SLOVENSKI STANDARD
SIST EN 764-2:2002

01-november-2002

Tlaļ na oprema - 2. del: Veliļ ine, simboli in enote

Pressure equipment - Part 2: Quantities, symbols and units

Druckgeräte - Teil 2: Größen, Symbole und Einheiten

Equipements sous pression - Partie 2: Grandeurs, symboles et unités

Ta slovenski standard je istoveten z: EN 764-2:2002

ICS:

01.060	Veliļ ine in enote	Quantities and units
23.020.30	Tlaļ ne posode, plinske jeklenke	Pressure vessels, gas cylinders

SIST EN 764-2:2002 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 764-2

May 2002

ICS 01.060; 23.020.30

English version

Pressure equipment - Part 2: Quantities, symbols and units

Equipements sous pression - Partie 2: Grandeurs, symboles et unités

Druckgeräte - Teil 2: Größen, Symbole und Einheiten

This European Standard was approved by CEN on 29 April 2002.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

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Ref. No. EN 764-2:2002 E

Contents

Foreword

This document EN 764-2:2002 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of an identical text or by endorsement, at the latest by November 2002, and conflicting national standards shall be withdrawn at the latest by November 2002.

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

This European Standard consists of seven parts which are:

Part 1 *Definitions of pressure, temperature and volume;*

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 *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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard specifies the basic quantities, symbols and units to be used for pressure equipment and assemblies addressed by the European Directive 97/23/EC.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

ISO 31-0, *Quantities and units – Part 0: General principles.*

ISO 31-1, *Quantities and units – Part 1: Space and time.*

ISO 31-2, *Quantities and units – Part 2: Periodic and related phenomena.*

ISO 31-3, *Quantities and units – Part 3: Mechanics.*

ISO 31-4, *Quantities and units – Part 4: Heat.*

ISO 31-11, *Quantities and units – Part 11: Mathematical signs and symbols for the use in the physical sciences and technology.*

ISO 31-12, *Quantities and units – Part 12: Characteristic numbers.*

ISO 1000, *SI units and recommendations for the use of their multiples and of certain other units.*

3 General

3.1 All units used for pressure equipment shall be derived from the base units of the international system of Units (SI) in accordance with ISO 31-0, ISO 31-1, ISO 31-2, ISO 31-3, ISO 31-4, ISO 31-11, ISO 31-12 and ISO 1000.

3.2 The choice of the appropriate multiple (decimal multiple or sub-multiple) of unit is governed by convenience, the multiple chosen for a particular application being one which would lead to numerical values within a practical range. Therefore when indicating quantities it is recommended to choose decimal multiple or sub multiple quantities such that the resulting values are easy to handle, e.g. between 0,1 and 1 000.

4 Quantities, symbols and units

Symbols and units for the quantities used in pressure equipment shall be in accordance with Tables 1 and 2.

Table 1 — Quantities for space and time

Quantity	Symbol	Unit
time	*t*	s, min, h, d, a
frequency	*f*	Hz
dimension	any Latin letter [a]	mm
length	*l*	mm
thickness	*e*	mm
corrosion allowance	*c*	mm
diameter	*d, D*	mm
radius	*r, R*	mm
area	*A, S*	mm^2
volume, capacity	*V*	mm^3 [b, c]
weight	*W*	N, kN
density	*ρ*	kg/mm^3 [d]
second moment of area	*I*	mm^4
section modulus	*Z*	mm^3
acceleration	*γ*	m/s^2
plane angle	any Greek letter [a]	rad, °

[a] Symbols may use any lower-case letter, except for those defined elsewhere in this table.

[b] Volume may also be given in m^3 or L.

[c] Litre "L" is a non-SI unit which may be used with SI units and their multiples.

[d] Density may also be given in kg/m^3.

Table 2 — Mechanical quantities

Quantity [a]	Symbol [b]	Unit
force	F	N
moment	M	N·mm
pressure	p, P	bar [c], MPa, N/mm^2
Celsius temperature	t	°C
thermodynamic temperature	T	K
linear expansion coefficient	α	µm/m°C
normal stress	σ	MPa, N/mm^2
shear stress	τ	MPa, N/mm^2
nominal design stress	f	MPa, N/mm^2
tensile strength	R_m	MPa, N/mm^2
yield strength	R_e	MPa, N/mm^2
1 % yield strength	$R_{e1\%}$	MPa, N/mm^2
yield strength at temperature t	$R_{e/t}$	MPa, N/mm^2
upper yield strength	R_{eH}	MPa, N/mm^2
0,2 % proof strength	$R_{p0,2}$	MPa, N/mm^2
0,2 % proof strength at temperature t	$R_{p0,2/t}$	MPa, N/mm^2
ultimate tensile strength at temperature t	$R_{m/t}$	MPa, N/mm^2
modulus of elasticity	E	MPa, N/mm^2
shear modulus	G	MPa, N/mm^2
Poisson's ratio	υ	-
strain	ε	%
elongation at rupture	A	%
impact rupture energy	KV	J
hardness	HB, HV	-
Joint efficiency	z	-
safety factor	S	-

[a] Quantities without a temperature index normally refer to room temperature.

[b] Some of these symbols, such as R, f, are not part of ISO 31.

[c] "bar" is a non-SI unit which may be used with SI units and their multiples. The unit bar shall be used on nameplates, certificates, drawings, pressure gauges and instrumentation and is always used as a gauge pressure. This is in line with the requirements of the Pressure Equipment Directive 97/23/EC.