



SLOVENSKI STANDARD

SIST EN 1444:2001

01-december-2001

Vlaknatocementni cevovodi - Smernica za polaganje in delo na terenu

Fibre-cement pipelines - Guide for laying and on-site work practices

Faserzement-Rohrleitungen - Hinweise für die Verlegung und für die bauseitige Bearbeitung

Conduites en fibres-ciment - Guide pour la pose et le travail sur chantier

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ICS:

23.040.50	Cevi in fitingi iz drugih materialov	Pipes and fittings of other materials
91.100.40	Cementni izdelki, ojačani z vlakni	Products in fibre-reinforced cement

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en

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 1444

December 2000

ICS 23.040.50

English version

Fibre-cement pipelines - Guide for laying and on-site work practices

Conduites en fibres-ciment - Guide pour la pose et le travail sur chantier

Faserzement-Rohrleitungen - Hinweise für die Verlegung und für die bauseitige Bearbeitung

This European Standard was approved by CEN on 27 November 2000.

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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 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, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 164 "Water supply", 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of an identical text or by endorsement, at the latest by June 2001, and conflicting national standards shall be withdrawn at the latest by June 2001.

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, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Annex A is informative.

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Introduction

In respect of potential adverse effects on the quality of water intended for human consumption, caused by the product covered by this standard :

- 1) this standard provides no information as to whether the product may be used without restriction in any of the Member States of the EU or EFTA ;
- 2) it should be noted that, while awaiting the adoption of verifiable European criteria, existing national regulations concerning the use and/or the characteristics of this product remain in force.

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1 Scope

This draft European Standard, applies to both types of fibre-cement pipes AT and NT as defined in EN 512:1994, gives installation recommendations for this pipelines in above or below ground situations. It complements the general principles for all types of water supply systems specified in EN 805:2000, "Water supply - Requirements for systems and components outside buildings", and should be used in conjunction with that standard.

This standard gives guidance in on-site working methods and in the selection and use of approved tools for cutting and machining fibre-cement pipes.

This standard does not cover the following :

- a) installation by thrust boring and pipe jacking methods which require the use of highly specialized techniques ;
- b) problems caused by the use of special installations procedures (e.g. removal of pile sheeting in very deep trenches, etc.).

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).

EN 512:1994, *Fibre-cement products - Pressure pipes and joints*

EN 805:2000, *Water supply - Requirements for systems and components outside buildings*.

EN 1295-1, *Structural design of buried pipelines under various conditions of loading – Part 1: General requirements*.

ISO 2785, *Directives for selection of asbestos-cement pipes subject to external loads with or without internal pressure*.

3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply:

3.1 Pressures

For the designation of pressures in English, French and German see table 1 and EN 805:2000 annex A.

Table 1 — Designation of pressures in English, French, German

Abbreviation ^a	English	French	German	
DP	design pressure	pression de calcul en regime permanent	Systembetriebsdruck	System related
MDP	maximum design pressure	pression maximale de calcul	höchster Systembetriebsdruck	
STP	system test pressure	pression d'épreuve du réseau	Systemprüfdruck	
PFA	allowable operating pressure	pression de fonctionnement admissible	zulässiger Bauteilbetriebsdruck	Component related
PMA	allowable maximum operating pressure	pression maximale admissible	höchster zulässiger Bauteilbetriebsdruck	
PEA	allowable site test pressure	pression d'épreuve admissible sur chantier	Zulässiger Bauteilprüfdruck auf der Baustelle	
OP	operating pressure	pression de fonctionnement	Betriebsdruck	System related
SP	service pressure	pression de service	Versorgungsdruck	related

^a Valid for all language versions.

