Irish Standard
I.S. EN 12331:2021

Food processing machinery - Mincing machines - Safety and hygiene requirements

I.S. EN 12331:2021

Incorporating amendments/corrigenda/National Annexes issued since publication:

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NSAI	T +353 1 807 3800	Sales:
1 Swift Square,	F +353 1 807 3838	T +353 1 857 6730
Northwood, Santry	E standards@nsai.ie	F +353 1 857 6729
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National Foreword

I.S. EN 12331:2021 is the adopted Irish version of the European Document EN 12331:2021, Food processing machinery - Mincing machines - Safety and hygiene requirements

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 12331

August 2021

ICS 67.260

Supersedes EN 12331:2015

English Version

Food processing machinery - Mincing machines - Safety and hygiene requirements

Machines pour les produits alimentaires - Hachoirs - Prescriptions relatives à la sécurité et l'hygiène

Nahrungsmittelmaschinen - Wölfe - Sicherheits- und Hygieneanforderungen

This European Standard was approved by CEN on 23 May 2021.

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

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European foreword

This document (EN 12331:2021) has been prepared by Technical Committee CEN/TC 153 “Machinery intended for use with foodstuffs and feed”, 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of an identical text or by endorsement, at the latest by February 2022 and conflicting national standards shall be withdrawn at the latest by February 2022.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 12331:2015.

This document has been prepared under a Standardization Request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

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

The significant changes with respect to the previous edition EN 12331:2015 are listed below:

— for better distinction, two types of mincing machines are defined: professional and industrial;

— the requirements have been specified and revised with regard to the two types of mincing machine (professional and industrial).

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This document is a type-C-standard as stated in EN ISO 12100.

This document is of relevance, in particular for the following stakeholder groups representing the market players with regard to machinery safety:

— machine manufacturers (small, medium and large enterprises);

— health and safety bodies (regulators, accident prevention organizations, market surveillance, etc.).

Others can be affected by the level of machinery safety achieved with the means of the document by the above-mentioned stakeholder groups:

— machine users/employers (small, medium and large enterprises);

— machine users/employees (e.g. trade unions, organizations for people with special needs);

— service providers, e.g. for maintenance (small, medium and large enterprises);

— consumers (in the case of machinery intended for use by consumers).

The above-mentioned stakeholder groups have been given the possibility to participate at the drafting process of this document.

The machinery concerned and the extent to which hazards, hazardous situations and hazardous 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 -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

This document specifies requirements for the design and manufacture of mincing machines (see Figure 1).

The mincing machines (hereinafter referred to as machine) covered by this document are used for size reduction of fresh or frozen meat, meat products and fish (hereinafter referred to as product) by cutting in a set of cutting tools.

Household machines are not included in this document. Filling mincers are covered by EN 12463 “Food processing machinery — Filling machines and auxiliary machines — Safety and hygiene requirements”.

This document applies only to machines that are manufactured after the date of issue of this document.

This document covers:

a) professional machines (see Figure 1 a) used for on-demand preparation in shops and/or restaurants characterized by all of the following features (if any of the features is missing the machine is considered an industrial machine):

   1) designed as a table-top machine;

   2) having a feed tray;

   3) the product is only fed manually;

   4) is only operated from the ground;

   5) is operated by no more than one operator;

   6) with full visibility and full accessibility of the entire machine from the operator workstation;

   7) having hole plate diameter ≤ 106 mm;

   8) a worm casing set which is removable without using any tools;

