



**SLOVENSKI STANDARD**  
**oSIST prEN 1009-5:2018**  
**01-januar-2018**

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**Stroji za mehansko obdelavo mineralov in podobnih trdnih snovi - Varnost - 5. del:  
Posebne zahteve za stroje za čiščenje, recikliranje, sortiranje in obdelavo blata**

Machines for mechanical processing of minerals and similar solid materials - Safety -  
Part 5: Specific requirements for cleaning, recycling, sorting and mud treatment  
machinery

iTeh STANDARD PREVIEW

Maschinen für die mechanische Aufbereitung von Mineralien und ähnlichen festen  
Stoffen - Sicherheit - Teil 5: Spezifische Anforderungen für Reinigungs-, Recycling-,  
Sortier- und Schlamm-Verarbeitungsmaschinen

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Machines pour le traitement mécanique des minéraux et des matériaux solides similaires  
- Sécurité - Partie 5 : Prescriptions spécifiques pour machines de nettoyage, de  
recyclage et de traitement des boues

**Ta slovenski standard je istoveten z: prEN 1009-5**

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**Machines for mechanical processing of minerals and  
similar solid materials - Safety - Part 5: Specific  
requirements for cleaning, recycling, sorting and mud  
treatment machinery**

Machines pour le traitement mécanique des minéraux  
et des matières solides similaires - Sécurité - Partie 5 :  
Prescriptions spécifiques aux machines de nettoyage,  
recyclage, triage et traitement des boues

Maschinen für die mechanische Aufbereitung von  
Mineralien und ähnlichen festen Stoffen - Sicherheit -  
Teil 5: Spezifische Anforderungen für Reinigungs-,  
Recycling-, Sortier- und Schlamm-  
Verarbeitungsmaschinen

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 151.

If this draft becomes a European Standard, 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.

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**prEN 1009-5:2017 (E)****European foreword**

This document (prEN 1009-5:2017) 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 document is currently submitted to the CEN Enquiry.

This document has been prepared under a standardization request 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.

prEN 1009 “Machines for mechanical processing of minerals and similar solid materials — Safety” comprises the following parts:

*Part 1: Common requirements for partly completed machinery and processing plants*

*Part 2: Specific requirements for feeding machinery and continuous handling equipment*

*Part 3: Specific requirements for crushing and milling machinery*

*Part 4: Specific requirements for screening machinery*

*Part 5: Specific requirements for cleaning, recycling and mud treatment machinery*

*Part 6: Specific requirements for mobile and semi-mobile crushing and screening equipment*

## 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 or hazardous events are covered are indicated in the Scope of this document.

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

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**prEN 1009-5:2017 (E)****1 Scope**

This part of prEN 1009 to be used together with prEN 1009-1, specifies the safety requirements and their verification for the design and construction of machinery for cleaning, water recycling, mud treatment and sorting (other than screens) for the mechanical processing in quarrying, recycling and processing mineral and by-products. In addition, it specifies the type of information on safe working practices (including residual risks) to be provided by the manufacturer.

The requirements of this part are complementary to the common requirements formulated in prEN 1009-1. This part does not repeat the requirements from prEN 1009-1, but adds or replaces them. When requirements of this part of prEN 1009 are different from those which are stated in prEN 1009-1, the requirements of this part of prEN 1009 take precedence over the requirements of prEN 1009-1 for machines that have been designed and built according to the provisions of this part of prEN 1009.

This part of prEN 1009, together with prEN 1009-1, deals with all the significant hazards, hazardous situations and events relevant to machinery for cleaning, recycling, mud treatment when they are used as intended and under the conditions of misuse which are reasonably foreseeable by the manufacturer associated with the whole lifetime of the machine (see Clause 4).

NOTE 1 EN 13309 specifies test methods and acceptance criteria for evaluating the electromagnetic compatibility of all kind of mobile construction machinery.

