



**SLOVENSKI STANDARD**  
**SIST EN 12629-4:2001+A1:2010**  
**01-december-2010**

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**Stroji za izdelavo gradbenih proizvodov iz betona in apnenega peščenca - Varnost**  
**- 4. del: Stroji za izdelavo betonskih strešnikov**

Machines for the manufacture of constructional products from concrete and calcium-silicate - Safety - Part 4: Concrete roof tile making machines

Maschinen für die Herstellung von Bauprodukten aus Beton und Kalksandsteinmassen - Sicherheit - Teil 4: Beton-Dachsteinmaschinen

Machines pour la fabrication de produits de construction en béton et silico-calcaire - Sécurité - Partie 4 : Machines pour la fabrication de tuiles en béton

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**Ta slovenski standard je istoveten z: EN 12629-4:2001+A1:2010**

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**ICS:**

91.220            Gradbena oprema            Construction equipment

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 12629-4:2001+A1**

September 2010

ICS 91.220

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English Version

**Machines for the manufacture of constructional products from  
concrete and calcium-silicate - Safety - Part 4: Concrete roof tile  
making machines**

Machines pour la fabrication de produits de construction en  
béton et silico-calcaire - Sécurité - Partie 4: Machines pour  
la fabrication de tuiles en béton

Maschinen für die Herstellung von Bauprodukten aus Beton  
und Kalksandsteinmassen - Sicherheit - Teil 4: Beton-  
Dachsteinmaschinen

This European Standard was approved by CEN on 1 January 2001 and includes Amendment 1 approved by CEN on 5 August 2010.

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, Croatia, 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.

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

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## Foreword

This document (EN 12629-4:2001+A1:2010) has been prepared by Technical Committee CEN/TC 151 "Construction equipment and building material machines - Safety", 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 March 2011, and conflicting national standards shall be withdrawn at the latest by March 2011.

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

This document includes Amendment 1, approved by CEN on 2010-08-05.

This document supersedes EN 12629-4:2001.

The start and finish of text introduced or altered by amendment is indicated in the text by tags  $\boxed{A_1}$   $\triangleleft A_1$ .

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 document.

$\boxed{A_1}$  *deleted text*  $\triangleleft A_1$

$\boxed{A_1}$  The series "*Machines for the manufacture of constructional products from concrete and calcium – silicate – Safety*" consists of following parts:

Part 1: Common requirements

Part 2: Block making machines

Part 3: Slide and turntable machines

Part 4: Concrete roof tile making machines

Part 5.1: Concrete pipe machines manufacturing in the vertical axis

Part 5.2: Concrete pipe machines manufacturing in the horizontal axis

Part 5.3: Pipe prestressing machines

Part 5.4: Concrete pipe coating machines

Part 6: Stationary and mobile equipment for the manufacture of precast reinforced products

Part 7: Stationary and mobile equipment for the benched manufacture of prestressed products

Part 8: Machines and equipment for the manufacture of constructional products from calcium silicate (and concrete).  $\triangleleft A_1$

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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

**EN 12629-4:2001+A1:2010 (E)****Introduction**

**A1** This European Standard is a Type C-standard as stated in EN ISO 12100.

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

When provisions of this type C document are different from those, which are stated in type A or B documents, the provisions of this type C document take precedence over the provisions of the other documents, for machines that have been designed and built according to the provisions of this type C document.

This document specifies the additional requirements to and/or the deviations from EN 12629-1:2000+A1:2010 specific for the concrete roof tile making machines as described in 1.1.

With the aim of clarifying the intentions of the document it should be noticed that the following assumptions were made when producing it:

- specific conditions of use or environmental conditions out of the scope of the document shall be the subject of negotiations between the manufacturer and the user/owner,
- the equipment will only be used by competent and designated persons,
- the place of use/installation is adequately lit,
- all operations are carried out by specially trained operators.

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**1 Scope**

**A1**

**1.1** This part of EN 12629, taken together with EN 12629-1:2000+A1:2010, applies to concrete roof tile making machines.

EN 12629-1:2000+A1:2010 specifies general requirements applicable to machines for the manufacture of constructional products from concrete and calcium–silicate.

This document specifies the additional requirements to and/or the deviations from EN 12629-1:2000+A1:2010 specific to the machines it covers. **A1**

**1.2 Limits of the machine**

The tile making machine is considered to begin at the point where moulds and/or the concrete are delivered to the fixed part of the machine and ends after the tile cutting process where products on their moulds are delivered on to an outfeed conveyor (see Annexes A and B). Moulds and concrete may be delivered to and removed from the machine by hand.

The preparation of the concrete mixture and the transport from the mixer to the machine are not covered by this standard.

