

STN	Zemné stroje Bezpečnosť Systémy na ochranu pred kontamináciou	STN EN 17969 27 5320
------------	--	--

Earth-moving machinery - Safety - Contamination protective systems

Táto norma obsahuje anglickú verziu európskej normy.

This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 07/26

Obsahuje: EN 17969:2026

142863

Úrad pre normalizáciu, metrológiu a skúšobníctvo Slovenskej republiky, 2026

Slovenská technická norma a technická normalizačná informácia je chránená zákonom č. 60/2018 Z. z. o technickej normalizácii v znení neskorších predpisov.

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 17969

May 2026

ICS 53.100

English Version

**Earth-moving machinery - Safety - Contamination
protective systems**

Engins de terrassement - Sécurité - Systèmes de
protection contre les contaminations

Erdbaumaschinen - Sicherheit -
Schutzbelüftungsanlagen

This European Standard was approved by CEN on 13 April 2026.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists 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.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN 17969:2026 (E)

Contents		Page
European foreword		4
Introduction		5
1	Scope	6
2	Normative references	6
3	Terms, definitions and abbreviations.....	8
3.1	Terms and definitions.....	8
3.2	Abbreviations	10
4	Safety requirements and/or protective/risk reduction measures.....	10
4.1	General	10
4.2	General requirements	10
4.2.1	Requirements for the operator's cab	10
4.2.2	Requirements for providing breathing air	10
4.2.3	Overpressure of the cab	11
4.2.4	Information on operating condition of protective ventilation system	12
4.2.5	Noise at the operator's station.....	12
4.2.6	Visibility.....	12
4.2.7	Vibration.....	13
4.2.8	Access.....	13
4.2.9	Maintenance.....	13
4.2.10	Filter unit handling.....	13
4.2.11	Ventilation system mounting.....	13
4.2.12	Requirements for control devices	13
4.2.13	Moving parts.....	14
4.2.14	Protection against electrical hazards.....	14
4.2.15	Electromagnetic compatibility	15
4.3	Special provisions for machinery with particle filter units or gas filter units	15
4.3.1	Common provisions.....	15
4.3.2	Requirements for particle protective ventilation system	16
4.3.3	Requirements for gas protective ventilation system	16
4.4	Special provisions for machinery with breathing compressed air unit as protective ventilation systems.....	17
4.4.1	Air characteristics	17
4.4.2	Pressure indicator.....	18
4.4.3	Air bottles fixing	18
4.4.4	Cylinder pressure control	18
4.4.5	Protection of the components for breathing compressed air unit as protective ventilation systems.....	18
4.4.6	Protection of the fittings outside the operator station.....	18
5	Verification of the safety requirements and/or protective/risk reduction measures	18
6	Information for use.....	21
6.1	General	21
6.2	Operator's manual	21
6.2.1	General	21

6.2.2	Operator's manual for operation, maintenance and application of the filters.....	22
6.2.3	Information concerning airborne noise emission	22
6.3	Marking.....	23
6.3.1	Protective ventilation system.....	23
6.3.2	Filters.....	23
6.3.3	Contaminant filtration warning.....	23
Annex A (informative)	List of significant hazards.....	24
Annex B (informative)	Non-exhaustive list of possible configurations for contamination protective system.....	27
Annex C (informative)	Cab overpressure vs relative wind speed	30
Annex D (normative)	Determination of the nominal airflow of the protective ventilation system.....	31
Annex E (normative)	Determination of the protection capacity of the gas filters	32
E.1	General.....	32
E.2	Test procedure	32
Annex ZA (informative)	Relationship between this European Standard and the essential requirements of Directive 2006/42/EC aimed to be covered	38
Annex ZB (informative)	Relationship between this European Standard and the essential requirements of Regulation (EU) 2023/1230 aimed to be covered.....	41
Bibliography.....		45

EN 17969:2026 (E)**European foreword**

This document (EN 17969:2026) has been prepared by Technical Committee CEN/TC 151 “Construction equipment and building material machines - Safety”, 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 November 2026 and conflicting national standards shall be withdrawn at the latest by November 2026.

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

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annexes ZA and ZB, which are an integral part of this document.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

Introduction

This document is a type C standard as stated in EN ISO 12100:2010.

This document is of relevance in particular for the following stakeholder groups representing the market players with regard to machinery safety:

- contamination protective device manufacturers;
- health and safety bodies (regulators, accident prevention organizations, market surveillance etc.).

Others can be affected by the level of machinery safety achieved with the means of the document by the above-mentioned stakeholder groups:

- machine users/employers;
- machine users/employees (e.g. trade unions, organizations for people with special needs);
- service providers, e.g. for maintenance;
- consumers (in case of machinery intended for use by consumers).

The above-mentioned stakeholder groups have been given the possibility to participate in the drafting process of this document.

