SLOVENSKI STANDARD
oSIST prEN 17348:2019

01-april-2019

Zahteve za načrtovanje in preskušanje sesalnikov in zbiralnikov prahu za uporabo v potencialno eksplozivnih atmosferah

Requirements for design and testing of vacuum cleaners and dust collectors for use in potentially explosive atmospheres

Anforderungen an die Konstruktion und Prüfung von Staubsaugern und Staubabscheidern zur Verwendung in explosionsgefährdeten Bereichen

Exigences relatives à la conception et aux essais des aspirateurs et des dépoussiéreurs destinés à être utilisés en atmosphères explosibles

Ta slovenski standard je istoveten z: **prEN 17348**

ICS:

97.080	Aparati za čiščenje	Cleaning appliances

oSIST prEN 17348:2019 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 17348

January 2019

ICS 97.080

English Version

Requirements for design and testing of vacuum cleaners and dust collectors for use in potentially explosive atmospheres

Anforderungen an die Konstruktion und Prüfung von Staubsaugern und Staubabscheidern zur Verwendung in explosionsgefährdeten Bereichen

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 305.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CEN in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (prEN 17348:2019) has been prepared by Technical Committee CEN/TC 305 “Potentially explosive atmospheres — Explosion prevention and protection”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

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 2014/34/EU.

This document also covers requirements of EU Directive 2006/42/EU relating to fire and explosion hazards.

For relationship with EU Directive 2014/34/EU, see informative Annex ZA, which is an integral part of this document.

Introduction

In accordance with EN ISO 12100, this is a type A standard.

The machinery concerned and the extent to which hazards, hazardous situations and events are covered and indicated in the scope of this European Standard.

When provisions of this type C standard are different from those which are stated in type A or B standards, the provisions of this type C standard take precedence over the provisions of the other standards, for machines that have been designed and built according to the provisions of this type C standard.

This standard supplements and modifies the general requirements of EN 60079-0 and EN ISO 80079-36. Where a requirement of this standard conflicts with a requirement of EN 60079-0 or EN ISO 80079-36 the requirement of this standard takes precedence.

1 Scope

This document specifies requirements for design, construction, testing and marking of hand-held, portable and transportable vacuum cleaners and dust collectors, including their accessories, constructed to Group II categories 2G and 3G and to Group II categories 2D and 3D, intended for the collection of combustible or non-combustible dusts and flammable or non-flammable liquids in potentially explosive atmospheres. A potentially explosive atmosphere may be generated by the equipment during its intended use. It covers equipment driven by electricity and by pneumatic power.

This document deals with all significant hazards, hazardous situations and events relevant to vacuum cleaners and dust collectors, when they are used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer.

Typical applications for the concerned equipment are:

— Collection of dust produced by machinery at the point of generation;

— General housekeeping around machinery and of working areas; and/or

— Collection of spills.

For other specific applications a specific assessment shall be performed.

This document does not cover equipment used to collect toxic dusts where there is a health risk if dust passes through the filter element. This document does not cover either the collection of dusts which have explosive and unstable properties (UN transport class 1, class 4.1 and class 5.2).

This document covers vacuum cleaners with an internal dust loaded volume of maximum 200 l.

This document does not apply to pumps, where the inlet nozzle is submerged into a liquid, and all conveying applications.

This document does not apply to Group I vacuum cleaners and dust collectors for mining.

For an easier readability, all types of equipment concerned by this standard are referred as “Vacuum cleaner” in this document.

NOTE Collecting dust is recognized as a suitable action in view to participate to prevention against explosion.

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 1127-1:2011, *Explosive atmospheres - Explosion prevention and protection - Part 1: Basic concepts and methodology*

EN 1822-1, *High efficiency air filters (EPA, HEPA and ULPA) - Part 1: Classification, performance testing, marking*

EN 13237:2012, *Potentially explosive atmospheres - Terms and definitions for equipment and protective systems intended for use in potentially explosive atmospheres*

EN 14986:2017, *Design of fans working in potentially explosive atmospheres*

EN 50495:2010, *Safety devices required for the safe functioning of equipment with respect to explosion risks*

EN 60079-0:2012, *Explosive atmospheres - Part 0: Equipment - General requirements*

EN 60079-14:2014, *Explosive atmospheres - Part 14: Electrical installations design, selection and erection*

EN 60079-31:2014, *Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"*

EN 60529:1991, *Degrees of protection provided by enclosures (IP Code)*

EN ISO 12100:2010, *Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)*

EN ISO 16852, *Flame arresters - Performance requirements, test methods and limits for use (ISO 16852)*

EN ISO 80079-36:2016, *Explosive atmospheres - Part 36: Non-electrical equipment for explosive atmospheres - Basic method and requirements (ISO 80079-36:2016)*

IEC/TS 60079-32-1:2013, *Explosive atmospheres — Part 32-1: Electrostatic hazards, guidance*

