SLOVENSKI STANDARD
SIST EN ISO 4126-7:2013

01-september-2013

Nadomešča:
SIST EN ISO 4126-7:2004
SIST EN ISO 4126-7:2004/AC:2009

Naprave za varovanje pred visokim tlakom - 7. del: Splošni podatki (ISO 4126-7:2013)

Safety devices for protection against excessive pressure - Part 7: Common data (ISO 4126-7:2013)

Sicherheitseinrichtungen gegen unzulässigen Überdruck - Teil 7: Allgemeine Daten (ISO 4126-7:2013)

Dispositifs de sécurité pour protection contre les pressions excessives - Partie 7: Données communes (ISO 4126-7:2013)

Ta slovenski standard je istoveten z: **EN ISO 4126-7:2013**

ICS:

13.240	Varstvo pred previsokim tlakom	Protection against excessive pressure

SIST EN ISO 4126-7:2013 **en,fr**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 4126-7

July 2013

ICS 13.240

Supersedes EN ISO 4126-7:2004

English Version

Safety devices for protection against excessive pressure - Part 7: Common data (ISO 4126-7:2013)

Dispositifs de sécurité pour protection contre les pressions excessives - Partie 7: Données communes (ISO 4126-7:2013)

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This European Standard was approved by CEN on 25 April 2013.

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-CENELEC 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-CENELEC 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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

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

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Foreword

This document (EN ISO 4126-7:2013) has been prepared by Technical Committee ISO/TC 185 "Safety devices for protection against excessive pressure" in collaboration with the Technical Committee CEN/TC 69 “Industrial valves” the secretariat of which is held by AFNOR.

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 January 2014, and conflicting national standards shall be withdrawn at the latest by January 2014.

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 supersedes EN ISO 4126-7:2004.

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.

For relationship with EU Directive, 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, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 4126-7:2013 has been approved by CEN as EN ISO 4126-7:2013 without any modification.

Annex ZA
(informative)
Relationship between this European Standard and the Essential Requirements of EU Directive 97/23/EC (PED)

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide one means of conforming to Essential Requirements of the New Approach Directive 97/23/EC (PED).

Once EN ISO 4126-7 is cited in the Official Journal of the European Communities under that Directive and has been implemented as a national standard in at least one Member State, compliance with the normative clauses of EN ISO 4126-7 confers, within the limits of the scope of EN ISO 4126-7, a presumption of conformity with the corresponding Essential Requirements of that Directive and associated EFTA regulations.

Table ZA.1 — Correspondence between this European Standard and Directive 97/23/EC (PED)

Sub-clauses of this EN	Essential Requirements of Directive 97/23/EC (PED)	
	Essential Requirements	Annex I of PED
5 and 6	Pressure Limitations	2.11.1

WARNING — Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of EN ISO 4126-7.

INTERNATIONAL STANDARD

ISO 4126-7

Second edition
2013-07-15

Safety devices for protection against excessive pressure —

Part 7: Common data

Dispositifs de sécurité pour protection contre les pressions excessives —

Partie 7: Données communes

Reference number
ISO 4126-7:2013(E)

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Published in Switzerland

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

ISO 4126-7 was prepared by Technical Committee ISO/TC 185, *Safety devices for protection against excessive pressure*.

This second edition cancels and replaces the first edition (ISO 4126-7:2004), which has been technically revised. It also incorporates the Technical Corrigendum ISO 4126-7:2004/Cor.1:2006.

ISO 4126 consists of the following parts, under the general title *Safety devices for protection against excessive pressure*:

— *Part 1: Safety valves*

— *Part 2: Bursting disc safety devices*

— *Part 3: Safety valves and bursting disc safety devices in combination*

— *Part 4: Pilot-operated safety valves*

— *Part 5: Controlled safety pressure relief systems (CSPRS)*

— *Part 6: Application, selection and installation of bursting disc safety devices*

— *Part 7: Common data*

— *Part 9: Application and installation of safety devices excluding stand-alone bursting disc safety devices*

— *Part 10: Sizing of safety valves for gas/liquid two-phase flow*

— *Part 11: Performance testing*[1)]

1) Under preparation.

Safety devices for protection against excessive pressure —

Part 7:
Common data

1 Scope

This part of ISO 4126 specifies requirements for safety valves. It contains information which is common to ISO 4126-1 to ISO 4126-6 to avoid unnecessary repetition.

For flashing liquids or two-phase mixtures, see ISO 4126-10.

The user is cautioned that it is not recommended to use the ideal gas formula presented in 6.3 when the relieving temperature is greater than 90 % of the thermodynamic critical temperature and the relieving pressure is greater than 50 % of the thermodynamic critical pressure. Additionally, condensation is not considered. If condensation occurs, the method presented in 6.3 should not be used.

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.

