



SLOVENSKI STANDARD
SIST EN 12621:2006+A1:2010

01-oktober-2010

Naprave za dovod in obtok premaznih materialov s pomočjo tlaka - Varnostne zahteve (vključno z dopnilom A1)

Machinery for the supply and circulation of coating materials under pressure - Safety requirements

Förder- und Umlaufanlagen für Beschichtungsstoffe unter Druck - Sicherheitsanforderungen

Installations d'alimentation et de circulation de produits de revêtement sous pression - Prescriptions de sécurité

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ICS:

87.100	Oprema za nanašanje premazov	Paint coating equipment
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EUROPEAN STANDARD
NORME EUROPÉENNE
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English Version

Machinery for the supply and circulation of coating materials under pressure - Safety requirements

Installations d'alimentation et de circulation de produits de
revêtement sous pression - Prescriptions de sécurité

Förder- und Umlaufanlagen für Beschichtungsstoffe unter
Druck - Sicherheitsanforderungen

This European Standard was approved by CEN on 9 December 2005 and includes Amendment 1 approved by CEN on 30 April 2010.

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COMITÉ EUROPÉEN DE NORMALISATION
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EN 12621:2006+A1:2010 (E)**Foreword**

This document (EN 12621:2006+A1:2010) 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of an identical text or by endorsement, at the latest by December 2010, and conflicting national standards shall be withdrawn at the latest by December 2010.

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

This document includes Amendment 1, approved by CEN on 2010-04-30.

This document supersedes EN 12621:2006.

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

This European Standard 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).





For relationship with EU Directive(s), see informative Annexes ZA and ZB, which are integral parts of this European Standard.

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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

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

This European Standard is part of a series of documents prepared by CEN/TC 271/WG2 specifying the health, safety and environmental protection requirements for devices, units and equipment for surface coating:

- EN 1953 "Atomising and spraying equipment for coating materials";
-  EN 12621:2006+A1  "Machinery for the supply and circulation of coating materials under pressure";
-  EN 12757-1  "Mixing machinery for coating materials".

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

When provisions of this type C standard are different from those 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.

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EN 12621:2006+A1:2010 (E)**1 Scope**

1.1 This European Standard applies to the design and construction of machinery for the supply and circulation of coating and/or auxiliary materials under pressure – in the following called "machine" (see 3.1).

The coating material is supplied by air pressure or airless.

NOTE Machines covered by this European Standard may be linked with e.g. colour mixing machinery, atomising and spraying equipment, spray booths and stands and/or automated coating machinery.

The pressure related parts of the machines covered are classified as no higher than category I under article 9 of the Pressure Equipment Directive 97/23/EC.

This European Standard deals with the significant hazards, hazardous situations and events relevant to the machinery for the supply and circulation of coating and/or auxiliary materials under pressure, when they are used as intended and under the conditions foreseen by the manufacturer (see Clause 4).

Machinery for the supply and circulation of coating and/or auxiliary materials under pressure consists of the following equipment:

- pump units;
- pressure vessels;
- non-pressurised containers;
- interconnecting pipes and hoses
- flanges, nozzles, couplings, supports, lifting equipment etc.;
- agitators;
- filters;
- pulsation damping devices;
- all safety devices (e.g. level monitoring equipment);
- equipment for heating and/or cooling of the coating materials.

The machine may be fixed or mobile.

1.2 This European Standard excludes:

- pressure related hazards of equipment classified as higher than category 1 under article 9 of the Pressure Equipment Directive 97/23/EC;
- atomising and spraying equipment as dealt with in EN 1953:1998 and the supply hoses for this equipment;
- atomising and spraying equipment as dealt with in EN 50144-2-7:2001, EN 50260-2-7:2002 and the supply hoses for this equipment.

1.3 This European Standard does not apply to:

- A1 machinery for A1 processing of foodstuffs and pharmaceuticals;

- design and construction of pipes and hoses;
- design and construction of coating presses (see 3.23);
- machinery for the supply of powder coating material.

