



SLOVENSKI STANDARD
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Rubber and plastics machines - Size reduction machines - Part 2: Safety requirements for strand pelletisers

Rubber and plastics machines - Size reduction machines - Part 2: Safety requirements for strand pelletisers

Gummi- und Kunststoffmaschinen - Zerkleinerungsmaschinen - Teil 2: Sicherheitsanforderungen an Stranggranulatoren

Machines pour le caoutchouc et les matières plastiques - Machines à fragmenter - Partie 2: Prescriptions de sécurité relatives aux granulateurs à joncs

Ta slovenski standard je istoveten z: EN 12012-2:2001

ICS:

83.200	Oprema za gumarsko industrijo in industrijo polimernih materialov	Equipment for the rubber and plastics industries
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ICS 83.200

English version

Rubber and plastics machines - Size reduction machines - Part 2: Safety requirements for strand pelletisers

Machines pour le caoutchouc et les matières plastiques -
Machines à fragmenter - Partie 2: Prescriptions de sécurité
relatives aux granulateurs à joncs

Gummi- und Kunststoffmaschinen -
Zerkleinerungsmaschinen - Teil 2:
Sicherheitsanforderungen an Stranggranulatoren

This European Standard was approved by CEN on 10 May 2001.

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 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 Management Centre has the same status as the official versions.

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

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

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EN 12012-2:2001 (E)

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 145 "Rubber and plastics machines - Safety", the secretariat of which is held by UNI.

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 January 2002, and conflicting national standards shall be withdrawn at the latest by January 2002.

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, which is an integral part of this standard.

This is the second in a series of standards on the safety of size reduction machines.

- Part 1 deals with blade granulators.
- Part 3 deals with shredders.

Annex A is normative.

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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, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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Introduction

This document is a type C standard as stated in EN 1070.

The machinery concerned and the extent to which hazards, hazardous situations and 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 standard specifies the essential safety requirements applicable to the design and construction of strand pelletisers used for plastics and rubber.

The machine begins with the feed opening of the feeding device, or start-up devices if fitted, and ends with the discharge area.

Only the significant hazards listed in clause 4 and dealt with in clause 5 are subject to this standard.

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NOTE: Directive 94/9/EC concerning equipment and protective systems intended for use in potentially explosive atmospheres can be applicable to the type of machine or equipment covered by this European Standard. The present standard is not intended to provide means of complying with the essential health and safety requirements of Directive 94/9/EC.

This standard applies to machines which are manufactured after the date of approval of this standard by CEN.

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 or 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 +A1/1995	Safety of Machinery - Basic concepts, general principles for design Part 2: Technical principles and specifications
EN 294:1992	Safety of Machinery - Safety distances to prevent danger zones being reached by the upper limbs
EN 418:1992	Safety of Machinery - Emergency stop equipment, functional aspects - Principles for design
EN 563:1994	Safety of Machinery - Temperatures of touchable surfaces - Ergonomics data to establish temperature limit values for hot surfaces
EN 953:1997	Safety of Machinery – Guards - General requirements for the design and construction of fixed and movable guards
EN 954-1:1996	Safety of Machinery - Safety related parts of control systems - Part 1: General principles for design
EN 1037:1995	Safety of machinery - Prevention of unexpected start-up
EN 1070	Safety of machinery - Terminology
EN 1088:1995	Safety of Machinery - Interlocking devices associated with guards - Principles for design and selection
EN 50014	Electrical apparatus for potentially explosive atmospheres - General requirements
EN 50015	Electrical apparatus for potentially explosive atmospheres - Oil-immersion "o"
EN 50016	Electrical apparatus for potentially explosive atmospheres - Pressurised apparatus "p"

