

STN	Automatické elektrostatické nanášacie systémy horľavých kvapalných náterových látok Bezpečnostné požiadavky	STN EN 50176 33 2037
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Automatic electrostatic application systems for ignitable liquid coating materials - Safety requirements

Táto norma obsahuje anglickú verziu európskej normy.

This standard includes the English version of the European Standard.

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**Automatic electrostatic application systems for ignitable liquid
coating materials - Safety requirements**

Systèmes automatiques d'application électrostatique de
matériaux de revêtement inflammables - Exigences de
sécurité

Automatische elektrostatische Beschichtungssysteme für
entzündbare Beschichtungsstoffe -
Sicherheitsanforderungen

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European Committee for Electrotechnical Standardization
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EN 50176:2025 (E)**European foreword**

This document (EN 50176:2025) has been prepared by CLC/SC 31-8 “Electrostatic painting and finishing equipment” of CLC/TC 31 “Electrical apparatus for potentially explosive atmospheres”.

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2026-02-28
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2028-02-29

This document supersedes EN 50176:2009 and all of its amendments and corrigenda (if any).

The significant technical changes between this document and EN 50176:2009 are given in Annex G, Table G.1.

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

This document has been prepared under a standardization request addressed to CENELEC 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 ZZA and ZZB, which are integral parts of this document.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Introduction

During the electrostatic coating process, the ignitable liquid coating material is transported to a spraying device where it is atomised by mechanical forces and/or by the influence of an electric field. The generated spray cloud is charged by high voltage of some 10 kV, is attracted by and is applied to the earthed workpiece.

Spray clouds which are not applied to the workpiece (overspray) are removed by a suction device or by other means.

The coating material is cured at room temperature or by heating.

EN 50176:2025 (E)**1 Scope**

1.1 This document specifies the electrical requirements for the design of automatic electrostatic application systems for liquid coating materials which can be ignited in an atomised state, used within a temperature range from 5 °C to 40 °C.

This document considers automatic electrostatic application systems for processing ignitable liquid coating materials, where the conductivity of the complete system is limited up to 50 nS/cm. Together with additional measures like e.g. potential separation systems, these requirements can also be applied to ignitable liquid coating materials, where the conductivity of the complete system is limited up to 2 000 µS/cm.

Ignition hazards related to the generated explosive atmosphere and the protection of persons against electric shock are considered.

1.2 This document specifies

- requirements for an interface to machinery according to EN 16985:2018,
- additional requirements for machinery covered by EN 1953:2025 and EN 12621:2025.

1.3 This document also specifies requirements for a safe operation of electrostatic application systems, including the electrical installation. The requirements consider both the processing of coating materials and the cleaning and purge processes.

1.4 This document applies to three types of spraying systems; see 5.1.1.

Spraying systems are classified as equipment of group II, category 2G (for intended use in zone 1 or zone 2) or category 3G (for intended use in zone 2).

Only electrostatic spraying systems operating with a d.c. sinusoidal ripple of not more than 10 % of the r.m.s. value are considered.

1.5 For electrostatic application systems used in food and pharmaceutical industry, additional requirements may apply.

1.6 This document does not apply to

- potential separation systems;
- selection, installation and application of other electrical and non-electrical equipment in areas with explosion hazard, see EN 60079-14:2014 and EN 16985:2018;
- quality assurance systems for electrostatic spraying equipment (see EN ISO/IEC 80079-34:2020, ZB.11).

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.

EN 1149-5:2018, *Protective clothing - Electrostatic properties - Part 5: Material performance and design requirements*

EN 1953:2025, *Application equipment for coating materials - Safety requirements*

EN 12621:2025, *Machinery for supply and circulation of liquid coating materials - Safety requirements*

EN 16985:2018, *Spray booths for organic coating material - Safety requirements*

EN 50050-1:2013, *Electrostatic hand-held spraying equipment - Safety requirements - Part 1: Hand-held spraying equipment for ignitable liquid coating materials*

EN 50050-2:2013, *Electrostatic hand-held spraying equipment - Safety requirements - Part 2: Hand-held spraying equipment for ignitable coating powder*

EN 50050-3:2013, *Electrostatic hand-held spraying equipment - Safety requirements - Part 3: Hand-held spraying equipment for ignitable flock*

EN 50059:2025, *Hand-held electrostatic application equipment for non-ignitable liquid coating materials — Safety requirements*

EN 50177:2009,¹ *Stationary electrostatic application equipment for ignitable coating powders - Safety requirements*

EN 50223:2015, *Stationary electrostatic application equipment for ignitable flock material - Safety requirements*

EN 50348:2010,² *Stationary electrostatic application equipment for non-ignitable liquid coating material - Safety requirements*

EN 60204-1:2018, *Safety of machinery - Electrical equipment of machines - Part 1: General requirements (IEC 60204-1:2016, modified)*

EN 60529:1991, *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)*

EN 61340-4-1:2004,³ *Electrostatics - Part 4-1: Standard test methods for specific applications - Electrical resistance of floor coverings and installed floors*

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

EN ISO 13849-1:2023, *Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design (ISO 13849-1:2023)*

EN ISO 20344:2021, *Personal protective equipment - Test methods for footwear (ISO 20344:2021)*

IEC 60479-1:2018, *Effects of current on human beings and livestock — Part 1: General aspects*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN

¹ As impacted by EN 50177:2009/A1:2012.

² As impacted by EN 50348:2010/COR1:2010.

³ As impacted by EN 61340-4-1:2004/A1:2015.