



# SLOVENSKI STANDARD

## SIST EN 12854:2004

01-junij-2004

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### Stroji za predelavo hrane – Palični rezalniki – Varnostne in higienske zahteve

Food processing machinery - Beam mixers - Safety and hygiene requirements

Nahrungsmittelmaschine - Rüsselmixer mit flexibler Welle - Sicherheits- und Hygieneanforderungen

Machines pour les produits alimentaires - Broyeurs verticaux a moteur montés sur chariot - Prescriptions relatives a la sécurité et a l'hygiene

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#### **ICS:**

67.260

Tovarne in oprema za  
živilsko industrijo

Plants and equipment for the  
food industry

**SIST EN 12854:2004**

**en**

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EUROPEAN STANDARD

EN 12854

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2003

ICS 67.260

English version

## Food processing machinery - Beam mixers - Safety and hygiene requirements

Machines pour les produits alimentaires - Broyeurs verticaux à moteur montés sur chariot - Prescriptions relatives à la sécurité et à l'hygiène

Nahrungsmittelmaschinen - Rüsselmixer mit flexibler Welle - Sicherheits- und Hygieneanforderungen

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

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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 Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

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## Foreword

This document (EN 12854:2002) has been prepared by Technical Committee CEN/TC 153 "Food processing machinery - Safety and hygiene specifications", 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of an identical text or by endorsement, at the latest by November 2003, and conflicting national standards shall be withdrawn at the latest by November 2003.

It is one of a series of standards on the design and construction of machines used in catering:

- vegetable cutting machines;
- catering attachments for machines having an auxiliary drive hub;
- food processors and blenders;
- hand-held blenders and whisks;
- beam mixers;
- salad dryers;
- vegetable peelers;
- cooking kettles equipped with stirrer and/or mixer

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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 EC Directive(s).

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

The annexes A and B are normative.

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

## Introduction

The use of beam mixers generates various mechanical and other hazards.

Their extensive use justifies the need of a standard covering both safety and the hazards of food hygiene arising from machine design, complementary to EN 1672-2 which states general hygiene requirements for food processing machines.

This standard is a harmonised standard which provides one means of conformity with the essential safety and hygiene requirements of the Machinery Directive and associated EFTA Regulations.

This European standard is a type C standard as stated in EN 1070:1998.

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

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## 1 Scope

**1.1** This European standard specifies the safety and hygiene requirements for the design and manufacture of beam mixers.

Beam mixers are used in the catering industry for the preparation of mixture or emulsion, directly in the cooking pan, such as for : puree, mayonnaise, sauces, soups, compotes.

It applies to the design, installation, operation and maintenance of such machines when they are used to operate under the intended conditions of use as defined in 3.12 of EN 292-1:1991 and stated in the instruction handbook (see 7.1), including cleaning, and changing the tools.

**1.2** This European standard does not apply to:

- domestic machines;
- portable hand-held blenders and whisks which are covered by a specific standard (see EN 12853:2001).

**1.3** This standard covers significant hazards at such machines, as identified by risk assessment (see EN 1050:1996), which are listed in clause 4 of this standard.

**1.4** This European standard does not deal with the vibration hazard.

**1.5** This European standard applies primarily to the machines which are manufactured after its date of issue.

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## EN 12854:2003 (E)

## 2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment of revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 292-1:1991, *Safety of machinery - Basic concepts, general principles for design - Part 1 : Basic terminology, methodology.*

EN 292-2:1991, *Safety of machinery - Basic concepts, general principles for design - Part 2 : Technical principles and specifications.*

EN 292-2:1991/A1:1995, *Safety of machinery - Basic concepts, general principles for design - Part 2 : Technical principles and specifications.*

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

EN 954-1:1996, *Safety of machinery – Safety-related parts of control systems - Part 1 : General principles for design.*

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

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

EN 1672-2:1997, *Food processing machinery - Basic concepts - Part 2 : Hygiene requirements.*

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, *Electromagnetic compatibility (EMC) – Part 6-4: Generic Standards: Emission standard for industrial environments (IEC 61000-6-4:1997 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 60947-2:1996, *Low-voltage switchgear and controlgear - Part 2 : Circuit - Breakers. (IEC 60947-2:1995)*

EN ISO 3744:1995, *Acoustics - Determination of sound power levels of noise sources using sound pressure - Engineering method in an essentially free field over a reflecting plane (ISO 3744:1994)*

