

**Betoonist ja kaltsiumsilikaadist
konstruktsioonielementide
valmistamiseks mõeldud masinad.
Ohutus. Osa 6: Statsionaarne ja
mobiilne tehnika fassaadikivide
tootmiseks**

Machines for the manufacture of constructional products from concrete and calcium-silicate - Safety - Part 6: Stationary and mobile equipment for the manufacture of precast reinforced products

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 12629-6:2004 sisaldab Euroopa standardi EN 12629-6:2004 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 23.11.2004 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 12629-6:2004 consists of the English text of the European standard EN 12629-6:2004.</p> <p>This document is endorsed on 23.11.2004 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
--	---

<p>Käsitlusala: This European Standard is intended to 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.</p>	<p>Scope: This European Standard is intended to 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.</p>
---	---

ICS 91.220

Võtmesõnad:

ICS 91.220

English version

Machines for the manufacture of constructional products from concrete and calcium-silicate - Safety - Part 6: Stationary and mobile equipment for the manufacture of precast reinforced products

Machines pour la fabrication de produits de construction en béton et silico-calcaire - Sécurité - Partie 6: Equipements fixes et mobiles pour la fabrication de composants en béton armé

Maschinen für die Herstellung von Bauprodukten aus Beton und Kalksandsteinmassen - Sicherheit - Teil 6: Stationäre und fahrbare Einrichtungen für die Herstellung von bewehrten Fertigteilen

This European Standard was approved by CEN on 30 April 2004.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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

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

Contents

	page
Foreword.....	3
Introduction.....	4
1 Scope	5
2 Normative references	6
3 Terms and definitions	7
4 List of significant hazards	10
5 Safety requirements and/or measures	18
5.1 Introduction	18
5.2 General.....	18
5.3 Control stations (see 3.7.8 of EN ISO 12100-2:2003 and 5.3.4, 5.3.5 of EN 12629-1:2000)	18
5.4 Emergency stops	19
5.5 Operating mode	19
5.6 Module A: Manufacturing.....	19
5.7 Module B: storage-hardening.....	20
5.8 Module C: Palletising and packaging of final products and defective products disposal station (see also 5.2 of EN 12629-1:2000)	21
5.9 Noise	21
5.10 Summary of the safety measures given in relation to the significant hazards listed in Clause 4	22
6 Verification of safety requirements and/or measures.....	26
7 Information for use	27
7.1 General.....	27
7.2 Instruction handbook	27
7.3 Marking	28
Annex A (informative) Manufacturing process on machines with or without turnover.....	29
Annex B (informative) Terminology and hazard zones relative to the various types of machines	30
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive Machinery Directive 98/37/EC amended by 98/79/EC.....	34
Bibliography	35

Foreword

This document (EN 12629-6:2004) 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 February 2005, and conflicting national standards shall be withdrawn at the latest by February 2005.

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).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

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: Pipe making machines

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

Part 7: Stationary and mobile equipment for long line manufacture of prestressed products

Part 8: Machines and equipment for the manufacture of constructional products from calcium silicate (and concrete)

This document is complementary to part 1 and is intended to be used in combination with that part.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

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

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 specific for the stationary and mobile equipment for long-line manufacture of pre-stressed products as defined in Clause 3.

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

1 Scope

1.1 This document is intended to be used together with EN 12629-1 "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 document specifies the additional requirements to and/or the deviations from EN 12629-1 specific for the stationary and mobile equipment for the manufacture of precast reinforced products as defined in Clause 3.

This document applies to these machines also when used for the manufacture of non-reinforced moulded products.

1.2 This document applies to the modules comprising production machines (with or without turnover demoulding) for the manufacturing of reinforced moulded products as shown below and illustrated in informative Annexes A and B.

NOTE This machinery can consist of three modules and they are generally designed to obtain a large moulding capacity (middle length of the products from 3 to 4 meters), with a limit height of demoulding of 1 m and a maximum width of 1,50 m.

Module A: Manufacturing machines by vibration or compression and floating, with or without turnover.

Module B: Stocking/hardening unit.

Module C: Assembly for palletising/packaging of the concrete products. This module also permits the inspection of the products.