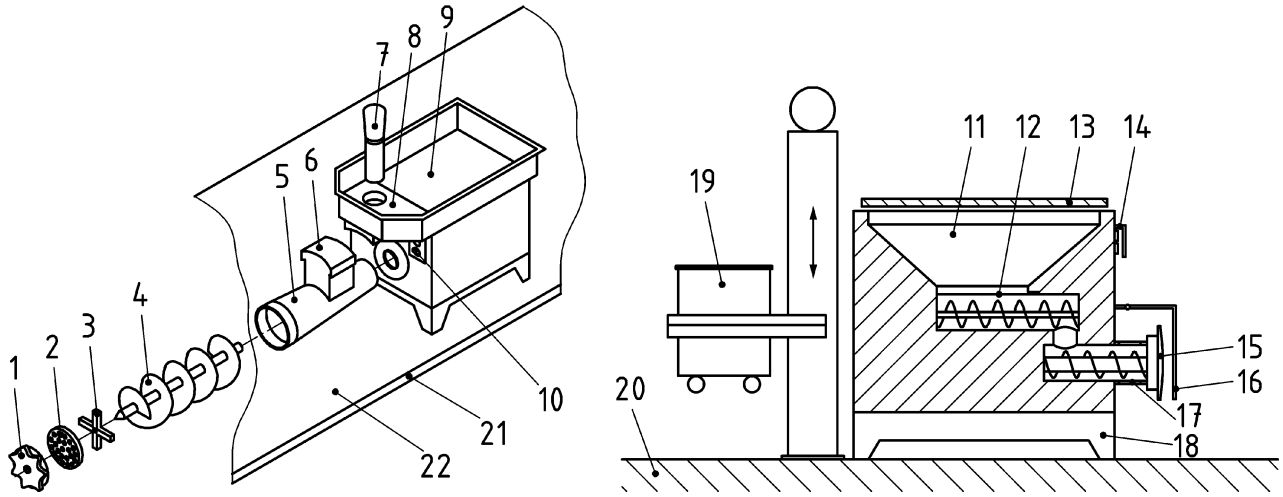
   9) the weight of the worm casing set ≤ 15 kg;

NOTE The table-top machine can be equipped with a frame or base, so no separate table is needed.

b) industrial machines (see Figure 1 b) used for industrial mass production, and which cannot be characterized as a professional machine.

This document does not describe the specific requirements for the control of machines with foot switch.

This document does not describe the specific requirements for additional mixing screws in the feed intake hopper which are covered by EN 13570:2005+A1:2010 “Food processing machinery — Mixing machines — Safety and hygiene requirements”.



a) Professional machine with feed tray and restrictor plate

b) Industrial machine with feed intake hopper, protective cover and feeding screw

Key

1	lock nut	6	feed intake	11	feed intake hopper	16	protective hood
2	hole plate	7	pusher	12	feeding screw	17	worm
3	blade	8	restrictor plate	13	protective cover	18	machine rack
4	worm	9	feed tray	14	on-/off-switch with protective hood	19	loading device
5	worm casing	10	on-/off-switch	15	lock nut	20	floor
21	table	22	table-top				

Figure 1 — Examples of machines

This document covers the following types of machines:

— machine with feed tray, feed intake and pusher (see Figure 3);

— machine with feed tray, feed intake, restrictor plate and pusher (see Figure 4);

— machine with feed intake hopper, protective cover and feeding screw (see Figure 6);

— machine with feed intake hopper, with or without protective cover, feeding screw, with loading device (continuously or discontinuously).

Machines comprise a machine base, a worm casing with a worm, a feed tray (with feed intake) or a feed intake hopper, a set of cutting tools, a lock nut, a drive motor. They will also have various safeguarding devices as examples in Clause 4.

Machines can be equipped e.g. with:

— an extraction claw;

— an ejector or extractor;

— a protective hood over the discharge outlet;

— a protective cover over the inlet opening of the feed intake hopper;

— a transport carriage for the lock nut, the set of cutting tools, the worm and the feeding screw;

— a lifting device for the lock nut, the set of cutting tools, the worm and the feeding screw;

— a loading device.

The product is fed manually or with a loading device into the machine. The product is fed to the worm either by a pusher or a feeding screw and reduced in size by a set of cutting tools.

This document specifies all significant hazards, hazardous situations and events relevant to machines, when they are used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer (see Annex D).

