SLOVENSKI STANDARD
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Pressure equipment - Part 1: Vocabulary

Druckgeräte - Teil 1: Vokabular

Equipement sous pression - Partie 1: Vocabulaire

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ICS:

01.040.23	Tekočinski sistemi in sestavni deli za splošno rabo (Slovarji)	Fluid systems and components for general use (Vocabularies)
23.020.32	Tlačne posode	Pressure vessels

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EUROPEAN STANDARD

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EN 764-1:2015+A1

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Supersedes EN 764-1:2015

English Version

Pressure equipment - Part 1: Vocabulary

Equipement sous pression - Partie 1: Vocabulaire

Druckgeräte - Teil 1: Vokabular

This European Standard was approved by CEN on 14 February 2015 and includes Amendment 1 approved by CEN on 5 June 2016.

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

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European foreword

This document (EN 764-1:2015+A1:2016) has been prepared by Technical Committee CEN/TC 54 “Unfired pressure vessels”, the secretariat of which is held by BSI.

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of an identical text or by endorsement, at the latest by February 2017, and conflicting national standards shall be withdrawn at the latest by February 2017.

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 includes Amendment 1 approved by CEN on 2016-06-05.

This document supersedes ⟦A1⟩ EN 764-1:2015 ⟨A1⟧.

The start and finish of text introduced or altered by amendment is indicated in the text by tags ⟦A1⟩ ⟨A1⟧.

⟦A1⟩ *deleted text* ⟨A1⟧

An informative annex on notions of allowable pressures and temperatures has been added.

An annex containing translations of terms to several other languages is in the course of preparation.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

EN 764, *Pressure equipment* comprises the following parts:

— *Part 1: Vocabulary;*

— *Part 2: Quantities, symbols and units;*

— *Part 3: Definition of parties involved;*

— *Part 4: Establishment of technical delivery conditions for metallic materials;*

— *Part 5: Inspection documentation of metallic materials and compliance with the material specification;*

— *Part 6: Structure and content of operating instructions;*

— *Part 7: Safety systems for unfired pressure equipment.*

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.

1 Scope

This European Standard specifies terms and definitions to be used for pressure equipment and assemblies within the scope of European Directives on pressure equipment.

NOTE It can be applied to other pressure equipment.

2 Normative references

Not applicable.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

If a term or definition only applies to a special area or is different in different areas, the relevant area is shown within brackets <....>.

3.1 General terms

3.1.1
ambient temperature
temperature of the surrounding atmosphere in the immediate vicinity of the pressure component

3.1.2
assembly
several pieces of pressure equipment assembled by a manufacturer to constitute an integrated and functional whole

3.1.3
cryogenic applications
applications at low temperature

Note 1 to entry: Normally involving liquefied gases.

3.1.4
design validation
examination of the design documents to verify that the design conforms to the relevant product standard

3.1.5
fluid
gas, liquid and vapour in its pure phase as well as mixtures thereof

3.1.6
hazard category
category of the pressure equipment taking into account the potential hazards

3.1.7
joint coefficient
reduction coefficient (e.g. for a welded joint) related to the testing group and which is applied to the nominal design stress

3.1.8
main pressure bearing parts
parts which constitute the envelope under pressure, essential for the integrity of the equipment

3.1.9
maximum allowable temperature
TS_{max}
maximum temperature for which the pressure equipment is designed as specified by the manufacturer

3.1.10
minimum allowable temperature
TS_{min}
minimum temperature for which the pressure equipment is designed as specified by the manufacturer

3.1.11
pipelines
piping or piping system designed for the conveyance of any fluid or substance to or from an installation (onshore or offshore) starting from and including the first isolation device located within the installation and including all the annexed equipment designed specifically for pipelines

3.1.12
piping
tubing, fittings, expansion joints, hoses or other pressure-bearing components, intended for the transport of fluid, connected together and integrated into a pressure system

3.1.13
piping class
category in which piping is classified in accordance with the Pressure Equipment Directive 97/23/EC

3.1.14
piping system
pipe or system of pipes for the conveyance of fluids within an industrial site

Note 1 to entry: A piping system can be regarded as one single system, provided it conveys substances having the same properties and it is a whole designed for the same allowable pressure.

Note 2 to entry: Interruption by different components such as pumps, machines, vessels, etc. does not preclude the integration to one single piping.

3.1.15
pressure vessel
housing and its direct attachments up to the coupling point connecting it to other equipment, designed and built to contain fluids under pressure

3.1.16
repair
process of rectifying a defect in either base material or weld

3.2 Terms related to design

3.2.1
action
imposed mechanical, thermal or thermo-mechanical influence which causes stress and/or strain in a structure, e.g. an imposed pressure, force, displacement or temperature

3.2.2
action type
classification of action based on statistical properties and duration

3.2.3
analysis thickness
e_a
effective thickness available to resist the loading depending on the load case

3.2.4
anchor
rigid device, which may itself be subject to imposed displacement, used to prevent all relative pipe rotation and displacement at the point of application, under the design conditions of temperature and loading

3.2.5
annular plate
flat end of annular form, connected to one cylindrical shell at its outside diameter and another at its inside diameter, and subject predominantly to bending and not shear

3.2.6
application rule
generally recognized rule that follows the principles of the relevant product standard and satisfies their requirements

3.2.7
assembly condition
condition applying when the gasket or joint contact surface is seated during assembly of the joint at ambient temperature and the only loading comes from the bolts

3.2.8
assumed thickness
thickness assumed by the designer between the minimum required shell thickness and the shell analysis thickness

3.2.9
bending stress
equivalent linear distributed stress through the wall of the pressure part, proportional to the distance from the neutral axis

3.2.10
blind flange
blank flange
flat closure connected by bolts

3.2.11
bolted domed end
cover or blind flange consisting of a flange and a dome of constant radius of curvature

3.2.12
calculation pressure
differential pressure used for the purpose of the design calculations for a component

3.2.13
calculation temperature
temperature used for the purpose of the design calculations for a component

3.2.14
chamber
fluid space within a unit of pressure equipment

3.2.15
chamber volume
internal volume of a chamber, including the volume of nozzles to the first connection (flange, coupling, weld) and excluding the volume of internal permanent parts (e.g. baffles, agitators)

3.2.16
characteristic function
characteristic function of an action is a representative function (of time) for the action

Note 1 to entry: Required for actions for which, in specific design checks, the time-dependence is of importance, e.g. temperature/pressure transients during start-up or shut-down.