1.4 This European Standard is not applicable to machinery for the supply and circulation of coating materials under pressure which are manufactured before the date of publication of this document by CEN.

2 Normative references

The following referenced documents are indispensable for the application of this European Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

- EN 294:1992, *Safety of machinery — Safety distance to prevent danger zones being reached by the upper limbs*
- EN 349:1993, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body*
- EN 563:1994, *Safety of machinery — Temperatures of touchable surfaces — Ergonomics data to establish temperature limit values for hot surfaces*
- EN 619:2002, *Continuous handling equipment and systems — Safety and EMC requirements for equipment for mechanical handling of unit loads*
- EN 809:1998, *Pumps and pump units for liquids — Common safety requirements*
- EN 811:1996, *Safety of machinery — Safety distances to prevent danger zones being reached by the lower limbs*
- EN 842:1996, *Safety of machinery — Visual danger signals — General requirements, design and testing*
- EN 894-1:1997, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 1: General principles for human interactions with displays and control actuators*
- EN 894-2:1997, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 2: Displays*
- EN 894-3:2000, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 3: Control actuators*
- EN 953:1997, *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*
- EN 971-1:1996, *Paints and varnishes — Terms and definitions for coating materials — Part 1: General terms*
- EN 981:1996, *Safety of machinery — System of auditory and visual danger and information signals*
- EN 982:1996, *Safety of machinery — Safety requirements for fluid power systems and their components — Hydraulics*
- EN 983:1996, *Safety of machinery — Safety requirements for fluid power systems and their components — Pneumatics*
- EN 1037:1995, *Safety of machinery — Prevention of unexpected start-up*

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

EN 1127-1:2007 ^{A1}, *Explosive atmospheres — Explosion prevention and protection — Part 1: Basic concepts and methodology*

EN 1494:2000, *Mobile or movable jacks and associated lifting equipment*

EN 1570:1998, *Safety requirements for lifting tables*

prEN 1829-1, *High pressure cleaners — High pressure water jet machines — Safety requirements — Part 1: General description*

EN 1953:1998, *Atomising and spraying equipment for coating materials — Safety requirements*

EN 13237:2003, *Potentially explosive atmospheres — Terms and definitions for equipment and protective systems intended for use in potentially explosive atmospheres* ^{A1}

EN 13445-1:2002, *Unfired pressure vessels — Part 1: General*

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

EN 13463-5:2003, *Non-electrical equipment intended for use in potentially explosive atmospheres — Part 5: Protection by constructional safety "c"*

EN 13478:2001, *Safety of machinery — Fire prevention and protection*

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

EN 50050:2006 ^{A1}, *Electrical apparatus for potentially explosive atmospheres — Electrostatic hand-held spraying equipment*

EN 50059:1990, *Specification for electrostatic hand-held spraying equipment for non-flammable material for painting and finishing*

EN 50176:1996, *Automatic electrostatic spraying installations for flammable liquid spraying material*

EN 60079-0:2009, *Explosive atmospheres — Part 0: Equipment — General requirements (IEC 60079-0:2007)* ^{A1}

EN 60079-15:2005, *Electrical apparatus for explosive gas atmospheres — Part 15: Construction, test and marking of type of protection "n" electrical apparatus (IEC 60079-15:2005)* ^{A1}

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

EN 61000-6-1:2001, *Electromagnetic compatibility (EMC) — Part 6-1: Generic standards — Immunity for residential, commercial and light-industrial environments (IEC 61000-6-1:1997, modified)*

EN 61000-6-2:2001, *Electromagnetic compatibility (EMC) — Part 6-2: Generic standards — Immunity for industrial environments (IEC 61000-6-2:1999, modified)*

EN 61000-6-3:2001, *Electromagnetic compatibility (EMC) — Part 6-3: Generic standards — Emission standard for residential, commercial and light-industrial environments (IEC 61000-6-3:1996, modified)*

