
Stroji za predelavo gume in plastike - Drobilni stroji - 1. del: Varnostne zahteve za rezalne drobilnike

Plastics and rubber machines - Size reduction machines - Part 1: Safety requirements for blade granulators

Kunststoff- und Gummimaschinen - Zerkleinerungsmaschinen - Teil 1:
Sicherheitsanforderungen für Schneidmühlen

Machines pour les matières plastiques et le caoutchouc — Machines à fragmenter —
Partie 1: Prescriptions de sécurité relatives aux granulateurs à lames

<https://standards.iteh.ai/catalog/standards/sist/d955becf-b99d-4f42-9f6b-8b5beaf15894/sist-en-12012-1-2007a1-2008>

Ta slovenski standard je istoveten z: EN 12012-1:2007+A1:2008

ICS:

83.200

Oprema za gumarsko
industrijo in industrijo
polimernih materialov

Equipment for the rubber and
plastics industries

SIST EN 12012-1:2007+A1:2008

en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 12012-1:2007+A1:2008

<https://standards.iteh.ai/catalog/standards/sist/d955befc-b99d-4f42-9fb-8b5beaf15894/sist-en-12012-1-2007a1-2008>

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 12012-1:2007+A1

September 2008

ICS 83.200

Supersedes EN 12012-1:2007

English Version

**Plastics and rubber machines - Size reduction machines - Part
1: Safety requirements for blade granulators**

Machines pour les matières plastiques et le caoutchouc -
Machines à fragmenter - Partie 1: Prescriptions de sécurité
relatives aux granulateurs à lames

Kunststoff- und Gummimaschinen -
Zerkleinerungsmaschinen - Teil 1:
Sicherheitsanforderungen für Schneidmühlen

This European Standard was approved by CEN on 23 June 2006 and includes Amendment 1 approved by CEN on 8 June 2008.

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.

SIST EN 12012-1:2007+A1:2008

<https://standards.iteh.ai/catalog/standards/sist/d955befc-b99d-4f42-9f6b-8b5beaf15894/sist-en-12012-1-2007a1-2008>





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

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

Contents

Page

Foreword.....	4
Introduction	5
1 Scope	6
2 Normative references	6
3 Terms and definitions	8
4 List of significant hazards	10
4.1 Mechanical hazards	10
4.1.1 Cutting chamber	10
4.1.2 Feeding area.....	10
4.1.3 Discharge area	10
4.2 Hazards generated by noise	10
4.3 Hazards generated by the materials processed	10
4.4 Hazards resulting from loss of machine stability.....	11
4.5 Electrical hazards	11
5 Safety requirements and/or protective measures	11
5.1 General.....	11
5.2 Mechanical hazards	11
5.2.1 Cutting chamber	11
5.2.2 Feeding area.....	12
5.3 Hazards generated by noise	13
5.3.1 Noise reduction at source by design	13
5.3.2 Main sources of noise and noise reduction measures.....	13
5.3.3 Measurement and declaration of noise emissions	13
5.4 Hazards generated by the material processed	14
5.5 Hazards resulting from loss of machine stability.....	14
5.6 Hazards due to electrical energy.....	14
5.6.1 General.....	14
5.6.2 Supply disconnecting (isolating) device	14
5.6.3 Unexpected start-up	14
5.6.4 Protection against direct contact.....	14
5.6.5 Protection against indirect contact.....	14
5.6.6 Emergency stop	15
5.6.7 Devices for emergency stop.....	15
5.6.8 Testing and verification	15
6 Verification of the safety requirements and/or protective measures	15
7 Information for use	17
7.1 Instruction manual.....	17
7.2 Marking	18
Annex A (normative) Noise test code	19
A.1 Introduction	19
A.2 Scope	19
A.3 Determination of sound power levels.....	19
A.3.1 Basic standards	19
A.3.2 Measurement uncertainty	20
A.4 Determination of emission sound pressure level	20
A.4.1 Basic standards	20
A.4.2 Measurement uncertainty	20

A.5	Installation and mounting conditions for noise measurement	20
A.6	Operating conditions	20
A.7	Measurement uncertainty	21
A.8	Information to be recorded	22
A.8.1	General	22
A.8.2	General data	22
A.8.3	Technical machine data	22
A.8.4	Standards	22
A.8.5	Mounting and operating conditions	22
A.8.6	Samples and material data	22
A.9	Declaration and verification of noise emission values	23
Annex ZA	(informative) Relationship between this European Standard and the Essential Requirements of EU Directive 98/37/EC	24
Annex ZB	(informative)  Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC 	25
Bibliography	26

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 12012-1:2007+A1:2008

<https://standards.iteh.ai/catalog/standards/sist/d955befc-b99d-4f42-9f6b-8b5beaf15894/sist-en-12012-1-2007a1-2008>

EN 12012-1:2007+A1:2008 (E)

Foreword

This document (EN 12012-1:2007+A1:2008) has been prepared by Technical Committee CEN/TC 145 "Plastics and rubber machines", 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 March 2009, and conflicting national standards shall be withdrawn at the latest by December 2009.

