Metallurgiatööstuse vormimis- ja kärnimasinate, seadmete ning nendega seotud abiseadmete ohutusnõuded

Safety of machinery - Safety requirements for foundry moulding and coremaking machinery and plant and associated equipment

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 710:1999+A1:2010 sisaldab Euroopa standardi EN 710:1997+A1:2010 ingliskeelset teksti.	This Estonian standard EVS-EN 710:1999+A1:2010 consists of the English text of the European standard EN 710:1997+A1:2010.
Standard on kinnitatud Eesti Standardikeskuse 30.06.2010 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.	This standard is ratified with the order of Estonian Centre for Standardisation dated 30.06.2010 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.
Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 28.04.2010.	Date of Availability of the European standard text 28.04.2010.
Standard on kättesaadav Eesti standardiorganisatsioonist.	The standard is available from Estonian standardisation organisation.

ICS 25.120.30

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 710:1997+A1

April 2010

ICS 25.120.30

Supersedes EN 710:1997

English Version

Safety of machinery - Safety requirements for foundry moulding and coremaking machinery and plant and associated equipment

Sécurité des machines - Prescriptions de sécurité applicables aux machines et chantiers de moulage et de noyautage en fonderie et à leurs équipements annexes

Sicherheit von Maschinen - Sicherheitsanforderungen an Gießereimaschinen und -anlagen der Form- und Kernherstellung und dazugehörige Einrichtungen

This European Standard was approved by CEN on 2 August 1997 and includes Amendment 1 approved by CEN on 18 March 2010.

CEN 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 Management Centre or to any CEN member.

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Foreword

This document (EN 710:1997+A1:2010) has been prepared by Technical Committee CEN/TC 202 “Foundry machinery”, 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 2010, and conflicting national standards shall be withdrawn at the latest by October 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 2010-03-18.

This document supersedes EN 710:1997.

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

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

〈A1〉 This European Standard is a type C standard as stated in EN ISO 12100.

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 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 type C standard.

Where for clarity an example of a preventive measure is given in this European Standard, this should not been considered as the only possible solution. Any other solution leading to the same risk reduction is permissible if an equivalent level of safety is achieved. 〈A1〉

1 Scope

This standard specifies safety requirements to be met by the manufacturer for machines and plant used in foundries for the production of castings in disposable models. It takes into account the foreseeable significant hazards due to design, construction and installation that may occur during commissioning, operation, maintenance and decommissioning. It specifies preventative measures and verification means for the elimination or reduction of these hazards. It specifies requirements for information to be provided by the manufacturer to the user on safe operation and maintenance.

This standard applies to the following equipment:

— Machinery and plant constructed to condition and/or reclaim foundry sands;

— Moulding machinery and plants;

— Coremaking machinery and plants;

— Knock-out equipment;

— Other directly associated equipment.

The foreseeable significant hazards covered are listed in clause 5 and include:

— Mechanical hazards, movement of machinery and workpieces, ejection of material, of liquids and gases, inadequacy of the mechanical strength;

— Explosion, fire, exothermic reactions;

— Contact with hot parts, gases and flames;

— Noise and vibration;

— Thermal heat radiation and conduction;

— Harmful by-products, poisoning, pollution of operators' breathing air.

This standard applies to equipment covered by this standard which is placed on the market after the date of issue of this standard.

This standard does not cover the safety requirements for wax- and lost foam pattern production and wax removal equipment and drying ovens.

This standard does not apply to crane installations, winches, continuous conveyors or handling systems which could be an integral part of the above equipment.

The standard does not cover dust reduction equipment.

2 Normative references

〈A1〉 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. 〈A1〉

〈A1〉 EN 349, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body*

EN 574, *Safety of machinery — Two-hand control devices — Functional aspects — Principles for design*

EN 614-1, *Safety of machinery — Ergonomic design principles — Part 1: Terminology and general principles*

EN 614-2, *Safety of machinery — Ergonomic design principles — Part 2: Interactions between the design of machinery and work tasks*

EN 746-2, *Industrial thermoprocessing equipment — Part 2: Safety requirements for combustion and fuel handling systems*

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

EN 894-1, *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, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 2: Displays*

EN 894-3, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 3: Control actuators*

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

EN 1005-2, *Safety of machinery — Human physical performance — Part 2: Manual handling of machinery and component parts of machinery*

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

EN 1093-1, *Safety of machinery — Evaluation of the emission of airborne hazardous substances — Part 1: Selection of test methods*

EN 1265, *Noise test code for foundry machines and equipment*

EN 1299, *Mechanical vibration and shock — Vibration isolation of machines — Information for the application of source isolation*

EN 1539, *Dryers and ovens, in which flammable substances are released — Safety requirements*

EN 13861*, Safety of machinery — Guidance for the application of ergonomics standards in the design of machinery*

EN 14253, *Mechanical vibration — Measurement and calculation of occupational exposure to whole-body vibration with reference to health — Practical guidance*

EN 60204-1:2006, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:2005, modified)*

EN 61310-1, *Safety of machinery — Indication, marking and actuation — Part 1: Requirements for visual, acoustic and tactile signals (IEC 61310-1:2007)*

EN 61310-2, *Safety of machinery — Indication, marking and actuation — Part 2: Requirements for marking (IEC 61310- 2:2007)*

EN 60447, *Basic and safety principles for man-machine interface — Marking and identification — Actuating principles (IEC 60447:2004)*

EN 61496-1, *Safety of machinery — Electro-sensitive protective equipment — Part 1: General requirements and tests (IEC 61496-1:2004, modified)*

EN ISO 7731, *Ergonomics — Danger signals for public and work areas — Auditory danger signals (ISO 7731:2003)*

EN ISO 11064-1, *Ergonomic design of control centres — Part 1: Principles for the design of control centres (ISO 11064-1:2000)*

EN ISO 11688-1, *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)*

EN ISO 13849-1, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design (ISO 13849-1:2006)*

EN ISO 13850, *Safety of machinery — Emergency stop — Principles for design (ISO 13850:2006)*

EN ISO 13857:2008, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2008)*

ISO 6184-1, *Explosion protection systems — Part 1: Determination of explosion indices of combustible dusts in air*

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

ISO 7000, *Graphical symbols for use on equipment — Index and synopsis* ⟨A1⟩