NOTE 2 Specific requirements related to road traffic regulations (e.g. lighting, dimensions, speed limit plate) are not taken into account in this standard.

This part of prEN 1009 is not applicable to machinery for cleaning, recycling, mud treatment which are manufactured before the date of publication of this document by CEN.

**2 Normative references**

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 617:2001+A1:2010, *Continuous handling equipment and systems — Safety and EMC requirements for the equipment for the storage of bulk materials in silos, bunkers, bins and hoppers*

prEN 1009-1:2017, *Machines for mechanical processing of minerals and similar solid materials — Safety — Part 1: Common requirements for partly completed machinery and processing plants*

prEN 1009-4:2017, *Machines for mechanical processing of minerals and similar solid materials - Safety - Part 4: Specific requirements for screening machinery*

EN 61496-1, *Safety of machinery — Electro-sensitive protective equipment — Part 1: General requirements and tests*

EN 61496-2, *Safety of machinery — Electro-sensitive protective equipment — Part 2: Particular requirements for equipment using active opto-electronic protective devices (AOPDs)*

EN ISO 12100:2010, *Safety of machinery — General principles for design — Risk assessment and risk reduction (ISO 12100:2010)*

EN ISO 13857:2008, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2008)*

EN ISO 14119:2013, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection (ISO 14119:2013)*



EN ISO 14120:2015, *Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards (ISO 14120:2015)*

EN ISO 14122-3:2016, *Safety of machinery — Permanent means of access to machinery — Part 3: Stairs, stepladders and guard-rails (ISO 14122-3:2016)*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100, prEN 1009-1, EN 617:2001+A1:2010 and the following apply.

#### 3.1

##### **sand unit**

sand treatment plant with hydro-cyclone system, a tank, a pump and a drying system, allowing the washing and drying of sands

#### 3.2

##### **settling tank/clarifier/thickener**

plant containing a decantation pool with a scraper, pumps and a flocculation plant with the aim to clarify washing water through a mud thickening, for their recycling

#### 3.3

##### **dewatering screw/screw classifier**

plant containing a screw rotating within a tank or sump to separate sand from fines

#### 3.4

##### **hydro-cyclone**

classifying (or concentrating) separator into which pulp is fed, so as to take a circular path

Note 1 to entry: Coarser and heavier fractions of solids report at apex of long cone while finer particles overflow from central vortex.

#### 3.5

##### **sieving equipment**

static or vibrating equipment with a single level, ensuring a sand classification

#### 3.6

##### **dewatering and draining screen**

equipment decreasing the moisture of sands and aggregates

#### 3.7

##### **fluidised bed separator**

equipment realizing a cut size between 100 and 800 microns, through density control and water injection

#### 3.8

##### **hydro-separator**

equipment realizing a cut size less than 100 microns, by water injection

#### 3.9

##### **log washer**

slurry tank in which one or two shafts equipped with paddle to break up each other various types of materials like clay, sands, aggregates agglomerates, impurities (e.g. wood) in order to produce a clean aggregate outlet and a dirty water outlet with impurities and fines

**prEN 1009-5:2017 (E)****3.10****blender**

equipment with a tank in which an agitator is turning in order to mix a liquid product with a solid product

**3.11****press filter**

multiple plate filters in which the mud is injected under pressure to produce mud cakes on one side and collect filtrates on the other side

**3.12****rotary scrubber**

rotary device in which coarse and sticky ore is mixed with water to wash and disintegrate material and achieve a free rock from one side and slurry from the other side

**3.13****centrifugal thickening**

equipment used for fine separation, using centrifugal forces fed by concentrated slurry to be separated in a pasty sludge and centrates (e.g. water)

**3.14****vacuum filter**

Filtering device where the pulp is drawn into contact with a porous media by means of a moderately high vacuum, solids being filtrated drawn through from one side and filtrates collected from the other side

Note 1 to entry: A vacuum filter can be a belt filter, a drum filter or a disc filter.

