



NSAI
Standards

Irish Standard
I.S. EN 50223:2015

Stationary electrostatic application equipment for ignitable flock material - Safety requirements

I.S. EN 50223:2015

Incorporating amendments/corrigenda/National Annexes issued since publication:

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):

NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.

This document is based on:

EN 50223:2015

Published:

2015-05-08

*This document was published
under the authority of the NSAI
and comes into effect on:*

2015-05-26

ICS number:

29.260.20

87.100

NOTE: If blank see CEN/CENELEC cover page

NSAI
1 Swift Square,
Northwood, Santry
Dublin 9

T +353 1 807 3800
F +353 1 807 3838
E standards@nsai.ie
W NSAI.ie

Sales:
T +353 1 857 6730
F +353 1 857 6729
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

EUROPEAN STANDARD

EN 50223

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2015

ICS 29.260.20; 87.100

Supersedes EN 50223:2010

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

This European Standard was approved by CENELEC on 2015-04-13. CENELEC 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 CENELEC 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 CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

	Page
Foreword	4
Introduction	5
1 Scope	6
2 Normative references	6
3 Terms and definitions	8
4 List of significant hazards	15
4.1 General	15
4.2 Mechanical hazards	15
4.3 Electrical hazards	16
4.4 Hazards generated by noise	16
4.5 Hazards resulting from dangerous substances	17
4.6 Fire hazards	17
4.7 Explosion hazards	17
4.8 Hazards by malfunctions of the control system	18
4.9 Hazards by failure of energy supply	18
5 Safety requirements and/or measures	18
5.1 General requirements for electrostatic flock application systems	18
5.2 Categorisation of electrostatic flock application systems	18
5.3 Equipment requirements for flock application systems of category 3	19
5.4 Requirements for the high voltage supply	22
5.5 Requirements for the flock application booth	22
6 Testing	31
6.1 Type test of the high voltage cables	31
6.2 Routine tests of the stationary equipment	31
6.3 Testing of the requirements for the flock application booth	33
7 Information for use	35
7.1 General	35
7.2 Instruction manual	35
7.3 Marking of the flock application system	40
7.4 Marking of the flock application booth	41
Annex A (normative) Determination of the concentration of ignitable flock material in terms of LEL	42
A.1 Calculation	42
A.2 Examples of calculation – Determination of concentration of ignitable flock material	43
Annex B (normative) Determination of concentration of organic solvents	45
B.1 Calculation	45
B.2 Example for calculation - Determination of minimum exhaust volume flow based on a design concentration value	46
Annex C (informative) Classification of areas with potential explosion hazard	47
Annex D (informative) Example of marking	48
Annex ZY (informative) Significant changes between this European Standard and EN 50223:2010	49
Annex ZZA (informative) Coverage of Essential Requirements of EU Directive 2006/42/EC	51

Annex ZZB (informative) Coverage of Essential Requirements of EU Directive 94/9/EC	52
Bibliography.....	53

Figure

Figure C.1 — Flock application booth with closed flock recovery system	47
--	----

Tables

Table 1 — Electrostatic flock application systems for ignitable flock – Overview	19
Table 2 — Requirements for electrostatic flock application systems of category 3 for ignitable flock.....	20
Table 3 — Required minimum ignition protection categories inside and within the vicinity of flock systems	28
Table 4 — Survey of tests	32
Table 5 — Test intervals.....	39
Table ZY.1 — Significant changes between this European Standard and EN 50223:2010	49

EN 50223:2015 (E)

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".

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

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.

EN 50223:2015 (E)**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*

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

-
- Looking for additional Standards? Visit Intertek Inform Infostore
 - Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation
-