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RAKENDUSSEADMED SÜTTIVALE HELVESMATERJALILE.
OHUTUSNÕUDED

Stationary electrostatic application equipment for
ignitable flock material - Safety requirements

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 50223:2015 sisaldab Euroopa standardi EN 50223:2015 ingliskeelset teksti.	This Estonian standard EVS-EN 50223:2015 consists of the English text of the European standard EN 50223:2015.
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EUROPEAN STANDARD

EN 50223

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English Version

Stationary electrostatic application equipment for ignitable flock material - Safety requirements

Matériel fixe de projection électrostatique de flock inflammable - Exigences de sécurité

Stationäre elektrostatische Flockanlagen für entzündbaren Flock - Sicherheitsanforderungen

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

This document (EN 50223:2015) has been prepared by CLC/SC 31-8 "Electrostatic painting and finishing equipment" from CLC/TC 31 "Electrical apparatus for potentially explosive atmospheres".

This document supersedes EN 50223:2010.

The following dates are proposed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2016-04-13
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2018-04-13

The State of the Art is included in Annex ZY "Significant changes between this European Standard and EN 50223:2010".

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This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For the relationship with EU Directives 94/9/EC and 2006/42/EC, see informative Annexes ZZA and ZZB, which are an integral part of this document.

Introduction

In the process of electrostatic flock application, the flock is transported from a reservoir through an electrical field either by gravitational forces or an air stream or electrostatic forces. As the flock particles disperse due to the flock application device and/or the electric field, they are electrostatically charged by means of high voltage of some tens of kilovolts aligned and, in the form of a cloud, encased by and deposited on the grounded workpiece. They stick to those workpieces, which are covered with an adhesive layer. The adhesive is set at room temperature or by heating.

Flock particles not deposited on the workpiece (overspray) are upcast or removed by the exhaust ventilation system, by brushes or other devices into the flock recovery system.

1 Scope

1.1 This European Standard specifies requirements for stationary electrostatic flock application equipment which is designed for applying ignitable flock which may form explosive atmospheres in the flock application area. For stationary electrostatic application devices for ignitable flock of type B-F, EN 50050-3 is applicable in addition to this standard.

This European Standard also specifies the constructional requirements for a safe operation of the stationary equipment of flock application booths, including the electrical installations and the accessories.

This European Standard deals with all significant hazards, hazardous situations and events relevant to flock application booths, when they are used as intended and under conditions which are foreseeable as malfunction by the manufacturer (see Clause 4).

1.2 This European Standard considers three types of electrostatic flock systems. For more details, see Table 1.

1.3 This European Standard deals with those hazards occurring during stationary automatic electrostatic flocking. Among these hazards are, above all, ignition hazards of the generated explosive atmosphere and hazard to persons.

1.4 The stationary equipment dealt with in this European Standard is considered to be equipment of group II, category 3D for the use in areas with potential explosion hazards of zone 22.

1.5 This European Standard is not applicable for

- flock systems in which mixtures of solvent vapours in air occur with a concentration of > 20 % of the LEL,
- flock systems operated with AC high voltage,
- hand-held spraying equipment for ignitable flock (see EN 50050-3),
- the application system for liquid or pasty substances (e.g. adhesives, primer),
- the cleaning of flock application booths,
- the storage and handling of ignitable substances outside the coating plant.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 953, *Safety of machinery - Guards - General requirements for the design and construction of fixed and movable guards*

EN 981, *Safety of machinery - System of auditory and visual danger and information signals*

EN 1037, *Safety of machinery - Prevention of unexpected start-up*

EN 1081, *Resilient floor coverings - Determination of the electrical resistance*

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

- EN 13463-1:2009, *Non-electrical equipment for use in potentially explosive atmospheres - Part 1: Basic method and requirements*
- EN 13478, *Safety of machinery - Fire prevention and protection*
- EN 13501-1, *Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests*
- EN 14373, *Explosion suppression systems*
- EN 14460, *Explosion resistant equipment*
- EN 14462, *Surface treatment equipment - Noise test code for surface treatment equipment including its ancillary handling equipment - Accuracy grades 2 and 3*
- EN 14491, *Dust explosion venting protective systems*
- EN 14797, *Explosion venting devices*
- EN 14986, *Design of fans working in potentially explosive atmospheres*
- EN 15089, *Explosion isolation systems*
- EN 50050-3, *Electrostatic hand-held spraying equipment - Safety requirements - Part 3: Hand-held spraying equipment for ignitable flock*
- EN 60079-0, *Explosive atmospheres - Part 0: Equipment - General requirements (IEC 60079-0)*
- EN 60204-1, *Safety of machinery - Electrical equipment of machines - Part 1: General requirements (IEC 60204-1)*
- EN 60529, *Degrees of protection provided by enclosures (IP code) (IEC 60529)*
- EN 61340-4-1, *Electrostatics - Part 4-1: Standard test methods for specific applications - Electrical resistance of floor coverings and installed floors (IEC 61340-4-1)*
- EN 61508-3, *Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 3: Software requirements (IEC 61508-3)*
- EN 62061:2005, *Safety of machinery - Functional safety of safety-related electrical, electronic and programmable electronic control systems (IEC 62061:2005)*
- EN ISO 12100:2010, *Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)*
- EN ISO 13856 (all parts), *Safety of machinery - Pressure-sensitive protective devices (ISO 13856)*
- EN ISO 13857, *Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857)*
- EN ISO 13849-1, *Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design (ISO 13849-1)*
- EN ISO 14122-2, *Safety of machinery - Permanent means of access to machinery - Part 2: Working platforms and walkways (ISO 14122-2)*

EN ISO 14122-3, *Safety of machinery - Permanent means of access to machinery - Part 3: Stairs, stepladders and guard-rails (ISO 14122-3)*

EN ISO 14122-4, *Safety of machinery - Permanent means of access to machinery - Part 4: Fixed ladders (ISO 14122-4)*

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

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

stationary electrostatic application device for ignitable flock

flock application booths or flock application areas, in which the electrostatic application equipment is either fixed stationary (e.g. on supports) and is operated automatically or is guided by reciprocators (e.g. robots). In general, the equipment comprises the following units:

- flock application booth;
- flock application area;
- flock application system;
- flock recovery system;
- fixtures for workpieces;
- conveyors;
- grounding devices;
- forced ventilation;
- fire prevention and protection equipment;
- explosion protection equipment

3.2

flock application system

devices for application of flock by means of electrostatic charge. In general, the flock application system comprises the following units:

- device for the transport of flock;
- high voltage electrode;
- high voltage supply system;
- dosing device