

## **Masinate ohutus. Inimeste füüsiline töö. Osa 5. Sagedase korduva käsitlemisega kaasnevate riskide hindamine**

Safety of machinery - Human physical performance -  
Part 5: Risk assessment for repetitive handling at  
high frequency

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 1005-5:2007 sisaldab Euroopa standardi EN 1005-5:2007 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 30.03.2007 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 1005-5:2007 consists of the English text of the European standard EN 1005-5:2007.</p> <p>This document is endorsed on 30.03.2007 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 European Standard presents guidance to the designer of machinery or its component parts and the writer of type C standards in assessing and controlling health and safety risks due to machine-related repetitive handling at high frequency. This European Standard specifies reference data for action frequency of the upper limbs during machinery operation, and it presents a risk assessment method intended for risk reduction option analysis. This European Standard applies to machinery for professional operation by the healthy adult working population. This European Standard is not applicable for repetitive movements and related risks of the neck, back and lower limbs.</p>	<p><b>Scope:</b></p> <p>This European Standard presents guidance to the designer of machinery or its component parts and the writer of type C standards in assessing and controlling health and safety risks due to machine-related repetitive handling at high frequency. This European Standard specifies reference data for action frequency of the upper limbs during machinery operation, and it presents a risk assessment method intended for risk reduction option analysis. This European Standard applies to machinery for professional operation by the healthy adult working population. This European Standard is not applicable for repetitive movements and related risks of the neck, back and lower limbs.</p>
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ICS 13.110, 13.180

Võtmesõnad:

ICS 13.110; 13.180

English Version

**Safety of machinery - Human physical performance - Part 5:  
Risk assessment for repetitive handling at high frequency**

Sécurité des machines - Performance physique humaine -  
Partie 5: Appréciation du risque relatif à la manipulation  
répétitive à fréquence élevée

Sicherheit von Maschinen - Menschliche körperliche  
Leistung - Teil 5: Risikobeurteilung für kurzzyklische  
Tätigkeiten bei hohen Handhabungsfrequenzen

This European Standard was approved by CEN on 16 December 2006.

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.

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 CEN Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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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## Foreword

This document (EN 1005-5:2007) has been prepared by Technical Committee CEN/TC 122 “Ergonomics”, 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 August 2007, and conflicting national standards shall be withdrawn at the latest by August 2007.

As a result of the assessment of the CEN consultant the standard will be published a non-harmonized standard (no reference to Machinery directive and no publication in the Official Journal of EC).

EN 1005 consists of the following Parts, under the general title *Safety of machinery — Human physical performance*:

- *Part 1: Terms and definitions (harmonized standard);*
- *Part 2: Manual handling of machinery and component parts of machinery (harmonized standard);*
- *Part 3: Recommended force limits for machinery operation (harmonized standard);*
- *Part 4: Evaluation of working postures and movements in relation to machinery (harmonized standard);*
- *Part 5: Risk assessment for repetitive handling at high frequency (non-harmonized 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, 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

Within the life cycle of a machine from construction to dismantling, various machine-related actions may require repetitive handling at high frequency. Repetitive handling at high frequency can cause musculoskeletal strain and the risk of fatigue, discomfort and musculoskeletal disorders. The designer of a machine should seek to minimise these health risks by taking into account a variety of risk factors including the frequency of actions, the force, postures, durations, lack of recovery and other additional factors.

NOTE 1 Although factors such as duration and lack of recovery periods are relevant factors when assessing risk in relation to human physical performance in the workplace, these factors are controlled by the member states own national legislation, contract agreements with social partners and are not in the scope of this European Standard.

The risk assessment method in this European Standard gives guidance to the designer how to reduce health risks for the operator.

This European Standard is written in conformity with EN ISO 12100-1 and provides the user with guidance for hazard identification for harm through musculoskeletal overload and tools for qualitative and, to an extent, a quantitative risk assessment. The risk assessment tools also indicate how to achieve risk reduction. This European Standard does not deal with risks related to accidents.

The recommendations provided by this European Standard are based on available scientific evidence concerning the physiology and epidemiology of manual work. The knowledge is, however, limited and the suggested guidelines are subject to changes according to future research.

This European Standard is a type B standard as stated in EN ISO 12100-1.

The provisions of this European Standard can be supplemented or modified by a type C standard.

NOTE 2 For machines which are covered by the scope of a type C standard and which have been designed and built according to the provisions of that standard, the provisions of that type C standard take precedence over the provisions of this type B standard.

## 1 Scope

This European Standard presents guidance to the designer of machinery or its component parts and the writer of type C standards in assessing and controlling health and safety risks due to machine-related repetitive handling at high frequency.

This European Standard specifies reference data for action frequency of the upper limbs during machinery operation, and it presents a risk assessment method intended for risk reduction option analysis.

This European Standard applies to machinery for professional operation by the healthy adult working population. This European Standard is not applicable for repetitive movements and related risks of the neck, back and lower limbs.

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

EN 1005-3:2002, *Safety of machinery — Human physical performance — Part 3: Recommended force limits for machinery operation*

EN 1005-4:2005, *Safety of machinery — Human physical performance — Part 4: Evaluation of working postures and movements in relation to machinery*

EN 1050, *Safety of machinery — Principles for risk assessment*

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

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

EN ISO 14738:2002, *Safety of machinery — Anthropometric requirements for the design of workstations at machinery (ISO 14738:2002)*

ISO/IEC Guide 51, *Safety aspects — Guidelines for their inclusion in standards*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

NOTE Terms and definitions used in EN and ISO standards referred to in this European Standard are also valid for this European Standard.