ISO 1182, *Reaction to fire tests for products — Non-combustibility test*

ISO 29463-1:2017, *High efficiency filters and filter media for removing particles from air — Part 1: Classification, performance, testing and marking*

ISO 29463-5:2011, *High-efficiency filters and filter media for removing particles in air — Part 5: Test method for filter elements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1127-1, EN ISO 12100, EN 60079-0, EN 13237 and EN ISO 80079-36:2016 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
vacuum cleaner
suction device for the collection of solid debris, dust and liquids

3.2
dust collector
device for separating solid particles from air or gas and accumulating them in a form convenient for handling

3.3
vacuum cleaner types
cleaners are assigned a type based on the material they are designed to collect

Note 1 to entry: There are three types of vacuum cleaners: “Dry type dust collector”, “Wet type dust collector” and “liquid collector”

3.4
dry type dust collector
device designed for the collection of dust. The dust is collected in a collection bag or directly in the collection tank

3.5
wet type dust collector
device designed for the collection of dust. The collection device is designed to precipitate the collected dust into a neutralizing liquid

3.6
liquid collector
device designed for the collection of liquids. The liquids are collected directly in the collection tank

3.7
design codes
two series of design codes “E” and “M” listing the required safety elements the vacuum cleaner shall provide

3.8
design codes “E”
series of design codes “E” lists the required safety elements the vacuum cleaner shall provide based on the working environment (“E”) where it is used

3.9
design codes “M”
series of design codes “M” lists the required safety elements the vacuum cleaner shall provide based on the material (“M”) it is used to collect

3.10
transportable
vacuum cleaner not intended to be carried by a person nor intended for fixed installation and which can be moved when energized

3.11
portable
vacuum cleaner intended to be carried by a person and which can be moved when energized

3.12
powerhead
upper part of the vacuum cleaner containing the motor or power system which creates the vacuum

Note 1 to entry: The powerhead can be detached from the filter chamber or from the collection tank

Note 2 to entry: see Figure B.1

3.13
motor cabinet
enclosure containing the motor of the vacuum cleaner

Note 1 to entry: see Figures B.2 and B.3

3.14
collection tank
part of the vacuum cleaner where the material collected is contained

Note 1 to entry: see Figures B.1, B.2 and B.3

3.15
filter chamber
part of the vacuum cleaner containing filters

Note 1 to entry: see Figures B.2 and B.3

3.16
through flow motor
motor where the working air travels through the fan system and is discharged directly over the motor windings as it exits, so the working air also provides cooling for the motor

3.17
bypass motor
motor where the working airflow is independent from the cooling airflow

Note 1 to entry: The working air does not get into contact with motor windings. A separate fan is used for the cooling air

Note 2 to entry: see Figures C.1 and C.3

3.18
motor enclosure
enclosure designed to protect the motor from damages and from contaminants present in the environment it operates

Note 1 to entry: Motor enclosures are categorized as either open or totally enclosed and have an impact on how the cooling air circulate

Note 2 to entry: See Figures D.1 and D.2 for an example of motor with an open enclosure and Figures C.1 and C.3 for an example of motor with a totally enclosed one.

3.19
side channel blower
non-positive displacement, high volume, pressure, blower that can operate as either a compressor or a vacuum pump

Note 1 to entry: It is also known as other names such as regenerative blower or vortex blower. The blower typically consists of an impeller mounted directly on a motor shaft and is rotated at a high speed

3.20
non-electrical vacuum cleaner
vacuum cleaner using non-electrical power source to operate

3.21
electrical vacuum cleaner
vacuum cleaner using electrical power source to operate

3.22
absolute filter
filter certified in conformance with applicable standards for having a minimum filtration efficiency of 99,95 % as per EN 1822-1 (H13) or as per ISO 29463-1 (ISO 35H)

3.23
coalescing filter
specifically designed to filter a humidified air flow. It removes liquid and droplets from the air flow

3.24
mist filtration system
filtration system use as main filter in wet type dust collectors to filter airflow from droplets

3.25
most penetrating particle size
particle size for which the efficiency of the filter media is at its minimum under test conditions

3.26
main filter
filter element filtering the air flow upstream of the motor or power system in order to prevent the majority of collected material from entering into the motor or power system and to get released into the environment

Note 1 to entry: A main filter is designed for dust or liquid collectors

3.27
collection bag
bag into which the collected material is accumulated

3.28
suction inlet
air intake placed on the vacuum cleaner to which the suction hose is connected

3.29
filter blockage indicator
device indicating the blockage of the filters

3.30
working air
air allowing to collect dusts and/or liquids in the vacuum cleaner

Note 1 to entry: See Figure B.1 for illustration.

3.31
cooling air
air used to cool off the motor of the vacuum cleaner

Note 1 to entry: See Figure B.1 for illustration.