ISO 4126-1, *Safety devices for protection against excessive pressure — Part 1: Safety valves*

ISO 4126-2, *Safety devices for protection against excessive pressure — Part 2: Bursting disc safety devices*

ISO 4126-4, *Safety devices for protection against excessive pressure — Part 4: Pilot operated safety valves*

ISO 4126-5, *Safety devices for protection against excessive pressure — Part 5: Controlled safety pressure relief systems (CSPRS)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4126-1, ISO 4126-2, ISO 4126-4 ISO 4126-5 and the following apply.

NOTE Pressure unit used in ISO 4126-7 is the bar (1 bar = 10^5 Pa), quoted as gauge (relative to atmospheric pressure) or absolute as appropriate.

3.1
safety valve
valve which automatically, without the assistance of any energy other than that of the fluid concerned, discharges a quantity of the fluid so as to prevent a predetermined safe pressure being exceeded, and which is designed to re-close and prevent further flow of fluid after normal pressure conditions of service have been restored

Note 1 to entry: The valve can be characterized either by pop action (rapid opening) or by opening in proportion (not necessarily linear) to the increase in pressure over the set pressure. The use of the term safety valve in this part of ISO 4126 applies to other valve types as covered in ISO 4126-1, ISO 4126-4 and ISO 4126-5.

3.2
set pressure
predetermined pressure at which a safety valve under operating conditions commences to open

Note 1 to entry: It is the gauge pressure measured at the valve inlet at which the pressure forces tending to open the valve for the specific service conditions are in equilibrium with the forces retaining the valve disc on its seat.

3.3
maximum allowable pressure, PS
maximum pressure for which the protected equipment is designed

3.4
overpressure
pressure increase over set pressure, usually expressed as a percentage of the set pressure

3.5
relieving pressure
pressure used for the sizing of a safety valve which is greater than or equal to the set pressure plus overpressure

3.6
back pressure
pressure that exists at the outlet of a safety valve as a result of the pressure in the discharge system

Note 1 to entry: The back pressure is the sum of the superimposed and built-up back pressures.

3.7
built-up back pressure
pressure existing at the outlet of a safety valve caused by flow through the valve and the discharge system

3.8
superimposed back pressure
pressure existing at the outlet of a safety valve at the time when the device is required to operate

Note 1 to entry: It is the result of pressure in the discharge system from other sources.

3.9
flow area
minimum cross-sectional flow area (but not the smallest area between the disc and seat) between inlet and seat which is used to calculate the theoretical flow capacity, with no deduction for any obstruction

Note 1 to entry: The symbol is *A*.

3.10
theoretical discharge capacity
calculated capacity expressed in mass or volumetric units of a theoretically perfect nozzle having a cross-sectional flow area equal to the flow area of a safety valve

3.11
coefficient of discharge
value of actual discharge capacity (from tests) divided by the theoretical discharge capacity (from calculation)

3.12
certified (discharge) capacity
that portion of the measured capacity permitted to be used as a basis for the application of a safety valve

Note 1 to entry: It may, for example, equal the a)measured capacity times the de-rating factor of 0,9, or b)theoretical capacity times the coefficient of discharge times the de-rating factor of 0,9, or c)theoretical capacity times the certified de-rated coefficient of discharge.

3.13
dryness fraction
steam quality
measure of the relative vapour/liquid content of a steam quantity or stream. Expressed as the mass fraction or percentage of vapour

4 Symbols and units

Table 1 — Symbols and their descriptions

Symbol	Description	Unit
A	Flow area of a safety valve (not smallest area between the disc and seat)	mm^2
C	Function of the isentropic exponent, k	–
K_b	Theoretical capacity correction factor for subcritical flow	–
K_d	Coefficient of discharge [a]	–
K_{dr}	Certified de-rated coefficient of discharge ($K_d \times 0,9$) [a]	–
K_v	Viscosity correction factor	–
k	Isentropic exponent at relieving pressure and temperature	–
M	Molar mass	kg/kmol
n	Number of tests	–
p_o	Relieving pressure - absolute	bar (abs)
p_b	Back pressure - absolute	bar (abs)
p_c	Thermodynamic critical pressure - absolute	bar (abs)
p_r	Reduced pressure	–
PS	Maximum allowable pressure	bar (abs)
$\dot{Q}_m$	Mass flow rate	kg/h
q_m	Theoretical specific discharge capacity	$kg/(h \cdot mm^2)$
q'_m	Specific discharge capacity determined by tests	$kg/(h \cdot mm^2)$
R	Universal gas constant	J/K-mol
Re	Reynolds number	–
T_o	Relieving temperature	K
T_c	Thermodynamic critical temperature	K
T_r	Reduced temperature	–
μ_0	Dynamic viscosity	Pa·s
v_o	Specific volume at relieving pressure and temperature	m^3/kg
x_0	Dryness fraction of wet steam at the valve inlet at relieving pressure and temperature [b]	–
k_s	Steam pressure coefficient	$h \cdot mm^2$ bar (abs)/ kg
Z	Compressibility factor at relieving pressure and temperature	–

[a] K_d and K_{dr} are expressed as 0,xxx.

[b] x_0 is expressed as 0,xx.