These machines are designed to perform the following cyclic operations:

- manufacturing by vibration and even compression (oiling, mould feeding – concrete + reinforcement –, vibration, floating, interlocking, turnover, removing from mould);
- storage of moulds and pallet boards for concrete hardening;
- products destacking and packaging;
- moulds and pallet boards return to the manufacturing module.

Any of these operations may be manual, semi-automatic or automatic.

This document deals with automatic and semi-automatic operations of modules A and C and with automatic operations of module B.

There are two main types of stationary and mobile equipment for manufacture of precast reinforced products:

- equipment with instant removing from mould on pallet boards or on the floor;
- equipment with delayed removing from mould (collection of moulds: the concrete products are hardened in the mould).

This standard does not deal with the machines for:

- mixing of concrete;
- manufacturing of the reinforcing steel;
- evacuation of the products to the stockyard;

— manufacturing of products (e. g. slabs or blocks) covered by other parts of EN 12629.

Annex A shows the most common types of units as well as their variations: immediate demoulding unit and delayed demoulding unit.

1.3 This document is limited to the units comprising a fixed or movable manufacturing module with or without rolling over of the mould, a module or storage area for storing/hardening of the products and a products palletising/packaging module. It deals with the significant hazards pertinent to these machines, when used as intended under the conditions foreseen by the manufacturer (see Clause 4), except noise hazards, which are partly dealt with.

NOTE An 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 document specifies the appropriate technical measures to eliminate or reduce risks arising from the significant hazards, particularly:

- following a malfunction during the automatic mode of operation;
- during manual or semi-automatic manufacturing processes;
- during end-of-shift cleaning procedures, adjustment and maintenance.

This document deals with the significant hazards generated by handling equipment for palletising and stacking/destacking that are gantries. Complementary safety measures can be necessary if other type of handling equipment is used.

1.4 This document is not applicable to stationary and mobile equipment for the manufacture of precast products, which are manufactured before the date of publication of this document by CEN.

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

EN 349, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body*

EN 547-1, *Safety of machinery — Human body measurements — Part 1: Principles for determining the dimensions required for openings for whole body access into machinery*

EN 547-2, *Safety of machinery — Human body measurements — Part 2: Principles for determining the dimensions required for access openings*

EN 547-3, *Safety of machinery — Human body measurements — Part 3: Anthropometric data*

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

EN 614-1, *Safety of machinery — Ergonomic design principles — Part 1: Terminology and general principles*

EN 811, *Safety of machinery — Safety distances to prevent danger zones being reached by the lower limbs*

EN 894-1, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 1: General principles for human interactions with displays and control actuators*

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

EN 1005-3, *Safety of machinery — Human physical performance — Part 3: Recommended force limits for machinery operation*

EN 1050:1996, *Safety of machinery — Principles for risk assessment*

EN 1070:1998, *Safety of machinery — Terminology*

EN 1088, *Safety of machinery - Interlocking devices associated with guards - Principles for design and selection*

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

EN 61310-1, *Safety of machinery - Indication, marking and actuation - Part 1: Requirements for visual, auditory and tactile signals (IEC 61310-1:1995)*

EN ISO 14122-1, *Safety of machinery - Permanent means of access to machinery - Part 1: Choice of fixed means of access between two levels (ISO 14122-1:2001)*

EN ISO 14122-2, *Safety of machinery — Permanent means of access to machinery — Part 2: Working platforms and gangways (ISO 14122-2:2001)*

EN ISO 14122-3, *Safety of machinery - Permanent means of access to machinery - Part 3: Stairs, stepladders and guard-rails (ISO 14122-3:2001)*

prEN ISO 14122-4, *Safety of machinery - Permanent means of access to machinery - Part 4: Fixed ladders (ISO 14122-4:2004)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1070:1998, EN 12629-1:2000 and the following apply.

3.1 customary terms

there is no customary term for the machinery dealt with by this standard. The term featured in the title is one term frequently used, but other equivalent terms may be encountered, each combining the words in the list below in a variety of ways.

production making	unit assembly machines	with without turnover	or	For the manufacturing of concrete	moulded elements precast products	reinforced	1)
-------------------	------------------------	-----------------------------	----	-----------------------------------	--------------------------------------	------------	----

3.2 concrete hopper

1) In French, these kinds of machines are also commonly called “long products” manufacturing machines.