Note 2 to entry: In the drum and disc types, filtration is continuous.

Note 3 to entry: Vacuum is produced by means of a pump. [1009-5:2020](https://standards.iteh.ai/catalog/standards/sist/b5e9c165-4ff4-4c47-b12f-e075fe12fa05/sist-en-1009-5-2020)

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**3.15****attrition cell**

device to liberate sand from clay coating in wet process by friction of grains each others using a screw or paddles to move the material past each other (attrition)

**3.16****sand dryer**

rotating equipment fitted with filtrating grids decreasing the amount of moisture in the sand after drying through vacuum and/or heating

**3.17****bucket wheel**

rotating system with bucket wheel for separation of sand from water within a tank, combined or not with dewatering screen (e.g. bucket wheel or sand trap)

**3.18****dynamic/static air classifier**

dry classification device that separates sand and ultra-fine particles

**3.19****mixer**

machine with a hopper where are mainly introduced two solids which are mixed with one or several screws with the possibility or not to add water and an operation at ambient temperature or heated atmosphere

**3.20****tank**

storage equipment containing a liquid or a pulp

**3.21****tube press**

membrane type filter press, which performs filtration and separation during its press operation, designed in cylindrical format and capable of operating at high filtration

**3.22****magnetic separator**

mechanism for removing ferrous contaminates from the material being processed, e.g. permanent or electric, conveyors or drums

**4 List of significant hazards**

This clause contains all the significant hazards, hazardous situations and events common to the different types of machines in the scope and also the hazards due to the assembly of different machines into a plant, identified by risk assessments significant for this type of machinery and which require action to eliminate or reduce the risk.

**Table 1 — List of significant hazards**

Nbr <sup>a</sup>	Hazard, hazardous situation or hazardous event	Origin	Clause/subclause of this document
1	<b>Mechanical hazards due to:</b>		
1.1	Crushing hazard	Blockage of material in mobile part	7.3.4
		Contact with the filter component	5.4
		Implementation and design concerned	5.2, 7.3.1
		Interaction between moving and fix parts	5.9, 5.16, 5.17
		Moving and fix parts interaction	5.5, 5.7.2
		No blockage of the wheel	5.16
		Overflow	5.11, 5.12
		Rock ejection	5.14, 7.3.2
		Side of warning sign and warning sign Burying	5.7.1
		Side of warning sign and warning sign Burying	5.7.1 (5.7.2?)
		Wrong side of warning sign or wrong sign	5.15, 7.2

## prEN 1009-5:2017 (E)

Nbr <sup>a</sup>	Hazard, hazardous situation or hazardous event	Origin	Clause/subclause of this document
1.2	Shearing hazard	Blockage of material in mobile part	7.3.4
		Contact with high pressure fluid	5.13
		Contact with the filter component	5.4
		Implementation and design concerned	5.2, 7.3.1
		Interaction between moving and fix parts	5.9, 5.11, 5.16, 5.17
		Moving and fix parts interaction	5.5, 5.7.2
		No blockage of the wheel	5.16
		Overflow	5.11, 5.12
		Rock ejection	5.14, 7.3.2
		Wrong side of warning sign or wrong sign	5.15, 7.2
1.3	Cutting or severing hazard	Blockage of material in mobile part	7.3.4
		Contact with high pressure fluid	5.13
		Contact with the filter component	5.4
		Implementation and design concerned	5.2, 7.3.1
		Interaction between moving and fix parts	5.9, 5.11, 5.16, 5.17
		Moving and fix parts interaction	5.5, 5.7.2
		No blockage of the wheel	5.16
		Overflow	5.11, 5.12
		Rock ejection	5.14, 7.3.2
		Wrong side of warning sign or wrong sign	5.15, 7.2
1.4	Entanglement hazard	Contact with high pressure fluid	5.13
		Contact with the filter component	5.4