EN ISO 4287, *Geometrical product specifications (GPS) – Surface texture: profile method – Terms, definitions and surface texture parameters (ISO 4287:1997).*

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

EN ISO 11201:1995, *Acoustics - Noise emitted by machinery and equipment - Measurement of emission sound pressure levels at a work station and at other specified positions - Engineering method in an essentially free field over a reflecting plane (ISO 11201:1995)*



### 3 Terms and definitions - Description

#### 3.1 Terms and definitions

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

##### 3.1.1

**mobile trolley**

part of the machine allowing the appliance to be moved around, generally equipped with castors

##### 3.1.2

**head carrier**

tube containing the components which transmit the motor's power to the work head

##### 3.1.3

**work head**

set of parts which process the products

##### 3.1.4

**operating handle**

bar allowing the work head to be moved to all parts of the interior of the pan

##### 3.1.5

**clamping handle**

device which locks the head carrier

##### 3.1.6

**stator**

fixed part of the work head sometimes fitted with a sieve, the latter being perforated in a manner appropriate for the processing of the intended product

##### 3.1.7

**tool**

rotor with blades or paddles inside the stator

##### 3.1.8

**head protecting device**

fixed guard protecting the rotating tool

##### 3.1.9

**beam**

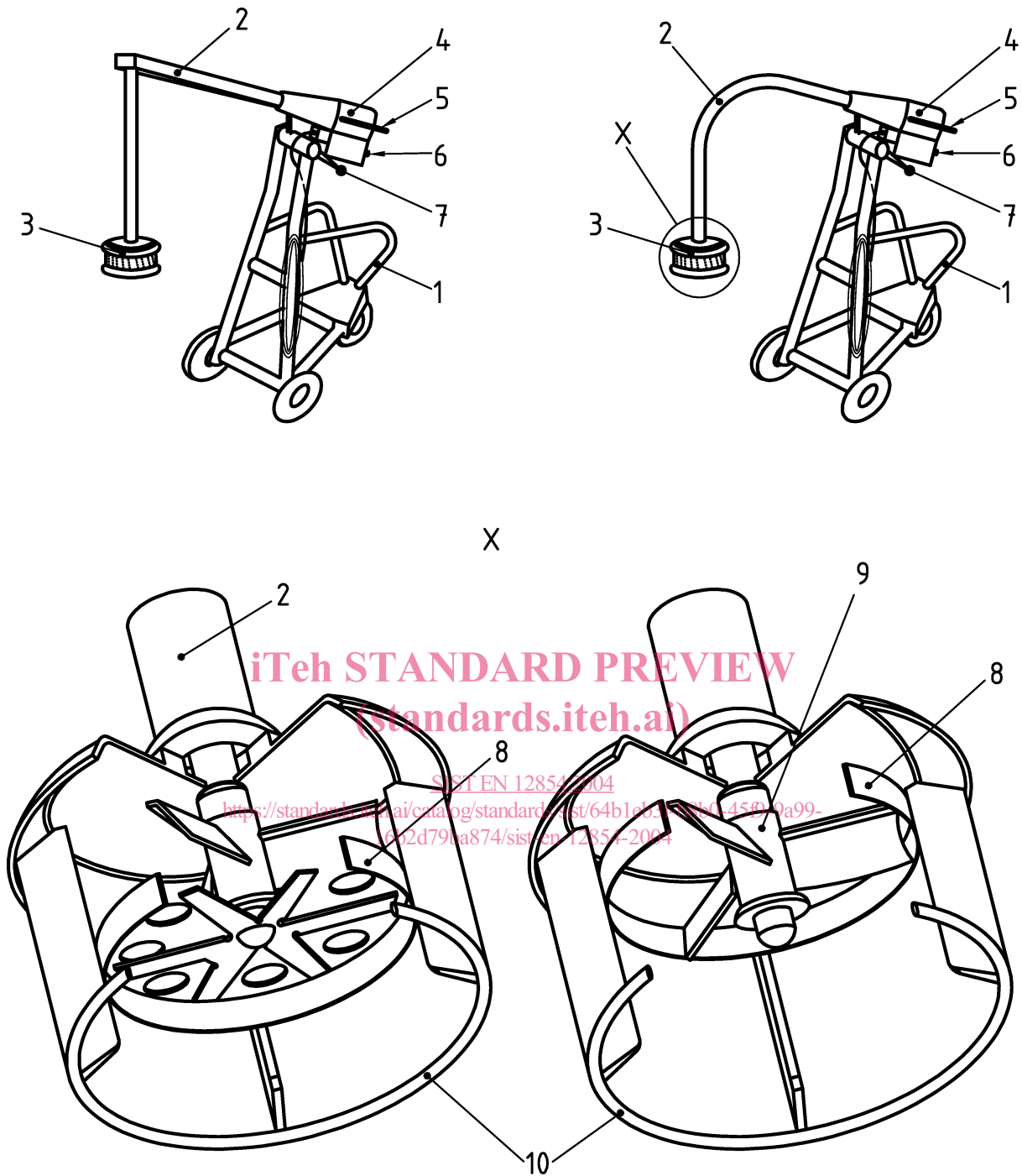
assembly of the head carrier, the work head, the motor and the operating handle

