SLOVENSKI STANDARD
oSIST prEN 1337-2:2018

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Konstrukcijska ležišča - 2. del: Drsni elementi

Structural bearings - Part 2: Sliding elements

Lager im Bauwesen - Teil 2: Gleitteile

Ta slovenski standard je istoveten z: **prEN 1337-2**

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English Version

Structural bearings - Part 2: Sliding elements

Lager im Bauwesen - Teil 2: Gleitteile

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 167.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (prEN 1337-2:2018) has been prepared by Technical Committee CEN/TC 167 “Structural bearings”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 1337-2:2004.

prEN 1337, *Structural bearings*, consists of the following 8 Parts:

— *Part 1: General*;

— *Part 2: Sliding elements*;

— *Part 3: Elastomeric bearings*;

— *Part 4: Roller bearings*;

— *Part 5: Pot bearings*;

— *Part 6: Rocker bearings*;

— *Part 7: Spherical and cylindrical PTFE bearings*;

— *Part 8: Guide bearings and Restraint bearings.*

The major technical changes are listed below:

— Complete technical and editorial revision of the document.

— Steel to steel sliding surfaces added to the scope.

— Parts of content from EN 1337-3 and EN 1337-8 were moved to this document.

— It is not possible to list all implemented changes to this edition of EN 1337-2.

1 Scope

This document specifies rules for the design, testing and manufacture of sliding elements which are not structural bearings but only parts of them for combination with structural bearings as defined in other parts of this European Standard.

It is applicable to:

— flat and curved sliding elements made of polytetrafluoroethylene (PTFE), lubricant and austenitic steel or chromium plated surfaces or anodized aluminium,

— sliding elements for guides made of PTFE or composite bearing materials, lubricant and austenitic steel,

— PTFE surfaces with a circumscribing circle diameter of single or multiple PTFE sheets larger than 75 mm and smaller than 1 500 mm,

— PTFE surface temperatures between –35 °C and +50 °C and

— steel to steel sliding surfaces.

Additional requirements for curved sliding elements used in spherical and cylindrical PTFE bearings are covered by prEN 1337-7:2018.

Sliding elements for use as temporary devices during construction, for example during launching of the superstructure, and sliding elements not permanently in contact, other than guides, are not covered within this document, because the required performance and conditions may deviate considerably.

This document will be used in conjunction with the relevant parts of this standard series.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

prEN 1337-1:2018, *Structural bearings — Part 1: General*

prEN 1337-3:2018, *Structural bearings — Part 3: Elastomeric bearings*

prEN 1337-6:2018, *Structural bearings — Part 6: Rocker bearings*

prEN 1337-7:2018, *Structural bearings — Part 7: Spherical and cylindrical PTFE bearings*

EN 1706, *Aluminium and aluminium alloys — Castings — Chemical composition and mechanical properties*

EN 1992-1-1, *Eurocode 2: Design of concrete structures — Part 1-1: General rules and rules for buildings*

EN 1992-2, *Eurocode 2 — Design of concrete structures — Concrete bridges — Design and detailing rules*

EN 1993 (all parts), *Eurocode 3: Design of steel structures*

EN 10025 (all parts), *Hot rolled products of structural steels*

EN 10088 (all parts), *Stainless steels*

EN ISO 527-1, *Plastics — Determination of tensile properties — Part 1: General principles (ISO 527-1)*

EN ISO 527-3:1995, *Plastics — Determination of tensile properties — Part 3: Test conditions for films and sheets (ISO 527-3:1995)*

EN ISO 1183 (all parts), *Plastics — Methods for determining the density of non-cellular plastics — Part 2: Density gradient column method (ISO 1183, all parts)*

EN ISO 2039-1, *Plastics — Determination of hardness — Part 1: Ball indentation method (ISO 2039-1)*

EN ISO 2178, *Non-magnetic coatings on magnetic substrates — Measurement of coating thickness - Magnetic method (ISO 2178)*

EN ISO 2360, *Non-conductive coatings on non-magnetic electrically conductive base metals — Measurement of coating thickness — Amplitude-sensitive eddy-current method (ISO 2360)*

EN ISO 2409, *Paints and varnishes — Cross-cut test (ISO 2409)*

EN ISO 4287, *Geometrical product specifications (GPS) — Surface texture: Profile method — Terms, definitions and surface texture parameters (ISO 4287)*