- EN 50017 Electrical apparatus for potentially explosive atmospheres - Powder filling "q"
- EN 50018 Electrical apparatus for potentially explosive atmospheres - Flameproof enclosures "d"
- EN 50019: Electrical apparatus for potentially explosive atmospheres - Increased safety "e"
- EN 50020 Electrical apparatus for potentially explosive atmospheres - Intrinsic safety "i"
- EN 60204-1:1997 Safety of Machinery - Electrical equipment of machines - Part 1: General requirements (IEC 60204-1:1997)
- EN 60529:1991 Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)
- EN ISO 3741:1999 Acoustics -Determination of sound power levels of noise sources using sound pressure - Precision methods for reverberation rooms (ISO 3741:1999)
- EN ISO 3743-1:1995 Acoustics - Determination of sound power levels of noise sources - Engineering methods for small, movable sources in reverberant fields - Part 1: Comparison method for hard-walled test rooms (ISO 3743-1:1994)
- EN ISO 3743-2:1996 Acoustics - Determination of sound power levels of noise sources using sound pressure - Engineering methods for small, movable sources in reverberant fields - Part 2: Methods for special reverberation test rooms (ISO 3743-2:1994)
- 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 3746:1995 Acoustics - Determination of sound power levels of noise sources using sound pressure - Survey method using an enveloping measurement surface over a reflecting plane (ISO 3746:1995)
- EN ISO 3747:2000 Acoustics - Determination of sound power levels of noise sources using sound pressure – comparison method for use in-situ (ISO 3747:2000)
- EN ISO 4871:1996 Acoustics - Declaration and verification of noise emission values of machinery and equipment (ISO 4871:1996)
- EN ISO 9614-1:1995 Acoustics - Determination of sound power levels of noise sources using sound intensity - Part 1: Measurement at discrete points (ISO 9614-1:1993)
- EN ISO 9614-2:1996 Acoustics - Determination of sound power levels of noise sources using sound intensity - Part 2: Measurement by scanning (ISO 9614-2:1996)

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- EN ISO 11201:1995 Acoustics - Noise emitted by machinery and equipment - Measurement of emission sound pressure levels at the work station and at other specified positions - Engineering method in an essentially free field over a reflecting plane (ISO 11201:1995)
- EN ISO 11202:1995 Acoustics - Noise emitted by machinery and equipment - Measurement of emission sound pressure levels at the work station and at other specified positions - Survey method in situ (ISO 11202:1995)
- EN ISO 11203:1995 Acoustics - Noise emitted by machinery and equipment - Determination of emission sound pressure levels at the work station and at other specified positions from the sound power level (ISO 11203:1995)
- EN ISO 11204:1995 Acoustics - Noise emitted by machinery and equipment - Measurement of emission sound pressure levels at the work station and at other specified positions - Method requiring environmental corrections (ISO 11204:1995)
- 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)
- ISO 3745:1977 Acoustics - Determination of sound power levels of noise sources - Precision methods for anechoic and semi-anechoic rooms

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3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1070 and the following terms and definitions apply:

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3.1 Strand pelletiser

A machine which cuts extruded strands into regular pellets within a cutting chamber. Pellet size regulation is achieved by synchronising the rotating speed of cutting rotor and feeding rolls.

3.2 Cutting chamber

The part of the machine where the cutting/reduction of the material takes place.

3.3 Rotor

A rotating cutting device with regularly spaced blades around the periphery.

3.4 Stationary cutting blade

A blade fixed inside the cutting chamber.

3.5 Start-up device

A device, peculiar to some installations, positioned upstream of the feeding area, which guides the material strands from the start-up position to the operating position.

3.6 Feeding device

The part of the machine used for feeding the material into the feeding area. The feeding device can be movable, e.g. conveyor belt or roller(s) or fixed, e. g. chute or plate.

3.7 Feeding area

the area of the machine where the feeding rolls are installed.