This document includes Amendment 1, approved by CEN on 2008-06-08. The main changes compared to the previous version are:

- addition of Annex ZB
- minor changes of Foreword, sub-clause 7.2, second and third indents, Annex A, A.9, third indent.

This document supersedes A1 EN 12012-1:2007. A1

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1

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 EU Directive(s).

A1 For relationship with EU Directive(s), see informative Annexes ZA and ZB, which are integral parts of this document. A1

<https://standards.iteh.ai/catalog/standards/sist/d955becf-b99d-4442-9f6b-8b5beaf15894/sist-en-12012-1-2007a1-2008>

This is the first in a series of documents on the safety of size reduction machines.

Part 2 deals with strand pelletisers.

Part 3 deals with shredders.

Part 4 deals with agglomerators.

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

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

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.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 12012-1:2007+A1:2008](https://standards.iteh.ai/catalog/standards/sist/d955befc-b99d-4f42-9fb-8b5beaf15894/sist-en-12012-1-2007a1-2008)

<https://standards.iteh.ai/catalog/standards/sist/d955befc-b99d-4f42-9fb-8b5beaf15894/sist-en-12012-1-2007a1-2008>

EN 12012-1:2007+A1:2008 (E)

1 Scope

This document specifies the essential safety requirements applicable to the design and construction of blade granulators used to reduce objects and materials made from plastics and rubber into granules.

The machine begins with the outer edge of the feed opening, or feeding device if it is an integral part of the machine, and ends with the discharge area.

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

This document does not deal with hazards caused by processing harmful materials.

This document is not applicable to machines which are manufactured before the date of its publication as an EN.

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 294:1992, *Safety of machinery — Safety distance to prevent danger zones being reached by the upper limbs.*

EN 574:1996, *Safety of machinery — Two-hand control devices — Functional aspects — Principles for design.*

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 999:1998, *Safety of machinery — The positioning of protective equipment in respect of approach speeds of parts of the human body.*

EN 1037:1995, *Safety of machinery — Prevention of unexpected start-up.*

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

EN 60204-1:2006, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:2005 modified).*

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 3745:2003, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Precision methods for anechoic and semi-anechoic rooms* (ISO 3745:2003).

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).

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).

EN ISO 11202:1995, *Acoustics — Noise emitted by machinery and equipment — Measurement of emission sound pressure levels at a 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 a work station and at other specified positions from the sound power level* (ISO 12203:1995).

EN ISO 11204:1995, *Acoustics — Noise emitted by machinery and equipment — Measurement of emission sound pressure levels at a 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).

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).

EN ISO 13850:2006, *Safety of machinery — Emergency stop — Principles for design* (ISO 13850:2006)

EN 12012-1:2007+A1:2008 (E)

3 Terms and definitions

For the purposes of this document the terms and definitions given in EN 12100-1:2003 and the following apply.

3.1

blade granulator

machine which cuts material within the cutting chamber until the size has been so reduced that the product is allowed into the discharge area through suitably sized screen plate holes

3.2

cutting chamber

part of the machine where cutting/reduction takes place

3.3

rotor

cutting device to which blades are fixed inside the cutting chamber

3.4

stationary cutting blade(s)

single or multiple blades fixed inside the cutting chamber

3.5

feeding area

area of the machine where the feeding of material takes place

3.6

feeding device

part of the machine used for feeding the material into the cutting chamber. The feeding device can be fixed, for example a hopper or similar device or movable, for example rollers, screw, conveyor belt or pneumatic transport device

<https://standards.iteh.ai/catalog/standards/sist/d955befc-b99d-442-9fb-8b5beaf15894/sist-en-12012-1-2007a1-2008>

3.7

rotor restraint

device that prevents manual rotation of the rotor or rotation due to inertia once the granulator has come to a stop and the chamber is open