EN ISO 4288, *Geometrical product specifications (GPS) — Surface texture: Profile method — Rules and procedures for the assessment of surface texture (ISO 4288)*

EN ISO 6158, *Metallic and other inorganic coatings — Electrodeposited coatings of chromium for engineering purposes (ISO 6158)*

EN ISO 6506 (all parts), *Metallic materials — Brinell hardness test (ISO 6506, all parts)*

EN ISO 6507-1, *Metallic materials — Vickers hardness test — Part 1: Test method (ISO 6507-1)*

EN ISO 6507-2, *Metallic materials — Vickers hardness test — Part 2: Verification and calibration of testing machines (ISO 6507-2)*

EN ISO 7500-1:2015, *Metallic materials — Calibration and verification of static uniaxial testing machines — Part 1: Tension/compression testing machines — Calibration and verification of the force-measuring system (ISO 7500-1:2015)*

ISO 1083, *Spheroidal graphite cast iron — Classification*

ISO 2137, *Petroleum products and lubricants — Determination of cone penetration of lubricating greases and petrolatum*

ISO 2176, *Petroleum products — Lubricating grease — Determination of dropping point*

ISO 3016, *Petroleum products — Determination of pour point*

ISO 3755, *Cast carbon steels for general engineering purposes*

ISO 4587, *Adhesives — Determination of tensile lap-shear strength of rigid-to-rigid bonded assemblies*

3 Terms, definitions, symbols and abbreviations

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in prEN 1337-1:2018 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1.1
backing plate
metallic component which supports sliding materials

3.1.2
coefficient of friction
ratio of lateral force to the normal force

3.1.3
composite material
sliding material used in guides

3.1.4
guide
sliding element which restrains a sliding bearing from moving in one axis

3.1.5
restraint
sliding element which restrains a sliding bearing from moving in two axis

3.1.6
hard chromium surface
steel backing element plated with a hard chromium layer

3.1.7
lubricant
special grease used to reduce both friction and wear in the sliding surfaces

3.1.8
mating surface
hard smooth metallic surface against which the PTFE or composite materials slide

3.1.9
Polytetrafluoroethylene
PTFE
thermoplastic material used for its low coefficient of friction

3.1.10
sliding surface
combination of a pair of flat or curved surfaces of different materials which allow relative displacements

3.1.11
sliding materials
materials which form sliding surfaces

3.1.12
sliding element
set of components in structural bearing that allows sliding

3.1.13
base plate
plate that is an integral part of the bearing and forms the main component to which restraints and guides are attached

3.2 Symbols

3.2.1 Latin upper cases

A	contact area	mm^2
E	modulus of elasticity	MPa
F	action; force	N; kN
M	bending moment	kN · m
N	axial force; force normal to principal bearing surface	N; kN
R	Roughness as e.g. R_a and R_z	µm
S	oil separation	%
T	temperature	°C
V	transverse or shear force	N; kN
W	weight	g

3.2.2 Latin lower case letters

a	smallest dimension of PTFE sheets or minor side of rectangular plates or sheets	mm
b	major side of rectangular plates or sheets	mm
c	clearance between sliding components (difference in width between key and keyway)	mm
d	diameter, diagonal, depth	mm
e	eccentricity	mm
f	tensile or compressive strength	MPa
g	gap	mm
h	protrusion	mm
k	factor	—
l	diameter of the circumscribing circle of single or multiple PTFE sheets; length of PTFE or composite materials sheets of guides	mm
m	material	—
n	number of cycles	—

s	sliding distance	mm
t	thickness, time	mm; s; h
tot	total	—
u	perimeter	mm
v	sliding speed	mm/s
w	deformation	—
x	longitudinal axis	—
y	transverse axis	—
z	axis normal to the principle bearing surface	—

3.2.3 Greek letters

α	angle	rad
γ	partial factor	—
ε	elongation	%
Δ	maximum deviation of flat or curved sliding surfaces from theoretical surface	mm
λ	ratio, coefficient	—
μ	coefficient of friction	—
ν	Poisson's ratio	—
ρ	mass density	kg/m^3
σ	normal pressure	MPa

