

**Kattematerjalide segamise masinad.  
Ohutusnõuded. Osa 1: Sõidukites  
kasutatavad segamismasinad**

Mixing machinery for coating materials - Safety requirements - Part 1: Mixing machinery for use in vehicle refinishing

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

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| <p>Käesolev Eesti standard EVS-EN 12757-1:2005 sisaldab Euroopa standardi EN 12757-1:2005 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 25.11.2005 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p> | <p>This Estonian standard EVS-EN 12757-1:2005 consists of the English text of the European standard EN 12757-1:2005.</p> <p>This document is endorsed on 25.11.2005 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 applies to the design and construction of mixing machinery for liquid coating materials equipped with container of maximal volume <math>\leq 10</math> l used by vehicle refinishers and their coating materials distributors.</p> | <p><b>Scope:</b></p> <p>This European Standard applies to the design and construction of mixing machinery for liquid coating materials equipped with container of maximal volume <math>\leq 10</math> l used by vehicle refinishers and their coating materials distributors.</p> |
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ICS 87.100

Võtmesõnad:

ICS 87.100

English Version

Mixing machinery for coating materials - Safety requirements -  
Part 1: Mixing machinery for use in vehicle refinishing

Machines à homogénéiser des produits de revêtement -  
Prescriptions de sécurité - Partie 1 : Machines à  
homogénéiser destinées à être utilisées pour la réfection  
des peintures d'automobiles

Mischgeräte für Beschichtungsstoffe -  
Sicherheitsanforderungen - Teil 1: Mischgeräte zur  
Verwendung in der Fahrzeugreparaturlackierung

This European Standard was approved by CEN on 1 August 2005.

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.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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## Foreword

This European Standard (EN 12757-1:2005) 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 April 2006, and conflicting national standards shall be withdrawn at the latest by April 2006.

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 Annex ZA and ZB, which is an integral part of this document.

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

## Introduction

This European Standard is a C type standard as stated in Parts 1 and 2 of EN ISO 12100.

This European Standard is part of a series of documents specifying the health, safety and environmental protection requirements for the devices, units and equipment for surface coating:

- EN 1953 "Atomising and spraying equipment for coating materials — Safety";
- prEN 12621 "Machinery for the supply and circulation of coating materials under pressure — Safety";
- EN 12757-1 "Mixing machinery for coating materials — Safety".

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

NOTE Further parts of this European Standard to cover other mixing machinery applications for coating materials may follow.

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.

## 1 Scope

**1.1** This European Standard applies to the design and construction of mixing machinery for liquid coating materials equipped with container of maximal volume  $\leq 10$  l used by vehicle refinishers and their coating materials distributors.

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.

**NOTE** Pressure related parts of the machines referred to in this European Standard exceeding the limits of category I may lead to additional application of the Pressure Equipment Directive 97/23/EC.

This European Standard deals with all significant hazards, hazardous situations and events relevant to mixing machinery mentioned above, when they are used as intended and under the conditions foreseen by the manufacturer (see Clause 4).

Mixing machinery can operate by stirring or vibrating (shaking) and consists of the following equipment:

- cabinet;
- stirrer;
- vibrator;
- shaker;
- drive unit and related devices;
- container for coating material;
- safety, measuring and control devices;
- lighting;
- heating equipment and/or air conditioning inside the mixing cabinet.

The mixing machinery may be fixed or mobile.

**1.2** The following is excluded from this European Standard:

- Mixing machinery intended for:
  - pressure vessels;
  - open or closed material containers larger than 10 l;
- hand-held mixing tools.

**1.3** This European Standard is not applicable to mixing machinery which are manufactured before the date of publication of this European Standard by CEN.

## 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 294, *Safety of machinery — Safety distances to prevent danger zones being reached by the upper limbs*

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

EN 619, *Continuous handling equipment and systems — Safety and EMC requirements for equipment for mechanical handling of unit loads*

EN 811, *Safety of machinery — Safety distances to prevent danger zones being reached by the lower limbs*

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

EN 953, *Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards*

EN 954-1, *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 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*

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

EN 13445-1, *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, *Non-electrical equipment intended for use in potentially explosive atmospheres — Part 5: Protection by constructional safety "c"*

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

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

EN 60079-0, *Electrical apparatus for explosive gas atmospheres — Part 0: General requirements (IEC 60079-0:2004)*

EN 60079-15, *Electrical apparatus for explosive gas atmospheres - Part 15: Type of protection "n" (IEC 60079-15:2001, modified)*

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

EN 60529, *Degrees of protection provided by enclosures (IP code) (IEC 60529:1989)*

EN 61000-6-1, *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, *Electromagnetic compatibility (EMC) — Part 6-2: Generic standards — Immunity for industrial environments* (IEC 61000-6-2:1999, modified)

EN 61000-6-3, *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, *Safety requirements for electrical equipment for measurement, control and laboratory use — Part 1: General requirements* (IEC 61010-1:2001)

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 areas*

### 3 Terms and definitions

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

#### 3.1

##### **mixing machinery**

machine for the mixing by stirring (with an inside agitating device), or by vibrating or shaking (by motion of the container) of liquid coating materials in containers (vessels without pressure)

NOTE 1 In a container, in which two or more components of which at least one is in a liquid consistence are brought together to be processed to a liquid coating material for vehicle refinishing use.

NOTE 2 In general, the mixing machinery consists of a cabinet (as framework) with several shelves on which the mixing places are arranged. The number of shelves and mixing places depend on the volume of the container. The mixing places could be occupied by container of standardized mixing coating materials with a capacity between 1 l and 10 l.

The container is closed by a stirring lid. The stirring lids generally consist of a unit with stirrer, lid and drive (e.g. clamp or rack-wheel) which are put on the open container of the coating materials. The lids are fixed by the pressing and turning of fixing clamps and ensure mixing process only in totally closed container. The stirrer can be powered e.g. via a clamp drive by a motor powered special shaft or via belt or worm drive.

In general this is an electric motor, but also air driven motors are used, especially for installations in hazardous explosive environments.

Furthermore the mixing machinery is equipped with a control unit with programmable timer controlling the mixing time (in most cases several times a day) of the closed stirring container. By fitting the side cowling moving parts of the power drive can be protected. Another standard equipment of mixing cabinets are drip trays for the coating materials.

If necessary, the mixing machinery is equipped with lighting.

#### 3.2

##### **container**

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

#### 3.3

##### **agitator**

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