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NSAI Standards

Irish Standard
I.S. EN 12981:2005+A1:2009

Coating plants - Spray booths for application of organic powder coating material - Safety requirements

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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
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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 12981:2005+A1

April 2009

ICS 87.100

Supersedes EN 12981:2005

English Version

Coating plants - Spray booths for application of organic powder coating material - Safety requirements

Installations d'application - Cabines d'application par projection de produit de revêtement en poudre organique - Exigences de sécurité

Beschichtungsanlagen - Spritzkabinen für organische Pulverlacke - Sicherheitsanforderungen

This European Standard was approved by CEN on 21 March 2005 and includes Amendment 1 approved by CEN on 22 February 2009.

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Foreword

This document (EN 12981:2005+A1:2009) has been prepared by Technical Committee CEN/TC 271 “Surface treatment equipment — 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of an identical text or by endorsement, at the latest by October 2009, and conflicting national standards shall be withdrawn at the latest by December 2009.

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(s).

[A1⟩ For relationship with EU Directive(s), see informative Annexes ZA and ZB, which are integral parts of this document. ⟨A1]

This document includes Amendment 1, approved by CEN on 2009-02-22.

This document supersedes EN 12981:2005.

The start and finish of text introduced or altered by amendment is indicated in the text by tags [A1⟩ ⟨A1].

NOTE Although a spray booth, as an integral whole, formally does not fall under the scope of the ATEX Directive 94/9/EC, the standard is based upon a fundamental risk analysis according to this directive.

This European Standard includes a Bibliography.

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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0 Introduction

This European Standard is a Type C standard as stated in EN ISO 12100.

The machinery concerned and the extent to which hazards, hazardous situation and events are covered are 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 European Standard.

The specific requirements which manufacturers shall include in the information for use are given in Clause 7.

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1 Scope

1.1 This European Standard is applicable to spray booths for spray application of organic coating powder, called in this European Standard “powder spray booths”, i.e. machinery and related equipment for automated and/or manual powder coating application processes.

This European Standard covers powder spray booths consisting of the following equipment:

— forced ventilation system;

— air filtering and coating powder recovery system;

— coating powder recycling system;

— delivery and circulating systems for coating powder (for instance hopper or tank, preparation and transfer new powder feeding);

— air conditioning system;

— automatic cleaning system;

— monitoring and/or control systems;

— fire detection and interlocking system;

— explosion protection system;

— mechanical aspects of product handling systems and reciprocators inside the powder spray booth;

— electrical equipment;

— powered doors and gates

joined together within or at a partially or totally enclosed structure (limited by walls, called space) for the controlled processing of spray application of organic coating powder.

This European Standard deals with the significant hazards, hazardous situations and events relevant to powder spray booths when they are used as intended and under the conditions foreseen by the manufacturer (see Clause 4).

NOTE Powder spray booths are classified in Annex [A1⟩ C ⟨A1].

In addition, it defines:

— the content of marking;

— the minimum requirements for use.

1.2 This European Standard does not cover:

a) powder spray booths in which the coating is applied by immersion in a fluidised bed;

b) powder spray booths for application of non combustible and inorganic coating powder and flock;

c) spraying equipment as covered by EN 1953, EN 50050, EN 50177;

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d) machinery for the supply or circulation of coating material under pressure as covered by prEN 12621;

e) all loading and unloading systems;

f) automatic systems, e.g. robots as covered by EN 775 and control systems of powder spray booths influencing these systems (e.g. teaching of the spraying process);

g) powder spray booths for application of coating powder for food-stuffs and pharmaceuticals;

h) spraying areas characterized by an open space for application of organic powder coating material which is limited only by one side wall used for extraction of exhaust ventilation;

i) limiting walls of powder spray booths if they are constituent parts of a building.

1.3 This European Standard is not applicable to powder spray booths which are manufactured before the date of publication of this European Standard by CEN.

2 Normative references

The following referenced documents are indispensable for the application 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 179, *Building hardware — Emergency exit devices operated by a lever handle or push pad* ⟨A1⟩ *, for use on escape routes* ⟨A1⟩ *— Requirements and test methods*

EN 294, *Safety of machinery — Safety distance to prevent danger zones being reached by the upper limbs*

EN 349, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body*

EN 418, *Safety of machinery — Emergency stop equipment, functional aspects — Principles for design*

EN 619, *Continuous handling equipment and systems — Safety and EMC requirements for equipment for mechanical handling of unit loads*

EN 775, *Manipulating industrial robots — Safety (ISO 10218:1992, modified)*

EN 811, *Safety of machinery — Safety distances to prevent danger zones being reached by the lower limbs*

EN 842, *Safety of machinery — Visual danger signals — General requirements, design and testing*

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

EN 954-1:1996, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design*

CR 954-100, *Safety of machinery — Safety-related parts of control systems — Part 100: Guide on the use and application of EN 954-1:1996*

EN 971-1:1996, *Paints and varnishes — Terms and definitions for coating materials — Part 1: General terms*

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

EN 999, *Safety of machinery — The positioning of protective equipment in respect of approach speeds of parts of the human body*

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

EN 1088:1995, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection*

EN 1127-1:1997, *Explosive atmospheres — Explosion prevention and protection — Basic concepts and methodology*

EN 13463-1:2001, *Non-electrical equipment for potentially explosive atmospheres — Part 1: Basic method and requirements*

EN 13463-5, *Non-electrical equipment intended for use in potentially explosive atmospheres — Part 5: Protection by constructional safety "c"*

EN 13478, *Safety of machinery — Fire prevention and protection*

⟩A1⟨ EN 14462:2005, *Surface treatment equipment — Noise test code for surface treatment equipment including its ancillary handling equipment — Accuracy grades 2 and 3* ⟨A1⟩

⟩A1⟨ EN 14986 ⟨A1⟩, *Design of fans working in potentially explosive atmospheres*

EN 50015, *Electrical apparatus for potentially explosive atmospheres — Oil immersion "o"*

EN 50017, *Electrical apparatus for potentially explosive atmospheres — Powder filling "q"*

EN 50020, *Electrical apparatus for potentially explosive atmospheres — Intrinsic safety "i"*

EN 50050, *Electrical apparatus for potentially explosive atmospheres — Electrostatic hand-held spraying equipment*

EN 50177:1996, *Automatic electrostatic spraying installations for flammable coating powder*

EN 50281-1-2, *Electrical apparatus for use in the presence of combustible dust — Part 1-2: Electrical apparatus protected by enclosures — Selection, installation and maintenance*

EN 60079-0, *Electrical apparatus for explosive gas atmospheres — Part 0: General requirements (IEC 60079-0:2004)*

EN 60079-1, *Electrical apparatus for potentially explosive atmospheres — Part 1: Flameproof enclosure "d" (IEC 60079-1:2003)*

EN 60079-7, *Electrical apparatus for explosive gas atmospheres — Part 7: Increased safety “e” (IEC 60079-7:2001)*

EN 60079-17, *Electrical apparatus for explosive gas atmospheres — Part 17: Inspection and maintenance of electrical installations in hazardous areas (other than mines) (IEC 60079-17:2002)*

EN 60079-18, *Electrical apparatus for explosive gas atmospheres — Part 18: Construction, test and marking of type of protection encapsulation “m” electrical apparatus (IEC 60079-18:2004)*

EN 60204-1:1997, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:1997)*

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

EN 61000-6-1, *Electromagnetic compatibility (EMC) — Part 6-1: Generic standards — Immunity for residential, commercial and light-industrial environments (IEC 61000-6-1:1997, modified)*

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