3.8 Discharge area

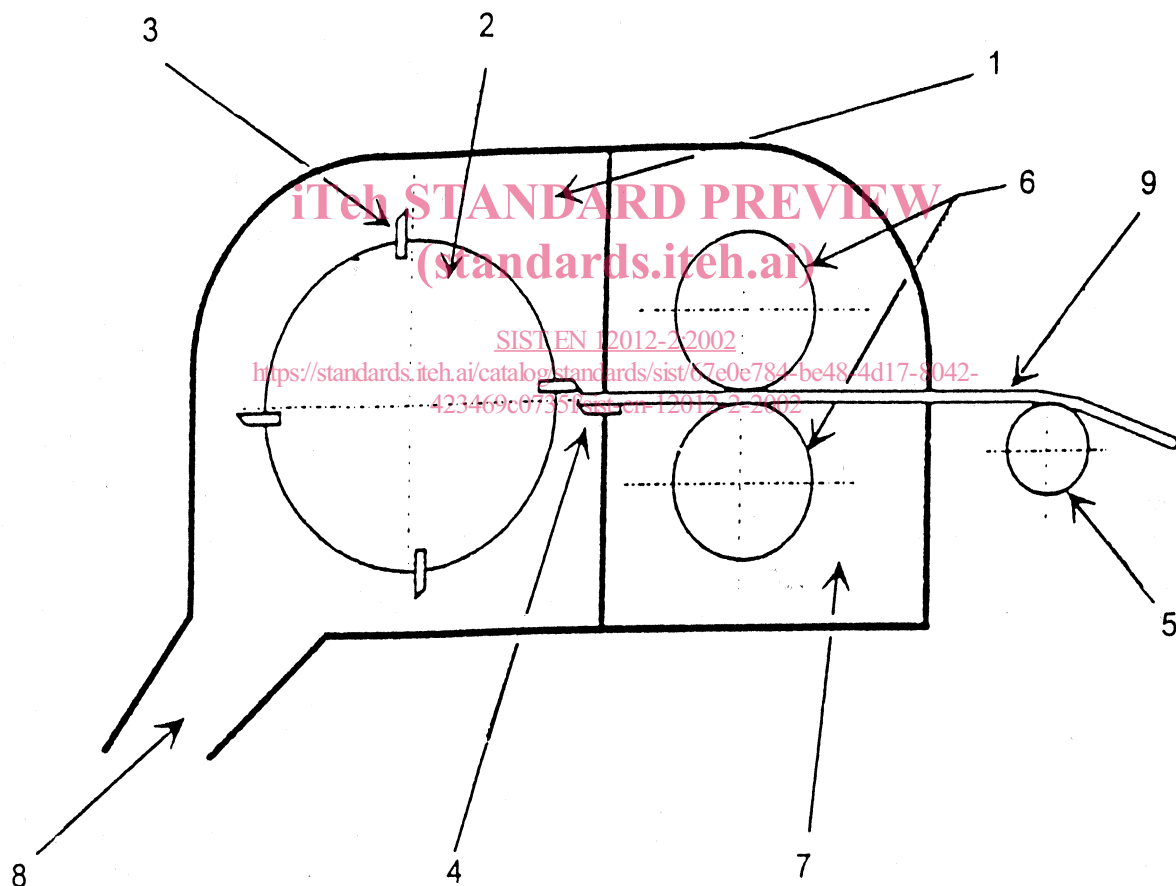
the area where the pellets leave the cutting chamber.

3.9 Cooling system

A system using water or air, which reduces the temperature of material to the appropriate level for the cutting process.