3.8

discharge area

area where the granulate or finished product leaves the cutting chamber

3.9

screen plate

perforated screen fitted at the discharge side of the cutting chamber to allow the passage of granulate or finished product of suitable size into the discharge area

3.10

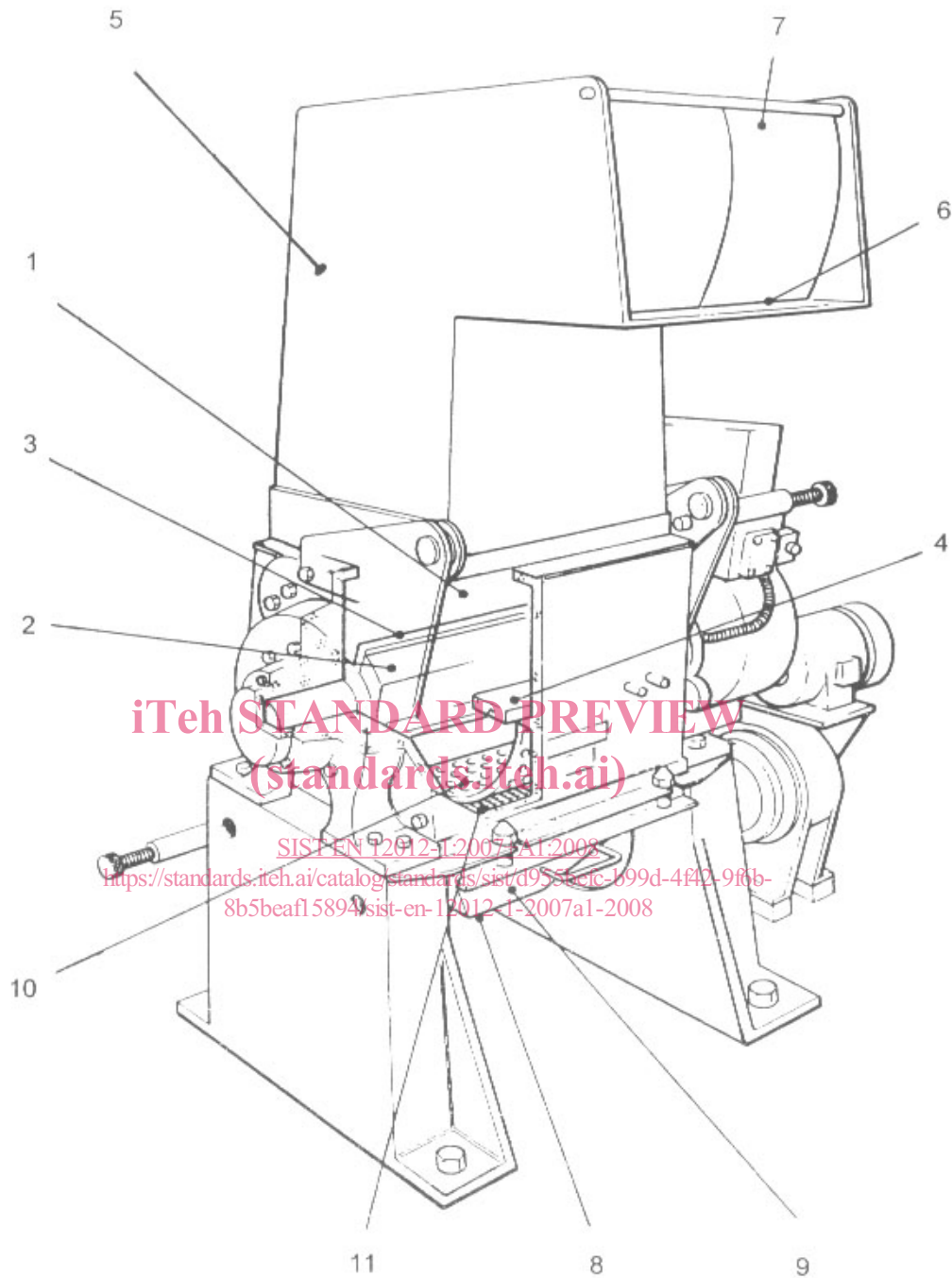
working level

surface on which the person who feeds the machine stands

3.11

loading table

surface for placing material to be fed into the granulator

**Key**

1	Cutting chamber	7	Protective flap
2	Rotor	8	Discharge area
3	Rotor blade	9	Discharge hopper
4	Stationary cutting blade	10	Screen plate
5	Feed hopper	11	Guard
6	Feed opening		

Figure 1 — Example of a blade granulator