Non destructive testing - Leak testing - Calibration of reference leaks for gases

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 13192:2002 sisaldab Euroopa standardi EN 13192:2001 + AC:2003 ingliskeelset teksti. Käesolev dokument on jõustatud 16.05.2002 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN 13192:2002 consists of the English text of the European standard EN 13192:2001 + AC:2003. This document is endorsed on 16.05.2002 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.

Käsitlusala: This European Standard specifies the calibration of those leaks that are used for the adjustment of leak detectors and the determination of leakage rate in everyday use.	**Scope:** This European Standard specifies the calibration of those leaks that are used for the adjustment of leak detectors and the determination of leakage rate in everyday use.

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Võtmesõnad: calibration, definition, definitions, leak testing, leak tests, materials testing, non destructive tests, non-destructive testing, reference methods, test gases, testing

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Zerstörungsfreie Prüfung - Dichtheitsprüfung - Kalibrieren von Referenzlecks für Gase

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 138 "Non-destructive testing", the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by May 2002, and conflicting national standards shall be withdrawn at the latest by May 2002.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association. This European Standard is considered to be a supporting standard to those application and product standards which in themselves support an essential safety requirement of a New Approach Directive and which make normative reference to this European Standard.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This draft European Standard specifies the calibration of those leaks that are used for the adjustment of leak detectors for the determination of leakage rate in everyday use. The preferred calibration method in this case is a comparison with a standard leak. In this way the leaks used for routine use become traceable to a primary standard as the ISO 9000 series of standards require.

The comparison procedures are preferably applicable to helium leaks, because this test gas can be selectively measured by a mass spectrometer leak detector (MSLD) (the definition of MLSD is given in EN 1330-8).

Calibration by comparison (see methods A and B below) with known standard leaks is easily possible for leaks with reservoir and leakage rates below 10^{-7} Pa·m^3/s.

From 10^{-7} Pa·m^3/s to 10^{-4} Pa·m^3/s no leaks reliable enough to be used as transfer standard exist. Leaks in this range can only be calibrated by measurement of flow in a calibrated capillary tube (see method C below).

Leakage rates greater than 10^{-4} Pa·m^3/s can be measured by flow meters calibrated against primary national standards.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 1330-8, *Non-destructive testing - Terminology - Part 8: Terms used in leak tightness testing.*

EN 13625, *Non-destructive testing - Leak test - Guide to the selection of instrumentation for the measurement of gas leakage.*

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 1330-8 and the following apply.

3.1
unknown leak
leak having a stable and repeatable leakage rate of known order of magnitude that can be determined by calibration

3.2
calibration of a reference leak
set of operations which establish, under specified conditions, the relationship between leakage rate values represented by an unknown leak and the corresponding known values of the leakage rate by general definition in: "International vocabulary of basic and general terms in metrology"

NOTE 1 In the case of calibration by comparison, the known values of the leakage rate are represented by a standard leak.

NOTE 2 Normally, the result of a calibration is given as the leakage rate value for the reference leak.

For proper usage of the different definitions of leakage rate, the following should be carefully considered:

In leak detection, leakage rates are commonly given in units of pV-throughput (Pa·m^3/s, mbar l/s). These are only a precise measure of gas flow if the temperature is given and kept constant.

Flow units such as mass flow (g/y) or molar flow (mol/s) are sometimes used to overcome this problem.