



SLOVENSKI STANDARD

SIST EN 12629-4:2001

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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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EUROPEAN STANDARD
NORME EUROPÉENNE
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EN 12629-4

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ICS 91.220

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.

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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COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This European Standard 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 July 2001, and conflicting national standards shall be withdrawn at the latest by July 2001.

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.

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.

Annex A, is informative and contains "First typical concrete tile manufacturing plant"

Annex B is informative and contains "Second typical concrete tile manufacturing plant".

The standard EN 12629 "Machines for the manufacture of constructional products from concrete and calcium - silicate - Safety" is composed with the following parts :

- Part 1 : Common requirements
- Part 2 : Block making machines
- Part 3 : Slide and turntable machines
- Part 4 : *Concrete rooftile making machines*
- Part 5 : Pipe making machines
- Part 6 : Stationary and mobile equipment for the manufacture of precast reinforced products
- Part 7 : Stationary and mobile equipment for the manufacture of prestressed products
- Part 8 : Machines and equipment for the manufacture of constructional products from calcium silicate (and concrete)

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Introduction

This European Standard is a Type C-standard in the structure as defined in EN 1070.

The machinery concerned and the extent to which hazards, hazardous situations and events are covered is indicated in the scope of this European Standard.

In addition, machinery shall comply as appropriate with EN 292-1:1991 and EN 292-2:1991 for hazards which are not covered by this standard.

Those hazards that are relevant for all mechanical, electrical, hydraulic, pneumatic or other equipment of machinery and that are dealt with in standards for common use (Type A, B1 and B2 standards) are not covered by this European Standard.

Reference to pertinent standards mentioned above is made where requirements of such standards are relevant.

1 Scope

This European Standard shall be used together with EN 12629-1:2000 "Machines for the manufacture of constructional products from concrete and calcium -silicate - Safety - Part 1 : Common requirements", which specifies general requirements of machines for the manufacture of constructional products from concrete and calcium -silicate .

This European Standard specifies the additional requirements to and/or the exceptions from EN 12629-1:2000 specific for the concrete roof tile making machines as defined in 3.1.

1.1 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.

1.2 This European Standard deals with all significant hazards pertinent to concrete roof tile making machines including the interfaces with the exception of noise hazards, when they are used as intended and under the conditions foreseen by the manufacturer (see clause 4). This European Standard specifies the appropriate technical measures to eliminate or reduce risks arising from the significant hazards.

NOTE Amendment is under preparation to deal with noise, in particular for measures to reduce noise at source and a noise test code including noise declaration.

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

1.3 See subclause 1.3 of EN 12629-1 :2000.

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 1070: 1998, *Safety of machinery - Terminology*

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

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

3 Definitions

For the purposes of this European Standard, the definitions stated in EN 1070:1998 apply. Other, more general, definitions are contained in EN 12629-1:2000, "Common requirements".

Additional definitions specifically needed for this European Standard are added below :

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 tile machine, forcing the mixed raw materials and mould a die. The extruded column is cut to length

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.

4.1 Mechanical Hazards

4.1.1 Crushing hazards

Access to the propulsion unit.

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.

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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.

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.

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5 Safety requirements and/or measures

General safety requirement of EN 12629-1:2000 shall be applied in conjunction with the specific requirements of this part.

5.1 Mechanical hazards

Sharp edges shall be chamfered.

5.1.1 Propulsion unit and cutting unit and extrusion unit

Access to the propulsion unit, extrusion unit, knife gear, trimming blades and moving parts in hopper(s) and internal conveying system shall be protected by an interlocking movable guard (see EN 12629-1 : 2000, subclause 5.2.2).

Subclause 5.2.4 of EN 12629-1 : 2000 shall apply if the moving parts do not come to rest.