This document specifies the hazards which can arise during commissioning, operation, cleaning, use, maintenance and decommissioning of the machine.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 614-1:2006+A1:2009, *Safety of machinery — Ergonomic design principles — Part 1: Terminology and general principles*

EN 1005-1:2001+A1:2008, *Safety of machinery — Human physical performance — Part 1: Terms and definitions*

EN 1005-2:2003+A1:2008, *Safety of machinery — Human physical performance — Part 2: Manual handling of machinery and component parts of machinery*

EN 1005-3:2002+A1:2008, *Safety of machinery — Human physical performance — Part 3: Recommended force limits for machinery operation*

EN 1672-2:2005+A1:2009, *Food processing machinery — Basic concepts — Part 2: Hygiene requirements*

EN 60204-1:2018, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:2016, modified)*

EN 60529:1991[1)], *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)*

EN 61496-1:2013, *Safety of machinery — Electro-sensitive protective equipment — Part 1: General requirements and tests (IEC 61496-1:2012)*

EN ISO 3744:2010, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Engineering methods for an essentially free field over a reflecting plane (ISO 3744:2010)*

1) As impacted by EN 60529:1991/A1:2000 and EN 60529:1991/A2:2013.

EN ISO 3746:2010, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Survey method using an enveloping measurement surface over a reflecting plane (ISO 3746:2010)*

EN ISO 4287:1998[2)], *Geometrical product specifications (GPS) — Surface texture: Profile method — Terms, definitions and surface texture parameters (ISO 4287:1997)*

EN ISO 4871:2009, *Acoustics — Declaration and verification of noise emission values of machinery and equipment (ISO 4871:1996)*

EN ISO 7010:2020, *Graphical symbols — Safety colours and safety signs — Registered safety signs (ISO 7010:2019, Corrected version 2020-06)*

EN ISO 11201:2010, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions in an essentially free field over a reflecting plane with negligible environmental corrections (ISO 11201:2010)*

EN ISO 11202:2010, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a workstation and at other specified positions applying approximate environmental corrections (ISO 11202:2010)*

EN ISO 11688-1:2009, *Acoustics — Recommended practice for the design of low-noise machinery and equipment — Part 1: Planning (ISO/TR 11688-1:1995)*

EN ISO 12100:2010, *Safety of machinery — General principles for design — Risk assessment and risk reduction (ISO 12100:2010)*

EN ISO 13849-1:2015, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design (ISO 13849-1:2015)*

EN ISO 13854:2019, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body (ISO 13854:2017)*

EN ISO 13857:2019, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2019)*

EN ISO 14119:2013, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection (ISO 14119:2013)*

EN ISO 14120:2015, *Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards (ISO 14120:2015)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100:2010 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

2) As impacted by EN ISO 4287:1998/AC:2008 and EN ISO 4287:1998/A1:2009.

3.1
platform
accessible workstation

3.2
worm
rotating screw-shaped component in the worm casing for product transport to the set of cutting tools

3.3
ejector/extractor
device for detaching the set of cutting tools and the worm

3.4
extraction claw
tool for detaching the set of cutting tools and the worm

3.5
loading device
device for the lifting and tilting of transport cars and containers

3.6
container
device for holding processed and/or unprocessed product

3.7
protective cover
device with safety function

3.8
feed intake
housing between the feed tray and the worm casing

3.9
feed intake hopper
device for holding the unprocessed product

3.10
locking device
device for locking the trolley or container in the load bearing device

3.11
trolley
movable container

3.12
design dimension
sum of dimensions measured as tight string length from the workstation (floor, steps, intermediate steps or platforms) to the hopper edge (inclusively additional safety measures) and from the hopper edge (inclusively additional safety measures) to the first danger point in the feed intake hopper (see Figure 7 and Figure 8)

3.13
cooling mincer
machine with a cooling device for the feed intake and the worm casing

3.14
workstation
every location at the machine from which the operator interacts with the machine

3.15
hole plate
plate with bores

Note 1 to entry: A hole plate is shown in Figure 1 a).

3.16
end hole plate
last hole plate towards the outlet

3.17
blade
element for cutting the product

3.18
feed tray
device for receiving the product to be processed to feed the feed intake by hand

3.19
mechanical trip bar
movable device with a safety function

3.20
worm casing
element for holding the worm and the set of cutting tools

3.21
worm casing set
arrangement consisting of a worm casing, a worm, a set of cutting tools and a lock nut

3.22
set of cutting tools
arrangement of blades and hole plates for size reduction of product

Note 1 to entry: The number and type of cutting tools used is selected depending on the desired quality of the minced product.

3.23
protective grid
device on the feed intake hopper mouth with a safety function

3.24
protective hood
device on the discharge outlet with a safety function

3.25
restrictor plate
device above the feed intake