

**Valukoja seadmed. Ohutusnõuded  
kulpidele, valamisseadmetele,  
tsentrifugaal valumasinatele, pideva- ja  
poolpideva töötsükliga valumasinatele**

Foundry machinery - Safety requirements for ladles,  
pouring equipment, centrifugal casting machines,  
continuous and semi continuous casting machines

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 1247:2004 sisaldab Euroopa standardi EN 1247:2004 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 26.10.2004 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 1247:2004 consists of the English text of the European standard EN 1247:2004.</p> <p>This document is endorsed on 26.10.2004 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p><b>Käsitlusala:</b></p> <p>This standard specifies requirements to be met by the manufacturer for the foreseeable significant hazards due to design, construction and installation, during commissioning, operation, maintenance, and decommissioning of the following machines and equipment which are used directly and indirectly for the manufacture of castings: - Ladles;- Pouring equipment;- Centrifugal casting machines for production of tubes (only machines with horizontal or oblique axis of rotation);- Continuous and semi continuous casting machines for non-ferrous metals</p>	<p><b>Scope:</b></p> <p>This standard specifies requirements to be met by the manufacturer for the foreseeable significant hazards due to design, construction and installation, during commissioning, operation, maintenance, and decommissioning of the following machines and equipment which are used directly and indirectly for the manufacture of castings: - Ladles;- Pouring equipment;- Centrifugal casting machines for production of tubes (only machines with horizontal or oblique axis of rotation);- Continuous and semi continuous casting machines for non-ferrous metals</p>
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English version

**Foundry machinery - Safety requirements for ladles, pouring equipment, centrifugal casting machines, continuous and semi continuous casting machines**

Machines de fonderie - Prescriptions de sécurité concernant les poches, les matériels de coulée, les machines à couler par centrifugation, les machines à couler en continu ou en semi-continu

Gießereimaschinen - Sicherheitsanforderungen für Gießpfannen, Gießeinrichtungen, Schleudergießmaschinen, kontinuierliche und halbkontinuierliche Stranggießmaschinen

This European Standard was approved by CEN on 17 December 2003.

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 Central Secretariat or to any CEN 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 CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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## Foreword

This document (EN 1247:2004) has been prepared by Technical Committee CEN/TC 202 “Safety requirements of 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 February 2005, and conflicting national standards shall be withdrawn at the latest by February 2005.

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).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

## Introduction

This document is a type C standard as stated in EN 1070.

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

When provisions of this type C standard are different from those which are stated in type A or type 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.

This document covers: the equipment concerned, the hazards and hazardous situation as well as all events during construction, operation and maintenance normally foreseeable.

## 1 Scope

This document specifies requirements to be met by the manufacturer for the foreseeable significant hazards due to design, construction and installation, during commissioning, operation, maintenance, and decommissioning of the following machines and equipment which are used directly and indirectly for the manufacture of castings:

- Ladles;
- Pouring equipment;
- Centrifugal casting machines for production of tubes (only machines with horizontal or oblique axis of rotation);
- Continuous and semi continuous casting machines for non-ferrous metals.

This document specifies the safety requirements in addressing the following items:

- controls;
- protection against:
  - mechanical hazards, movement of machines and material, ejection of parts, material, liquids and gases, implosion, structural instability;
  - electric hazards;
  - explosion, fire, scalds, contact with hot parts (burns), gases and flames;
  - noise and vibration;
  - thermal radiation;
  - harmful by-products, poisoning, pollution of operators air;
  - impact;
  - deterioration of worker's health;
  - shearing;
  - crushing;

- maintenance, provision for warning systems.

It is assumed that

- normal operation of equipment falling within this scope may involve the intervention of personnel;
- machines are operated by skilled and adequately trained persons;
- machines are used with adequate workplace lighting conforming to local regulations, or to EN 12464-1.

This document does not specify the safety requirements for machines in combination and for ancillary plant, melting, holding, drying and/or heating equipment, crane installations, winches, conveyors or handling systems which could be an integral part of the above equipment, or ladles which are specific to steelworks or ladles forming part of a crane or ladles for pouring by a casting machine or vessels used for molten metal transport on public highway, or continuous or semi continuous casting equipment which is specific to steelworks, or ladles which are carried by hand.

## 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 349:1993, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body*.

EN 418:1992, *Safety of machinery — Emergency stop equipment functional aspects — Principles for design*.

EN 626-1:1994, *Safety of machinery — Reduction of risks to health from hazardous substances emitted by machinery — Part 1: Principles and specifications for machinery manufacturers*.

EN 626-2:1996, *Safety of machinery — Reduction of risks to health from hazardous substances emitted by machinery — Part 2: Methodology leading to verification procedures*.

EN 746-2:1997, *Industrial thermoprocessing equipment — Part 2: Safety requirements for combustion and fuel handling systems*.

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 1037:1995, *Safety of machinery — Prevention of unexpected start-up*.

EN 1070:1998, *Safety of machinery — Terminology*.

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

EN 1265:1999, *Noise test codes for foundry machines and equipment*.

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

EN 60519-1:1993, *Safety in electroheat installations; Part 1: General requirements (IEC 60519-1:1984)*.

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 61310-2:1995, *Safety of machinery — Indication, marking and actuation — Part 2: Requirements for marking* (IEC 61310-2:1995).

EN ISO 4871:1996, *Acoustics — Declaration and verification of noise emission values of machinery and equipment* (ISO 4871:1996).

EN ISO 11688-1/AC: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 and specifications* (ISO 12100-2:2003).

EN ISO 14122-1:2001, *Safety of machinery — Permanent means of access to machinery — Part 1: Choice of a fixed means of access between two levels* (ISO 14122-1:2001).

EN ISO 14122-2:2001, *Safety of machinery — Permanent means of access to machinery — Part 2: Working platforms and walkways* (ISO 14122-2:2001).

EN ISO 14122-3:2001, *Safety of machinery — Permanent means of access to machinery — Part 3: Stairs, stepladders and guard-rails* (ISO 14122-3:2001).

prEN ISO 14122-4:2002, *Safety of Machinery — Permanent means of access to machinery — Part 4: Fixed ladders* (ISO/DIS 14122-4:1996).

ISO 7745:1989, *Hydraulic fluid power — fire-resistant (FR) fluids — Guidelines for use*.

CENELEC R044-001, 1999, *Safety of machinery — Guidance and recommendations for the avoidance of hazards due to static electricity*.

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1070:1998 and the following apply.

#### 3.1

##### **Ladle**

tiltable vessel with or without hanger with or without refractory lining designed to contain, transport and discharge molten material (see Annex B, Figures B.1 and B.2).

NOTE The tilting movement is often achieved by power driven tilting drives. Sometimes ladles are bottom discharging. In this case discharging is achieved by moving a stopper rod (see Annex B, Figure B.2) or a hydraulically or pneumatically driven bottom slide gate nozzle. Ladles are usually transported by hoists and have their own hanger which is integral to the ladle. Sometimes ladles are transported by floor based trucks or fork lift trucks.

#### 3.2

##### **tundish**

refractory lined vessel with a discharge at its bottom which may be interposed between the ladle and the mould in teeming

#### 3.3

##### **pouring equipment**

mechanically or electrically driven device (see Annex B, Figure B.6) which stores and delivers molten metal to the mould as part of an automatic or semi automatic integrated casting plant

NOTE: This equipment consists of a vessel, heated or unheated, with or without a metering device, for delivery of molten metal to the mould by gravity, or by applying air or inert gas pressure or vacuum onto the surface of the molten metal in the vessel. Heated vessels are also called furnaces.