

Electrical equipment used for detection and
concentration measurement of refrigerant gases -
Performance requirements and test methods

EESTI STANDARDI EESSÕNA

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English Version

**Electrical equipment used for detection and concentration
measurement of refrigerant gases - Performance requirements
and test methods**

Appareils électriques utilisés pour la détection et la mesure
de la concentration de gaz frigorigènes - Exigences de
performance et méthodes d'essai

Elektrische Geräte zur Detektion und
Konzentrationsmessung von Kältemittelgasen -
Anforderungen an das Betriebsverhalten und Prüfverfahren

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European foreword

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The following dates are fixed:

- latest date by which this document has (dop) 2020-11-04
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publication of an identical national
standard or by endorsement
- latest date by which the national (dow) 2022-11-04
standards conflicting with this document
have to be withdrawn

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Introduction

This document specifies test methods and performance requirements for all electrical equipment used for gas detection in refrigerant applications as defined in EN 378-1:2016 by means of concentration measurement.

This document is addressed to the manufacturers of such equipment and test laboratories which validate it.

The tendency to use low-GWP refrigerant gases in the refrigeration and HVAC market (F-Gas Regulation) has intensified the considerations of safety measures for low-GWP gases as some are flammable, toxic and can cause lack of oxygen.

This document covers all refrigerant gases and defines performance requirements for the detection equipment, mentioned in EN 378-3:2016 as gas detectors or sensors, used in refrigerant applications. The level of safety is expected to be the same as in the already existing performance standards for general-purpose equipment, i.e. EN 60079-29-1 concerning refrigerant flammable gases and EN 45544 series concerning refrigerant toxic gases in atmospheres. Refrigerant gases not mentioned by EN 378-1:2016 are also covered by this standard following the categorization scheme of EN 378-1:2016.

1 Scope

This document specifies general requirements for the construction, testing and performance of electrically operated refrigerant fixed gas detection equipment in safety applications. This document does not specify requirements for portable locating leak detectors for refrigerant application as already covered by EN 14624:2012.

This document is applicable to equipment whose primary purpose is to provide an indication, alarm and/or other output function to warn of the presence of refrigerant gases in an industrial or commercial environment and, in some cases, to initiate automatic or manual protective actions. It is applicable to equipment in which the sensor automatically generates an electrical signal when gas is present.

This standard does not apply to gas detection equipment:

- for non-refrigerant application;
- used for air pollution monitoring;
- sampling systems, which are not integral part of the gas detection equipment;
- open path gas detection;
- residential applications;
- process control;
- for applications in mines;
- portable locating leak detectors for refrigerant application.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 378-1:2016, *Refrigerating systems and heat pumps - Safety and environmental requirements - Part 1: Basic requirements, definitions, classification and selection criteria*

EN 45544-1, *Workplace atmospheres - Electrical apparatus used for the direct detection and direct concentration measurement of toxic gases and vapours - Part 1: General requirements and test methods*

EN 45544-2, *Workplace atmospheres - Electrical apparatus used for the direct detection and direct concentration measurement of toxic gases and vapours - Part 2: Performance requirements for apparatus used for exposure measurement*

EN 45544-3, *Workplace atmospheres - Electrical apparatus used for the direct detection and direct concentration measurement of toxic gases and vapours - Part 3: Performance requirements for apparatus used for general gas detection*

EN 45544-4, *Workplace atmospheres - Electrical apparatus used for the direct detection and direct concentration measurement of toxic gases and vapours - Part 4: Guide for selection, installation, use and maintenance*

EN 60079-29-1:2016, *Explosive atmospheres - Part 29-1: Gas detectors - Performance requirements of detectors for flammable gases*

IEC 60335-2-40, *Household and similar electrical appliances - Safety - Part 2-40: Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers*