SLOVENSKI STANDARD
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Rubber and plastics machines - Size reduction machines - Part 1: Safety requirements for blade granulators

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Gummi- und Kunststoffmaschinen - Zerkleinerungsmaschinen - Teil 1: Sicherheitsanforderungen für Schneidmühlen

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

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This European Standard was approved by CEN on 12 December 1999.

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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 Central Secretariat 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.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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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of an identical text or by endorsement, at the latest by September 2000, and conflicting national standards shall be withdrawn at the latest by September 2000.

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.

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.

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

Part 2 deals with strand pelletisers.
Part 3 deals with shredders.

Introduction

This European standard is a type C standard as defined in EN 292.

The extent to which hazards are covered is indicated in the scope of this standard. In addition, machinery shall comply as appropriate with EN 292 for hazards which are not covered by this standard.

1 Scope

This standard 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 standard.

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

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.

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 distance 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 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 devices 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 with and without guard locking - General principles and provisions for design
EN ISO 3741:1999	Acoustics - Determination of sound power levels of noise sources using sound pressure - Precision methods for reverberation rooms
EN 50014:1997	Electrical apparatus for potentially explosive atmospheres - General requirements
EN 50015:1998	Electrical apparatus for potentially explosive atmospheres - Oil immersion "o"
EN 50016:1995	Electrical apparatus for potentially explosive atmospheres - Pressurised apparatus "p"
EN 50017:1998	Electrical apparatus for potentially explosive atmospheres - Powder filling "q"

EN 50018:1994	Electrical apparatus for potentially explosive atmospheres - Flameproof enclosures "d"
EN 50019:1994	Electrical apparatus for potentially explosive atmospheres - Increased safety "e"
EN 50020:1994	Electrical apparatus for potentially explosive atmospheres - Intrinsic safety "i"
EN 60204-1:1997	Safety of Machinery - Electrical equipment of machines - Part 1: General requirements
EN 60529: 1991	Degrees of protection provided by enclosures (IP Code)
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
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
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
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
prEN ISO 3747:1998	Acoustics - Determination of sound power levels of noise sources using sound pressure - Comparison method for use in situ.
EN ISO 4871:1996	Acoustics - Declaration and verification of noise emission values of machinery and equipment
EN ISO 9614-1:1995	Acoustics - Determination of sound power levels of noise sources using sound intensity - Part 1: Measurement at discrete points
EN ISO 9614-2:1996	Acoustics - Determination of sound power levels of noise sources using sound intensity - Part 1: Measurement by scanning
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
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

EN ISO 11203:1995	Acoustics - Noise emitted by machinery and equipment - Measurement of emission sound pressure levels at the work station and at other specified positions from the sound power level
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
EN ISO 11688-1:1998	Acoustics - Recommended practice for the design of low noise machinery and equipment - Part 1: Planning
prEN ISO 3745	Acoustics - Determination of sound power levels of noise sources using sound pressure - Precision methods for anechoic and hemi-anechoic rooms (ISO/DIS 3745:2000)

3 Definitions

For the purposes of this standard the following definitions apply:

3.1
blade granulator
a 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
the part of the machine where cutting/reduction takes place.

3.3
rotor
a 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
the area of the machine where the feeding of material takes place.

3.6
feeding device
the 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.

3.7
rotor restraint
a 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
the area where the granulate or finished product leaves the cutting chamber.

3.9
screen plate
a 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
the surface on which the person who feeds the machine stands.

3.11
loading table
a surface for placing material to be fed into the granulator, on which the person who feeds the machine does not stand. (If it is possible to stand on this surface it shall be considered as the working level).