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

When operating earth-moving machinery in contaminated areas, the operator can be exposed to hazardous agents such as chemical agents in the form of dust, aerosols, gases or vapours or biological agents in the form of aerosols. Protective ventilation systems for earth-moving machinery providing protection against these hazardous agents can reduce operator exposure to airborne contaminants present in contaminated areas, where the protection provided by a standard filtration system (e.g. as required in EN 474-1:2022) is not sufficient.

The objective of this document is to improve the operator protection by using the protective ventilation systems of earth-moving machinery used in contaminated areas. For this purpose, this document specifies requirements, test procedures and the operator information to be provided, in particular with regard to installation, use and maintenance operations.

EN 17969:2026 (E)**1 Scope**

This document is applicable to protective ventilation systems to provide breathing air to operator's stations on earth-moving machinery used in contaminated areas. Its purpose is to limit the exposure of the operator (driver) to hazardous agents when earth-moving machinery is used in contaminated areas.

This document describes requirements, test procedures and information to be provided by the manufacturer of protective ventilation systems to provide breathing air to operator's stations on earthmoving machinery used in contaminated areas.

This document gives requirements additional to the common safety requirements of EN 474-1:2022 "Earthmoving machinery - Safety - Part 1: General requirements" and to the machine specific parts of the EN 474:2022 series.

This document does not repeat the requirements from the EN 474:2022 series but adds or replaces the requirements as applicable for Earth-moving machinery.

This document does not cover:

- the safety requirements to be used for any specific application;
- the choice of the system for a specific application site;
- the filter performance or the relevant filtration class for any particular application;
- the choice of type of filter for a specific application;
- the cab performance requirement when in-use;
- the filter durability when in-use.

This document is not applicable to protective ventilation systems which are manufactured before the date of its publication as an EN.

For the list of significant hazards, see informative Annex A.

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 474-1:2022, *Earth-moving machinery — Safety — Part 1: General requirements*

EN 474-5:2022, *Earth-moving machinery — Safety — Part 5: Requirements for hydraulic excavators*

EN 474-6:2022, *Earth-moving machinery — Safety — Part 6: requirements for dumpers*

EN 474-9:2022, *Earth-moving machinery — Safety — Part 9: requirements for pipelayers*

EN 474-10:2022, *Earth-moving machinery — Safety — Part 10: requirements for trenchers*

EN 474-12:2022, *Earth-moving machinery — Safety — Part 12: requirements for cable excavators*

EN 474-13:2022, *Earth-moving machinery — Safety — Part 13: requirements for rollers*

EN 1822-1:2019, *High efficiency air filters (EPA, HEPA and ULPA) — Part 1: Classification, performance testing, marking*

EN 12021:2014, *Respiratory equipment — Compressed gases for breathing apparatus*

EN 12341:2023, *Ambient air — Standard gravimetric measurement method for the determination of the PM₁₀ or PM_{2,5} mass concentration of suspended particulate matter*

EN 13274-8:2002, *Respiratory protective devices — Methods of test — Part 8: Determination of dolomite dust clogging*

EN 14387:2021, *Respiratory protective devices — Gas filter(s) and combined filter(s) — Requirements, testing, marking*

EN 15695-1:2017, *Agricultural tractors and self-propelled sprayers — Protection of the operator (driver) against hazardous substances — Part 1: Cab classification, requirements and test procedures*

EN 60204-1:2018, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements*

EN 60529:1991,¹ *Degrees of protection provided by enclosures (IP Code)*

EN IEC 62990-2:2021, *Workplace atmospheres — Part 2: Gas detectors — Selection, installation, use and maintenance of detectors for toxic gases and vapours*

EN ISO 4871:2009, *Acoustics — Declaration and verification of noise emission values of machinery and equipment (ISO 4871:1996)*

EN ISO 10121-1:2014, *Test method for assessing the performance of gas-phase air cleaning media and devices for general ventilation — Part 1: Gas-phase air cleaning media (ISO 10121-1:2014)*

EN ISO 13766-1:2018, *Earth-moving and building construction machinery — Electromagnetic compatibility (EMC) of machines with internal electrical power supply — Part 1: General EMC requirements under typical electromagnetic environmental conditions (ISO 13766-1:2018)*

EN ISO 13857:2019, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2019)*

EN ISO 19014-3:2018, *Earth-moving machinery — Functional safety — Part 3: Environmental performance and test requirements of electronic and electrical components used in safety-related parts of the control system (ISO 19014-3:2018)*

ISO 10263-4:2009, *Earth-moving machinery — Operator enclosure environment — Part 4: Heating, ventilating and air conditioning (HVAC) test method and performance*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN

¹ As impacted by EN 60529:1991/corrigendum May 1993, EN 60529:1991/A1:2000, EN 60529:1991/A2:2013, EN 60529:1991/AC:2016-12 and EN 60529:1991/A2:2013/AC:2019-02.