The equipment for the transport and handling of formed products is not covered by this standard.

**A1**

**1.3** This European Standard deals with all significant hazards pertinent to these machines, including the interfaces, when they are used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer (see Clause 4). This European Standard specifies the appropriate technical measures to eliminate or reduce risks arising from the significant hazards.

This standard establishes safety requirements and/or methods of protection which applies to these machines. **A1**

**A1**

**1.4** This document is not applicable to concrete roof tile making machines, which are manufactured before the date of publication of this document by CEN. **A1**

## 2 Normative references

**A1** 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 953, *Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards*

EN 1837, *Safety of machinery — Integral lighting of machines*

EN 12629-1:2000+A1:2010, *Machines for the manufacture of constructional products from concrete and calcium-silicate – Safety – Part 1: Common requirements*

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, *Safety of machinery — Emergency stop — Principles for design (ISO 13850:2006)* **A1**

## 3 **A1** Terms and definitions **A1**

**A1** For the purposes of this document, the terms and definitions given in EN ISO 12100-1:2003, EN 12629-1:2000+A1:2010 and the following apply. **A1**

### 3.1

#### **concrete roof tile making machine tile machine**

Power driven automatic machine which manufactures concrete roof tiles and is part of a complex manufacturing process (see annexes A and B)

NOTE The tile manufacturing process is complex comprising stationary and mobile equipment, designed to manufacture roof tiles in various sizes and shapes, including the complementary roof fitting. The tile machine is only one element in the overall tile making process which may comprise a number of linked equipment (see annexes A and B).

### 3.2 machine parts

#### 3.2.1

##### **extrusion unit**

Equipment consisting of a propulsion unit which drives the mould through to the making section of the file machine, forcing the mixed raw materials and mould a die. The extruded column is cut to length

**EN 12629-4:2001+A1:2010 (E)****3.2.2****press unit**

equipment, including hopper(s) and internal conveying system, for the production of tile by moulding and compaction of mortar (concrete) with or without vibration which then ejects the mould and formed tile

**3.2.3****propulsion unit**

mechanism for supporting and/or driving the mould through the making section

**3.2.4****sample point**

A position at the machine outlet from which a representative sample of product may be removed from the process

**3.2.5****knife gear**

A cutting mechanism for the extruded concrete ribbon to allow it to be cut to the required dimensions

**4 List of significant hazards**

This clause contains all hazards and hazardous situations, as far as they are dealt with in this European Standard, identified by risk assessment as specific for this type of machinery and which require action to eliminate or reduce risk.

**A<sub>1</sub>** In accordance with Clause 4 of EN 12629-1:2000+A1:2010 the hazard zones described in the following sub-clauses are illustrated in Annexes A and B: **A<sub>1</sub>**

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**4.1 Mechanical Hazards****4.1.1 Crushing hazards**

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Access to the propulsion unit.

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Access to press enclosure.

Access to trap between mould and damping mechanisms.

**4.1.2 Shearing hazards**

Access between the fixed and moving parts of the propulsion unit and associated drive systems.

From the mould on entry to the press enclosure.

Between the fixed and moving parts of the press.

**4.1.3 Cutting and severing hazards**

Access to the knife gear and any trimming blades.

Sharp machinery parts.

**4.1.4 Entanglement hazards**

From the propulsion and cutting unit projections.

From access to moving parts in the making section.



#### 4.1.5 Drawing - In or trapping hazards

From the extrusion unit.

From access to nips on concrete recovery conveyors and in and outfeed conveyors.

From access to moving parts in the making section.

#### 4.1.6 Impact hazards

Access to projections on moving propulsion and cutting units.

#### 4.1.7 High pressure fluid ejection

Hoses under hydraulic pressure.

#### 4.1.8 Ejection of parts or materials

Ejection of moulds.

Ejection of parts.

#### 4.1.9 Slip, trip and fall hazards

From spilt mould oil at the infeed parts of the tile machine.

### 4.2 Noise Hazards

From mould collision.

From mechanical/pneumatic equipment.

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### 4.3 Hazards from materials used

#### 4.3.1 Contact or inhalation

Chemical burns or dermatitis from cement in wet concrete mixture.

Dermatitis from contact with mould oils, hydraulic oils and greases.

Inhalation of off mists or release agents.

#### 4.3.2 Fire or explosion

Of oil mist from mould oil spraying processes.

### 4.4 Hazards generated by neglecting ergonomic principles in design

#### 4.4.1 Neglected use of personal protective equipment

#### 4.4.2 Inadequate local lighting

Lighting of working areas.

#### 4.4.3 Human error

Control panel layout.