3.2.4 Subscripts

b	backing plate
c	concrete
CM	composite
d	design
dyn	dynamic
E	effect of an action
el	Elastomer
f	friction
G	permanent action
G	geometrical
k	characteristic
m	material, average (mean)
max	maximum
min	minimum
n	cycle number
PTFE	Polytetrafluoroethylene

pl	preload
stat	static
Q	variable action
R	resistance
red	reduced
S	internal forces and moments from actions
s	static
t	tension
T	temperature
u	ultimate
x, y, z	coordinates
y	yield

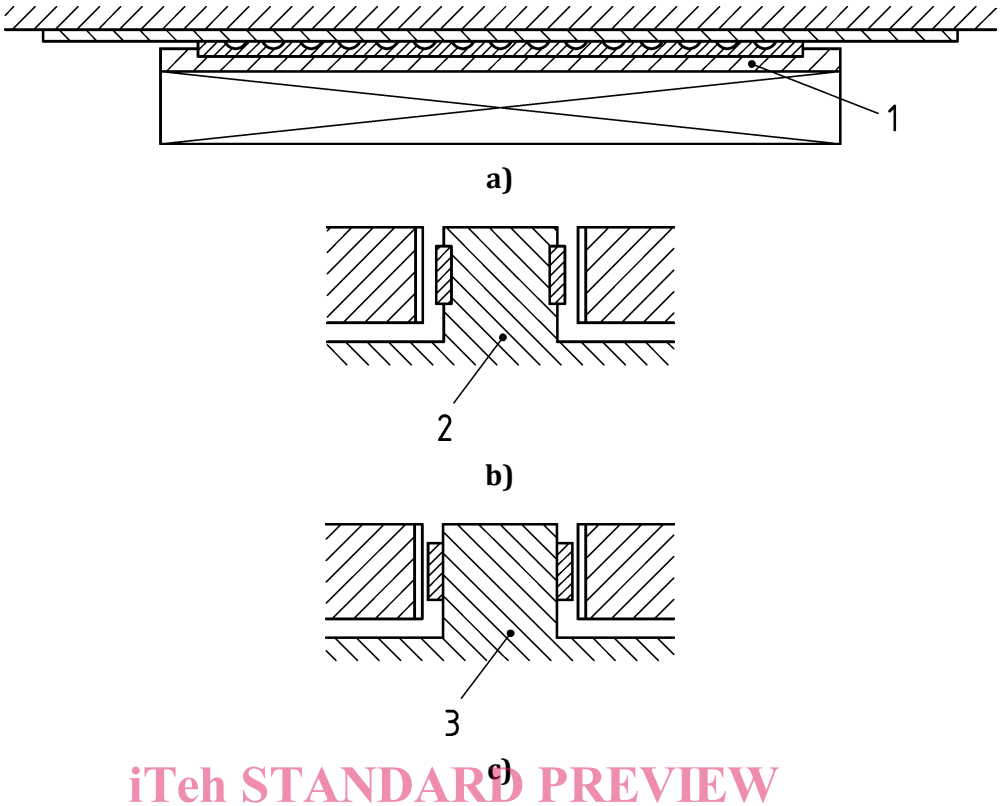
3.3 Abbreviations

CM	Composite Material
PTFE	Polytetrafluoroethylene
NDP	Nationally Determined Parameters

4 Types of sliding elements

4.1 General

Sliding elements carry axial loads and accommodate translations and/or rotations (see Figure 1).



Key

1 permanently loaded flat sliding element (with recessed PTFE)

2 guide, not permanently loaded flat sliding element (with recessed PTFE)

3 guide, not permanently loaded flat sliding element (with CM1 or CM2)

Figure 1 — Arrangements of sliding elements

Two types of sliding elements exist:

— Elements permanently loaded;

— Elements not permanently loaded.

4.2 Sliding elements permanently loaded

4.2.1 Flat sliding elements with recessed PTFE

Flat sliding elements shall accommodate translations in the plane of the sliding surface.

The flat sliding elements consist of a layer of virgin PTFE with dimples and lubricant which is lodged in a recess of a backing plate. The mating surface is given in Table 5.

Details are shown in 6.3.1.

Permanently loaded guides shall be considered as flat sliding elements.

4.2.2 Flat sliding elements with PTFE vulcanised to elastomeric bearings

Flat sliding elements shall accommodate translations in the plane of the sliding surface.

The flat sliding elements consist of a layer of virgin PTFE with or without out dimples, connected to the elastomer by means of vulcanisation. These sliding elements are only used to accommodate irreversible movements from creep, shrinkage and settlements.