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Safety devices for protection against excessive pressure - Part 6: Application, selection and installation of bursting disc safety devices (ISO 4126-6:2014)

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Sicherheitseinrichtungen gegen unzulässigen Überdruck - Teil 6: Berstscheibeneinrichtungen; Anwendung, Auswahl und Einbau (ISO 4126-6:2014)

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Dispositifs de sécurité pour protection contre les pressions excessives - Partie 6: Application, sélection et installation des dispositifs de sûreté à disque de rupture (ISO 4126-6:2014)

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13.240	Varstvo pred previsokim tlakom	Protection against excessive pressure
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EUROPEAN STANDARD
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EUROPÄISCHE NORM

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English Version

Safety devices for protection against excessive pressure - Part 6: Application, selection and installation of bursting disc safety devices (ISO 4126-6:2014)

Dispositifs de sécurité pour protection contre les pressions excessives - Partie 6: Application, sélection et installation des dispositifs de sûreté à disque de rupture (ISO 4126-6:2014)

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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.

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Foreword

This document (EN ISO 4126-6:2014) has been prepared by Technical Committee ISO/TC 185 "Safety devices for protection against excessive pressure" in collaboration with 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of an identical text or by endorsement, at the latest by December 2014, and conflicting national standards shall be withdrawn at the latest by December 2014.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 4126-6:2003.

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Endorsement notice

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INTERNATIONAL STANDARD

ISO 4126-6

Second edition
2014-06-15

Safety devices for protection against excessive pressure —

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

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*Dispositifs de sécurité pour protection contre les pressions
excessives —*

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*Partie 6: Application, sélection et installation des dispositifs de sûreté
à disque de rupture*

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. www.iso.org/directives

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 185, *Safety devices for protection against excessive pressure*.

This second edition cancels and replaces the first edition (ISO 4126-6:2003), which has been technically revised.

The main technical modifications are:

- a) Revision to [Annex C](#) to refer to Part 7 for capacity calculations;
- b) [Annex D](#) was deleted as this information is found in Part 7;
- c) [Annex E](#) was revised to include methodology for establishing flow resistance values for bursting discs opened in incompressible fluid;
- d) [Annex F](#) was added to include existing and additional guidelines for type testing;
- e) Annex G was added to provide a place for informative information relative to bursting disc tolerances and operating parameters.

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⁾

Part 7 contains data, which is common to more than one of the parts of ISO 4126 to avoid unnecessary repetition.

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1) In development.

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Introduction

Safety devices for the protection of pressure equipment against excessive pressure include pressure relief devices such as safety valves and bursting disc safety devices which, dependent upon the application, may be used either as the sole pressure relieving devices or in conjunction with each other.

Operating problems frequently arise due to the use of pressure relieving devices not having been properly selected for the intended service or properly selected but whose performance is adversely affected by improper handling, wrong installation or lack of maintenance, any of which may affect the safety of the pressure equipment being protected.

It is important to consider not only the pressure relief devices but also the whole of the pressure relief system so as not to reduce the relieving capacity below that required or adversely affect the proper operation of the pressure relieving devices.

A bursting disc safety device is a non-reclosing pressure relief device which typically comprises a bursting disc, which is a pressure-containing and pressure-sensitive part designed to open by bursting at a predetermined pressure, and a bursting disc holder. There are many different types of bursting disc safety devices manufactured in corrosion resistant materials, both metallic and non-metallic, to cover a wide range of nominal sizes, burst pressures and temperatures. They are used to protect pressure equipment such as vessels, piping, gas cylinders or other enclosures from excessive pressure and/or excessive vacuum.

This standard covers the important considerations necessary in the application, selection and installation of bursting disc safety devices to give the required protection against excessive pressure and/or excessive vacuum.

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Safety devices for protection against excessive pressure —

Part 6:

Application, selection and installation of bursting disc safety devices

1 Scope

This International standard gives guidance on the application, selection and installation of bursting disc safety devices used to protect pressure equipment from excessive pressure and/or excessive vacuum.

[Annex A](#) provides a checklist for the information to be supplied by the purchaser to the manufacturer.

[Annex B](#) gives guidance on the replacement period of a bursting disc.

[Annex C](#) provides guidance for determining the discharge capacity, for single phase fluids, of a pressure relief system that contains a bursting disc safety device.

[Annex D](#) is a non-mandatory procedure for establishing the flow resistance of a burst bursting disc assembly.