#### 3.2 Description of beam mixers

Beam mixers usually consist of the following parts as shown in Figure 1.

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**Key**

- |                    |                           |
|--------------------|---------------------------|
| 1 Mobile trolley   | 6 Start/stop devices      |
| 2 Head carrier     | 7 Clamping handle         |
| 3 Work head        | 8 Stator                  |
| 4 Motor            | 9 Tool                    |
| 5 Operating handle | 10 Head protecting device |

**Figure 1 — Example of a typical beam mixer**

## 4 List of significant hazards

### 4.1 General

This standard covers the significant hazards related to intended conditions of use.

NOTE If the machine is not to be used as described in clause 7 of this standard, the manufacturer should, when he is informed of such a situation, check on the basis of a new risk analysis that the preventive measures remain valid and sufficient.

### 4.2 Mechanical hazards

#### 4.2.1 Access to the danger zones

Mechanical hazards arise from contact with the rotating tool (see Figure 1, item 9 and 3.1.7).

The hazards may arise in (Figure 2) :

— Zone 1 : working zone

Hazard of cutting fingers

— Zone 2 : motor and drive mechanism

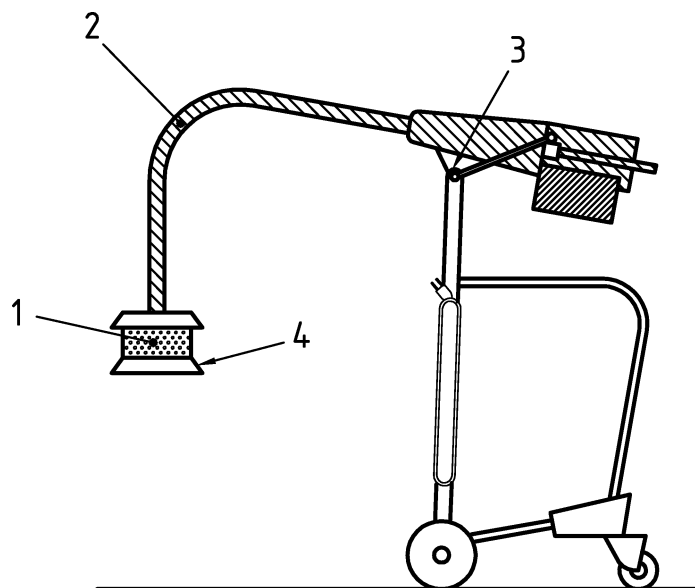
Hazard of crushing or trapping hands.

— Zone 3 : hinge area of the beam

Hazards of crushing and entanglement of hands and fingers.

— Zone 4 : ejection of the tool in the event of breakage

Hazard of cutting or penetration to body



- 1 Zone 1
- 2 Zone 2
- 3 Zone 3
- 4 Zone 4

Figure 2 — Hazard zones

**EN 12854:2003 (E)****4.2.2 Loss of stability**

Hazards of crushing and impact to the body.

**4.2.3 Incorrect assembly and fitting of tool**

Hazards of cutting and impact to fingers and hands.

**4.3 Electrical hazards**

Hazards of shock by direct or indirect contact with live parts and unexpected start up from restoration of energy supply after interruption.

Emission of EMC disturbances interfering with safety arrangements of other machines.

**4.4 Hazards generated by neglecting hygiene in machine design****4.4.1 Hazards to the operator**

Hazards from the food being processed, e.g. inhalation of flour, sugar, ... and from the cleaning agents used to disinfect the machine.