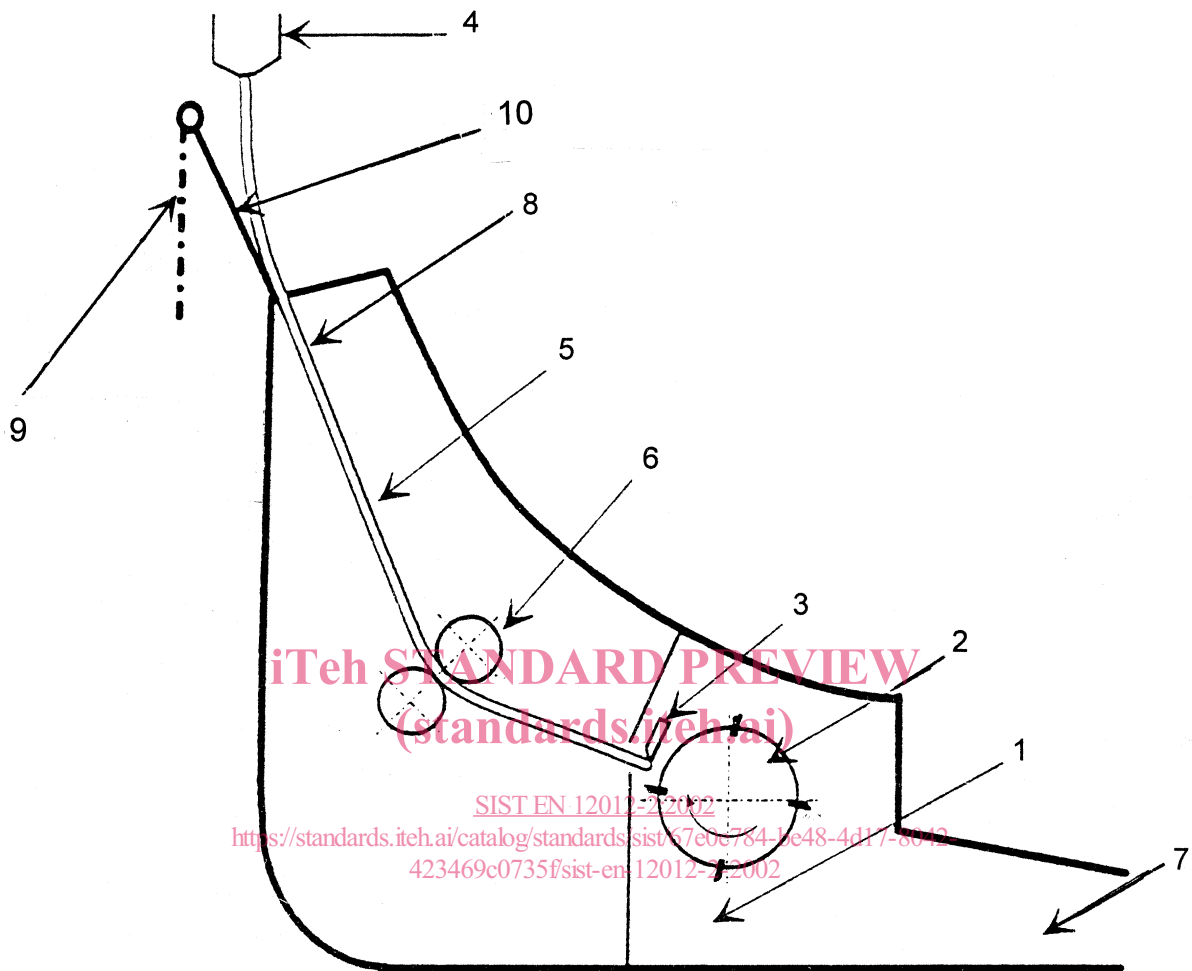
3.10 Working level

The surface on which the person who feeds the machine stands.

**Key**

1	Cutting chamber	6	Feeding rolls
2	Rotor	7	Feeding area
3	Rotor blade	8	Discharge area
4	Stationary cutting blade	9	Strands
5	Feeding device		

Figure 1 - Example of a strand pelletiser



Key

- | | | | |
|---|--------------------------|----|---|
| 1 | Cutting chamber | 6 | Feeding area |
| 2 | Rotor | 7 | Discharge area |
| 3 | Stationary cutting blade | 8 | Strands |
| 4 | Die plate | 9 | Start-up position of start-up device |
| 5 | Feeding device | 10 | Cutting operation position of start-up device |

Figure 2 - Example of a strand pelletiser with start-up device

4 List of significant hazards

4.1 Mechanical hazards

4.1.1 Cutting chamber

- crushing/shearing between the rotor and the housing;
- cutting/severing by the blades;
- ejection of parts of the machine or materials through the chamber.

4.1.2 Feeding device

- drawing-in by moving parts of the feeding devices;
- entanglement when material is fed manually.

4.1.3 Feeding area

- drawing-in and crushing between the feed rolls.

4.1.4 Discharge area:

- ejection of material or parts of the machine.

4.1.5 Start-up device:

- crushing between die plate and strand guiding device;
- crushing/shearing between the strand guiding device and the feeding area;
- crushing/shearing by dangerous movements of movable elements of the strand guiding device.

4.2 Hazards due to noise

Noise can cause:

- hearing damage; <https://standards.iteh.ai/catalog/standards/sist/67e0e784-be48-4d17-8042-423469-07358/sist-en-12012-2-2002>
- accidents due to interference with speech communication or
- accidents due to interference with the perception of acoustic signals.

4.3 Thermal hazards

Burns or scalds due to

- hot surfaces of the machine;
- hot temperature of the material and the cooling medium.

4.4 Hazards caused by water overflow

- water ingress into electrical equipment

4.5 Electrical hazards

- electric shock or burns due to direct contact with live conductive parts, or with parts that have become live due to electrical fault.