[Annex E](#) is a non-mandatory procedure for type testing of bursting disc safety devices.

[Annex F](#) provides typical performance characteristics for various bursting disc safety device types.

The requirements for the manufacture, inspection, testing, marking, certification and packaging of bursting disc safety devices are given in ISO 4126-2.

2 Normative references

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

ISO 4126-3, *Safety devices for protection against excessive pressure — Part 3: Safety valves and bursting disc safety devices in combination*

3 Terms and definitions

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

3.1

bursting disc safety device

non-reclosing pressure relief device actuated by differential pressure and designed to function by the bursting of the bursting disc(s), and which is the complete assembly of installed components including, where appropriate, the bursting disc holder

3.2

bursting disc assembly

complete assembly of components, which are installed in the bursting disc holder to perform the desired function

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3.3

bursting disc

pressure-containing and pressure-sensitive component of a bursting disc safety device

3.4

bursting disc holder

that part of a bursting disc safety device, which retains the bursting disc assembly in position

3.5

conventional domed bursting disc (also referred to as, forward acting)

bursting disc which is domed in the direction of the bursting pressure (i.e. where the bursting pressure is applied to the concave side of the bursting disc)

Note 1 to entry: See ISO 4126-2:2003, Figure 1).

3.6

slotted lined bursting disc

bursting disc made up of two or more layers, at least one of which is slit or slotted to control the bursting pressure of the bursting disc

3.7

reverse domed bursting disc (also referred to as, reverse acting)

bursting disc which is domed against the direction of the bursting pressure (i.e. where the bursting pressure is applied to the convex side of the bursting disc)

Note 1 to entry: See ISO 4126-2:2003, Figure 2).

3.8

flat bursting disc

bursting disc having one or more layers which is flat when installed. It may be made of a ductile or brittle material

3.9

graphite bursting disc

bursting disc manufactured from graphite, impregnated graphite, flexible graphite or graphite composite and designed to burst due to bending or shearing forces

3.10

specified bursting pressure

bursting pressure quoted with a coincident temperature when defining the bursting disc requirements (used in conjunction with a performance tolerance, see [3.14](#))

3.11

specified maximum bursting pressure

maximum bursting pressure quoted with the coincident temperature when defining the bursting disc requirements (used in conjunction with specified minimum bursting pressure, see [3.12](#))

3.12

specified minimum bursting pressure

minimum bursting pressure quoted with the coincident temperature when defining the bursting disc requirements (used in conjunction with specified maximum bursting pressure, see [3.11](#))

3.13

coincident temperature

temperature of the bursting disc associated with a bursting pressure (see [3.10](#), [3.11](#) and [3.12](#)) and which is the expected temperature of the bursting disc when it is required to burst

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3.14**performance tolerance**

range of pressure between the specified minimum bursting pressure and the specified maximum bursting pressure or the range of pressure in positive and negative percentages or quantities which is related to the specified bursting pressure

3.15**operating pressure**

pressure existing at normal operating conditions within the system being protected

3.16**relieving pressure**

maximum pressure under discharge conditions in the pressurized system

Note 1 to entry: It can differ from the bursting pressure of the bursting disc.

3.17**relieving temperature**

temperature under discharge conditions in the pressurized system

Note 1 to entry: It can differ from the coincident temperature specified for the bursting disc.

3.18**differential back pressure**

differential pressure across a bursting disc in the opposite direction to the direction of the bursting pressure, which is the result of pressure in the discharge system from other sources and/or a result of vacuum on the upstream side of the bursting disc

3.19**vent area**

cross-section area available for discharge of fluid as calculated by the manufacturer

Note 1 to entry: The calculated vent area should not exceed the cross-sectional area of the upstream piping, A_1 .

3.20**batch**

quantity of bursting discs or bursting disc safety devices made as a single group of the same type, size, materials and specified bursting pressure requirements where the bursting discs are manufactured from the same lot of material

3.21**bursting pressure**

value of the differential pressure between the upstream side and the downstream side of the bursting disc when it bursts

3.22**stiffening ring**

component of a bursting disc assembly used primarily for reinforcing bursting discs

3.23**back pressure support**

component of a bursting disc safety device, which prevents damage to the bursting disc due to differential back pressure

Note 1 to entry: A back pressure support, which is intended to prevent damage to the bursting disc when the system pressure falls below atmospheric pressure, is sometimes referred to as a vacuum support.

3.24**coating**

layer of metallic or non-metallic material applied to components of a bursting disc safety device by a coating process