**4.4.2 Hazards to the consumer**

Inability to clean food and splash areas effectively and thoroughly.

Contamination of the food by undesirable materials including residues of food, microbiological organisms as well as residues of cleaning and disinfecting fluids.

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**4.5 Hazards generated by neglecting ergonomic principles in machine design**

Neglecting ergonomic principles can cause mistake in operation of controls and physical injury to the operator due to over-reaching, heavy loads, awkward posture, etc.

**4.6 Noise**

Noise can be a hazard resulting in:

- permanent loss of hearing;
- tinnitus;
- tiredness, stress, etc.

**5 Safety and hygiene requirements and/or measures****5.1 General**

Beam mixers conforming to this standard shall comply with the safety requirements and/or protective measures of this clause. In addition, the machine shall be designed according to the principles of EN 292 for hazards relevant but not significant, which are not dealt with by this document (e.g. sharp edges).<sup>1</sup>

NOTE For hazards which are to be reduced by the application of another standard such as EN 1672-2 and EN 60204-1, the manufacturer should carry out a risk assessment to establish the requirements of the standard which are to be applied. This specific risk assessment is part of the general risk assessment of the machine.

Where the means of reducing the risk is by the physical arrangement or positioning of the installed machine, the manufacturer shall include in the Information for use a reference to the reduction means to be provided, and to any limiting value of the requirement, and, if appropriate, to the means of verification.

Where the means of reducing the risk is by a safe system of working the machinery, the manufacturer shall include in the Information for use details of the system and of the elements of training required by the operating personnel.

## 5.2 Mechanical hazards

All the interlocking devices shall comply with 5.7 of EN 1088:1995 and shall be category 1 of EN 954-1:1996.

### 5.2.1 Access to the danger zones

#### 5.2.1.1 Zone 1

Access to the lower part of the work head shall be prevented by complying with the following measures specified in 5.2.1.1.1 and 5.2.1.1.2 depending on the operating stage.

##### 5.2.1.1.1 During the work

The lower part of the work head shall be configured in such a manner that the distance between the head protecting device and the point nearest to the rotating part is over 90 mm, measured in accordance with Figure 3. The vertical height ( $x$ ), between the rotating part and the head protecting device shall be greater than 50 mm.

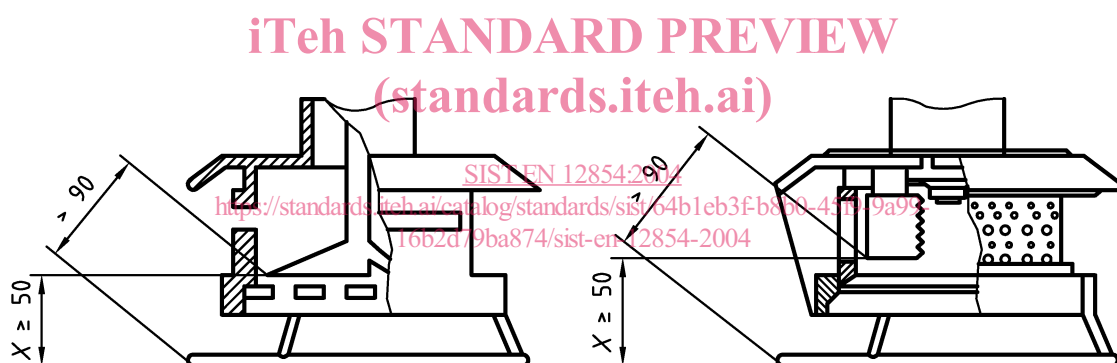


Figure 3 — Safety dimensions of the head protecting device

##### 5.2.1.1.2 During transport or removal of the tool

One of the following two measures shall be adopted :

- an interlocking device which prohibits the operation of the work head outside the working zone between 300 mm and 900 mm inclusive (see Figure 4a) from the level of access (ground for example). Out of this zone, operation by means of a hold-to-run control is permitted in order e.g. to finish a process;
- a hold-to-run control device located on the control panel in such a manner that the operator has a clear view of the work head in all positions, see Figure 4a (see 3.23.3 of EN 292-1:1991).

In the instruction handbook there shall be an explicit requirement for instructions to be given on tool change. For transport, the instructions shall state that the machine shall be locked in a safe position outside the operational area (see Figure 4b).