tank gauge systems and pressurized pipework systems*

— *Part 6: Sensors in monitoring wells*

— *Part 7: Requirements and test/assessment methods for leak detection linings*

According to the CEN/CENELEC Internal Regulations, the national standards organizations 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.

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1 Scope

This European Standard gives requirements and corresponding test\assessment methods applicable to leak detection kits, based on volumetric loss from within the tank and/or pipework system. The kits usually comprise:

— Measuring Device

— Evaluation Device

— Alarm Device

Intended use:

Leak Detection kits are intended to be used in\with single or double skin underground tanks or single or double skin underground and/or aboveground pipework designed for flammable liquids having a flash point not exceeding 100 °C.

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 228, *Automotive fuels — Unleaded petrol — Requirements and test methods*

EN 590, *Automotive fuels — Diesel — Requirements and test methods*

EN 976-1, *Underground tanks of glass-reinforced plastics (GRP) — Horizontal cylindrical tanks for the non-pressure storage of liquid petroleum based fuels — Part 1: Requirements and test methods for single wall tanks*

EN 981:1996+A1:2008, *Safety of machinery — System of auditory and visual danger and information signals*

EN 12285-1, *Workshop fabricated steel tanks — Part 1: Horizontal cylindrical single skin and double skin tanks for the underground storage of flammable and non-flammable water polluting liquids*

EN 13160-1:2016, *Leak detection systems — Part 1: General principles*

EN 13160-2, *Leak detection systems — Part 2: Requirements and test/assessment methods for pressure and vacuum systems*

EN 13352:2012, *Specification for the performance of automatic tank contents gauges*

EN 14879-4:2007, *Organic coating systems and linings for protection of industrial apparatus and plants against corrosion caused by aggressive media — Part 4: Linings on metallic components*

EN 60296, *Fluids for electrotechnical applications — Unused mineral insulating oils for transformers and switchgear (IEC 60296)*

EN 60529, *Degrees of protection provided by enclosures (IP Code) (IEC 60529)*

EN 61672-1, *Electroacoustics — Sound level meters — Part 1: Specifications (IEC 61672-1)*

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ISO 8601, *Data elements and interchange formats — Information interchange — Representation of dates and times*

3 Terms, definitions, symbols and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13160-1:2016 and the following apply.

3.1.1
quantitative output
numerical indication of the leak rate

3.1.2
qualitative output
pass/fail indication for a given test with reference to a specified leak rate

3.2 Symbols and abbreviated terms

B	is the bias
LL	is the lower confidence bound for probability of detection
UL	is the upper confidence bound for probability of detection
MSE	is the mean squared error
PD	is the probability of detection
PFA	is the probability of false alarm
PI (all)	is the proportion of invalid records for all records
PI (leak)	is the proportion of invalid records for leaking tanks
PI (tight)	is the proportion of invalid records for tight tanks
R	is the simulated leak rate
C	is the criterion or threshold for indicating a leak
B	is the estimated bias of the system
SD	is the standard deviation
t_b	is the two-sample *t*-test bias

4 Requirements

4.1 Effectiveness of leak detection kits

4.1.1 General

This type of leak detection kit is classified according to EN 13160-1:2016 as class IV.

The general requirements on leak detection systems according to Clause 5 of EN 13160-1:2016 shall be met.

The measuring device shall fulfil the requirements according to 5.1of EN 13352:2012.

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