3.2.17
characteristic value
characteristic value of an action is a representative value which takes account of the variation of an action

3.2.18
coefficient of variation
measure of statistical dispersion (standard deviation divided by mean value)

3.2.19
collar
<loose flange> abutment for the flange

<expansion bellows> cylinder attached to the end tangent

3.2.20
combination factor
factor applied to design values of variable actions with stochastic properties if combined with pressure, or if two or more of these actions are included in one load case

3.2.21
compliance
inverse of the axial stiffness of the assembly, symbol *Y*, units mm/N

3.2.22
component
part of pressure equipment which can be considered as an individual item for the calculation

3.2.23
constant hanger
constant support
pipe support with constant characteristic to carry vertical loads whilst permitting vertical displacements, base mounted or suspended

3.2.24
continuous weld
weld extending along the entire length of a joint

3.2.25
convolution
corrugation
flexible unit of an expansion bellows

3.2.26
creep range
temperature range in which material characteristics used in design are time dependent

3.2.27
critical area
<fatigue> an area where the total fatigue damage index exceeds a maximum value

3.2.28
critical zone
<spheroidal graphite cast iron> highly stressed area where a fracture is expected to occur in a burst test or where surface fatigue cracks are expected to be initiated due to fluctuating pressure loads

3.2.29
cut-off limit
cyclic stress range below which fatigue damage is disregarded

3.2.30
deposited thickness
weld throat thickness
thickness in the weld metal excluding any reinforcement

Note 1 to entry: The preferred term in ISO/TR 25901 is *penetration depth*.

3.2.31
design check
investigation of a component's safety under the influence of specified combinations of actions with respect to specified limit states

3.2.32
design model
structural model used in the determination of effects of actions

3.2.33
design pressure
pressure chosen for the derivation of the calculation pressure of each component

Note 1 to entry: The design pressure normally refers to the top of the equipment and does not include pressure generated by the weight of its content.

Note 2 to entry: If the equipment consists of several compartments, each compartment may have its own design pressure.

3.2.34
design reference temperature
TR
temperature used for determining the impact energy requirements

3.2.35
design stress range spectrum
histogram of the number of occurrences of all stress cycles of various ranges anticipated during the design lifetime

3.2.36
design temperature
temperature chosen for the derivation of the calculation temperature of each component

3.2.37
differential pressure
pressure whose algebraic value is equal to the pressure difference on either side of a separation wall

3.2.38
discontinuity
shape or material change which affects the stress distribution

3.2.39
dished end
end of pressure vessel formed to have its open end cylindrical

Note 1 to entry: Normally manufactured from plate.

Note 2 to entry: Earlier called "dished head".

3.2.40
effect
response (e.g. stress, strain, displacement, resultant force or moment, equivalent stress resultant) of a component to a specific action, or combination of actions

3.2.41
effective notch stress
stress which governs fatigue behaviour at a notch

3.2.42
effective stress concentration factor
ratio of effective notch stress (total stress), to structural stress at same point

3.2.43
ellipsoidal end
dished end having a truly ellipsoidal form

3.2.44
end tangents
straight unconvoluted portions at the ends of an expansion bellows

3.2.45
endurance limit
<fatigue> cyclic stress range below which, in the absence of any previous loading, no fatigue damage is assumed to occur under constant amplitude loading

3.2.46
equalizing ring
T-shaped device that is tightly fitted into the root of the convolutions (corrugations) of expansion bellows in order to equalize the movement of the different convolutions

3.2.47
equivalent full pressure cycles
number of full pressure cycles that cause the same damage as the applied pressure cycles of range ΔP

3.2.48
equivalent stress
uniaxial stress which produces the same damage as the applied multi-axial stresses

3.2.49
expansion bellows
flexible element consisting of one or more corrugations and the end tangents

3.2.50
external loads
forces and/or moments applied to a component due to actions other than internal or external pressure, or static head of contained fluid, e.g. weight, wind loading, earthquake loading or loads from attached piping or equipment

3.2.51
fatigue design curves
curves showing stress amplitude versus number of cycles

3.2.52
fixed tubesheet heat exchanger
heat exchanger with two tubesheets, each attached to the shell and channel

3.2.53
flat end
unstayed flat plate of generally constant thickness, connected to a shell by either welding or bolting, not supported by stays or stay-tubes, not strengthened by beams, and supported only at its periphery so that it is subject predominantly to bending

3.2.54
flexibility modulus
inverse of the stiffness modulus of a component, excluding the elastic constants of the material; axial: symbol X, units 1/mm; rotational: symbol Z, units $1/mm^3$

3.2.55
floating tubesheet heat exchanger
heat exchanger with a stationary tubesheet attached to the shell and channel and a floating tubesheet which can move axially

3.2.56
full face flange
flange in which the face contact area, either direct or through a gasket or spacer, extends outside the circle enclosing the bolts

3.2.57
full pressure cycles
pressure cycles of range $\Delta P = P_{max}$

3.2.58
gasketed tubesheet
tubesheet attached to the shell and/or channel by bolting