

**Tööstuspesumasinade ohutusnõuded.
Osa 2: Pesumasinad ja
tsentrifuugpesumasinad**

Safety requirements for industrial laundry machinery
- Part 2: Washing machines and washer-extractors

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 10472-2:1999 sisaldab Euroopa standardi EN ISO 10472-2:1997 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 23.11.1999 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN ISO 10472-2:1999 consists of the English text of the European standard EN ISO 10472-2:1997.</p> <p>This document is endorsed on 23.11.1999 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>
--	---

<p>Käsitlusala:</p> <p>Standardi EN ISO 10472 see osa ja EN ISO 10472-1 määravad kindlaks olulisemad ohud, mis seostuvad igasuguse konfiguratsiooniga pesumasinade ja tsentrifuugpesumasinatega, mille kasulik netokambrimaht on üle 60 liitri.</p>	<p>Scope:</p>
--	----------------------

ICS 97.060

Võtmesõnad: juhised, kasutusjuhend, kontrollimine, ohud, ohutusabinõud, ohutusnõuded, pesumajad, pesumasinad, pesupesemisseadmed, seadmete ohutus, tehnilised andmed, tekstiilitööstusseadmed, tööstusseadmed, õnnetusjuhtumite vältimine

ICS 97.060

Descriptors: Laundry machinery, safety requirements.

English version

Safety requirements for industrial laundry machinery

Part 2: Washing machines and washer-extractors
(ISO 10472-2 : 1997)

Exigences de sécurité pour les machines de blanchisserie industrielle –
Partie 2: Machines à laver et laveuses-essoreuses (ISO 10472-2 : 1997)

Sicherheitsanforderungen für industrielle Wäschereimaschinen – Teil 2:
Wasch- und Waschschleudermaschinen (ISO 10472-2 : 1997)

This European Standard was approved by CEN on 1997-12-21.

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.

The European Standards exist 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.

CEN members are the national standards bodies of Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

CEN

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

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Foreword

International Standard

ISO 10472-2 : 1997 Safety requirements for industrial laundry machinery – Part 2: Washing machines and washer-extractors,

which was prepared by ISO/TC 72 'Textile machinery and machinery for dry-cleaning and industrial laundering' of the International Organization for Standardization, has been adopted by CEN/TC 214 as a European Standard.

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 the relevant EU Directives.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, and conflicting national standards withdrawn, by June 1998 at the latest.

In accordance with the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard:

Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

Endorsement notice

The text of the International Standard ISO 10472-2 : 1997 was approved by CEN as a European Standard without any modification.

NOTE: Normative references to international publications are listed in Annex ZA (normative).

Contents

	Page
1 Scope	5
2 Normative references.....	5
3 Definitions	6
4 Hazards	8
5 Safety requirements and/or measures for the hazards identified in clause 4.....	9
5.1 General	9
5.2 Mechanical hazards.....	10
5.2.1 Rotating cage	10
5.2.2 Manual drum doors.....	10
5.2.3 Doors (cage and drum)	10
5.2.4 Cage doors	10
5.2.5 Power-operated drum doors	10
5.2.6 Loss of stability	11
5.2.7 Suspended washer-extractors.....	12
5.2.8 Falling load and loading devices.....	12
5.3 Electrical hazards.....	12
5.4 Thermal hazards	12
5.4.1 Hot liquor.....	12
5.4.2 Hot surfaces	13
5.4.3 Heat energy.....	13
5.4.4 Viewing panels.....	13
5.5 Hazards generated by noise.....	13
5.6 Hazards associated with materials and substances.....	13
5.6.1 Aggressive chemical action.....	13
5.6.2 Fire and explosion	13
5.6.3 Biological hazards	14
5.7 Hazards due to neglect of ergonomic principles in machine design.....	14
5.8 Failure of energy supply and control systems.....	14
5.8.1 Failure of energy supply	14
5.8.2 Failure of control systems	14
5.9 Hazards caused by unexpected ejection of machine parts.....	14
5.10 Particular hazards associated with barrier machines.....	15
5.11 Particular hazards associated with tilting machines.....	15
5.11.1 Tilting controlled manually.....	15
5.11.2 Automatic tilting	15
5.11.3 Loading and unloading	15
5.11.4 Overturning	16
5.11.5 Maintenance.....	16
6 Verification of safety requirements and/or measures.....	16
7 Information concerning machine use.....	23