EN 61000-6-4:2001, *Electromagnetic compatibility (EMC) — Part 6-4: Generic standards — Emission standard for industrial environments (IEC 61000-6-4:1997, modified)*

EN 61010-1:2001, *Safety requirements for electrical equipment for measurement, control and laboratory use — Part 1: General requirements (IEC 61010-1:2001)*

EN 61310-1:1995, *Safety of machinery — Indication, marking and actuation — Part 1: Requirements for visual, auditory and tactile signals (IEC 61310-1:1995)*

EN ISO 11688-1:1998, *Acoustics — Recommended practice for the design of low-noise machinery and equipment — Part 1: Planning (ISO/TR 11688-1:1995)*

EN ISO 12100-1:2003, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology (ISO 12100-1:2003)*

EN ISO 12100-2:2003, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles (ISO 12100-2:2003)*

ISO 3864-1:2002, *Graphical symbols — Safety colours and safety signs — Part 1: Design principles for safety signs in workplaces and public area*

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 971-1:1996 and EN ISO 12100-1:2003 and the following apply.

3.1

machine

machinery for the supply and circulation of coating materials under pressure

3.2

coating equipment

equipment used for the application of coating materials

NOTE Application by means such as, but not limited to:

- atomising and spraying;
- extrusion;
- flow coating.

3.3

pump unit

equipment comprising the pump, the power supply including the transmission elements (e.g. couplings, gears), base plates

3.4

pressure vessel

housing designed and built to contain coating and/or auxiliary materials under pressure including its direct attachments up to the coupling point connecting it to other equipment. A vessel may be composed of more than one chamber

3.5

container

vessel without pressure used for the storage and/or mixing of coating and/or auxiliary materials

3.6

safety device

device to fulfil a safety function when in use and the failure or malfunctioning of which endangers the safety or health of persons

3.7

agitator

device which is used to stir or otherwise move the coating material

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NOTE Such device is generally used in conjunction with pressure vessels or coating material containers. Such devices may be driven by a power supply.

3.8 pulsation damping device

device used to reduce pulsations which have been transmitted to the coating and/or auxiliary material by the operating cycles of the pump unit used in the machine

3.9 equipment for heating and/or cooling the coating and/or auxiliary materials

equipment, which may use electrical energy or some other source of energy, such as water or gas, to create a temperature change in the coating and/or auxiliary material

3.10 coating material

organic product in liquid or in paste form (see 1.9 of EN 971-1:1996)

NOTE 1 Such coating materials may consist of binders, pigments, fillers, solvents, thinner and other additives.

NOTE 2 Such coating materials can be:

- varnishes (see 1.7 of EN 971-1:1996);
- paints (see 1.36 of EN 971-1:1996);
- patching compounds;
- fillers (see 1.21 of EN 971-1:1996);
- sealers and adhesives.

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3.11 auxiliary material

material used for functions e.g.:

- solvents, compressed air (for cleaning),
- water, compressed air (for maintenance)

3.12 flammable substance

substance in form of gas, vapour, liquid, solid, or mixtures of these, able to undergo an exothermic reaction with air when ignited A_1 (see 3.48 of EN 13237:2003) A_1

NOTE "Flammable substances" and "combustible material" are equivalently used terms in this European Standard.

3.13 explosion range

range of concentration of a flammable substance with air, within which an explosion can occur A_1 (see 3.33 of EN 13237:2003) A_1

3.14 hazardous areas

areas where hazards due to explosive atmosphere may exist. The probability of occurrence of explosive atmospheres is classified in zones

NOTE Limits of hazardous zones are given in Annex B

3.14.1 zone 0

place in which an explosive atmosphere consisting of a mixture with air of flammable substances in the form of gas, vapour or mist is present continuously or for long periods or frequently A_1 (see 3.119-1 of EN 13237:2003) A_1