Introduction

This part of ISO 10472 is intended to instruct the designer of industrial laundry machinery in a systematic manner, focusing on his particular type of machine, regarding the relevant essential safety requirements, and to suggest possible state-of-the-art safety solutions.

The extent to which hazards are covered is indicated in the scope of this part of ISO 10472. In addition, machinery should comply as appropriate with ISO/TR 12100-1 and ISO/TR 12100-2 for hazards which are not specifically referred to in this part of ISO 10472.

All examples given in this part of ISO 10472 represent the state of the art. Equivalent solutions are acceptable, provided they attain at least the same safety level.

The designer is presumed to have taken into account all the provisions of ISO 10472-1 before considering this part of ISO 10472.

This document is a preview generated by EVS

1 Scope

This part of ISO 10472 covers, together with ISO 10472-1, most significant hazards associated with washing machines and washer-extractors of all configurations having a net usable cage volume > 60 l.

This part of ISO 10472 does not cover particular hazards for drawer-type washer-extractors.

This part of ISO 10472 does not cover the hazards caused by processing work which may create an explosive or flammable atmosphere inside the machine.

This part of ISO 10472 complements the basic requirements as laid down in ISO/TR 12100-1 and ISO/TR 12100-2. It also gives guidance to the designer on assessing the risks associated with the hazards (see EN 1050) and on selecting measures for attaining the required safety level.

This part of ISO 10472 does not apply to ancillary equipment, e.g. chemical supply pumps, steam valves and supply pipe work, vent systems, work feed systems and discharge systems and ducting to the atmosphere.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 10472. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreement based on this part of ISO 10472 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 10472-1:1997, *Safety requirements for industrial laundry machinery — Part 1: Common requirements.*

ISO/TR 12100-1:1992, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology.*

ISO/TR 12100-2:1992, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles and specifications.*

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

ISO 13852:1996, *Safety of machinery — Safety distances to prevent danger zones being reached by the upper limbs.*

ISO 13853:—¹⁾, *Safety of machinery — Safety distances to prevent danger zones being reached by the lower limbs.*

¹⁾ To be published.

ISO 14119:—¹⁾, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection.*

IEC 335-1:1991, *Safety of household and similar electrical appliances — Part 1: General requirements.*

IEC 335-2-7:1993, *Safety of household and similar electrical appliances — Part 2: Particular requirements for washing machines.*

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

EN 953:1997, *Safety of machinery — General requirements for the design and construction of guards (fixed, movable).*

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

EN 1050:1996, *Safety of machinery — Risk assessment.*

EN 1760-1:1997, *Safety machinery — Pressure sensitive protective devices — Part 1: General principles for the design and testing of pressure sensing mats and floors.*

EN 1760-2:—¹⁾, *Safety of machinery — Pressure sensitive protective devices — Part 2: General principles for the design and testing of pressure sensitive edges and pressure sensitive bars.*

EN 60204-1:1992, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements.* [IEC 204-1:1992, modified]

3 Definitions

For the purposes of this part of ISO 10472, the following definitions apply.

3.1

washing machine

Machine performing only those operations required for washing textiles.

3.2

washer-extractor

Machine which combines the functions of textile washing and moisture extraction by centrifugal action.

3.2.1

fixed washer-extractor

Washer-extractor in which the drum is rigidly mounted in the frame.

3.2.2

suspended washer-extractor

Washer-extractor in which the drum is not rigidly connected to the frame but is secured by means of a vibration-reducing system.

3.2.3

tilting washer-extractor

Fixed or suspended washer-extractor in which the drum tilts during loading and/or unloading.

¹⁾ To be published.