3.1.1

allowable maximum operating pressure (PMA)

maximum pressure occurring from time to time, including surge, that a component is capable of withstanding in service

3.1.2

allowable operating pressure (PFA)

maximum hydrostatic pressure that a component is capable of withstanding continuously in service

3.1.3

allowable site test pressure (PEA)

maximum hydrostatic pressure that a newly installed component is capable of withstanding for a relatively short duration, in order to ensure the integrity and tightness of the pipeline

3.1.4

design pressure (DP)

maximum operating pressure of the system or of the pressure zone fixed by the designer considering future developments but excluding surge

3.1.5

maximum design pressure (MDP)

maximum operating pressure of the system or of the pressure zone fixed by the designer considering future developments and including surge, where :

- MDP is designed MDP_a when there is a fixed allowance for surge ;
- MDP is designed MDP_c when the surge is calculated.

3.1.6

operating pressure (OP)

internal pressure which occurs at a particular time and at a particular point in the water supply system

3.1.7

pressure zones

areas of pressure ranges within a water supply systems

3.1.8

service pressure (SP)

internal pressure delivered at the point of connection to the consumer's installation at zero flow in the service pipe

3.1.9

surge

rapid fluctuations of pressure caused by flow alterations over short periods of time

3.1.10

system test pressure (STP)

hydrostatic pressure applied to a newly laid pipeline in order to ensure its integrity and tightness

3.2 System

3.2.1

gravity system

system where flow and/or pressure are caused by the force of gravity. There are two kinds of such systems :

- pressurized gravity system, where the pipeline operates full ;
- non-pressurized gravity system, where the pipeline operates partially full.

3.2.2

local main

water main which connects principal main(s) with service pipes

3.2.3

potable water

water intended for human consumption as defined by the relevant national authorities

3.2.4

principal main

water main serving as a principal distributor within the supply area, normally without direct consumer connections

3.2.5

pumped and gravity system

system where the gravity system and the pumped system are used, either separately or in combination, to provide the flow and/or pressure

3.2.6

pumping station

pumping installation designed to provide adequate pressure and flow within the distribution system. Three types can be distinguished (see Figure 1) :

- main lift : normally at the outlet of the treatment works, or source if there is no treatment, to provide flow to the service reservoir ;
- intermediate : to deliver flow on the way to a service reservoir or supply area ;
- booster : to pump directly from and to the area without storage.

3.2.7

pumped system

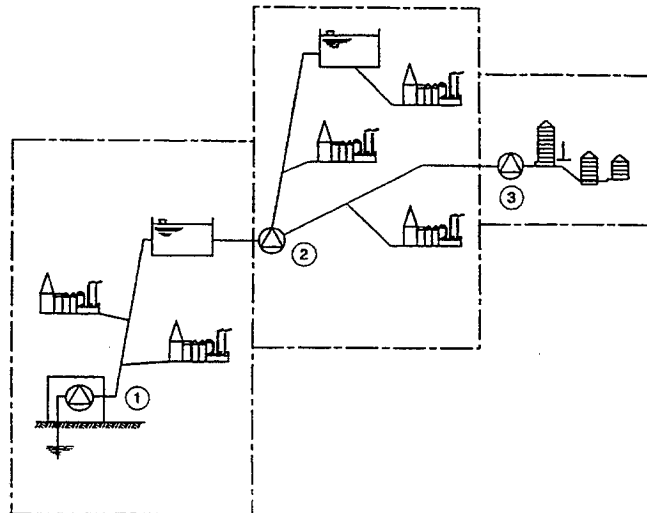
system where flow and/or pressure are provided by means of one or more pumps and where the pipeline operates full

3.2.8**reservoir**

storage facility for water

3.2.9**service pipe**

water pipe which supplies water from the local main to the consumer



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Key

- 1 Main lift
- 2 Intermediate
- 3 Booster

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Figure 1 — Example of different types of pumping stations

3.2.10**service reservoir**

covered reservoir for potable water which includes water compartment(s), control building, operation equipment and access arrangement providing reserve supplies, pressure stability and balancing demand fluctuations

3.2.11**standby plant**

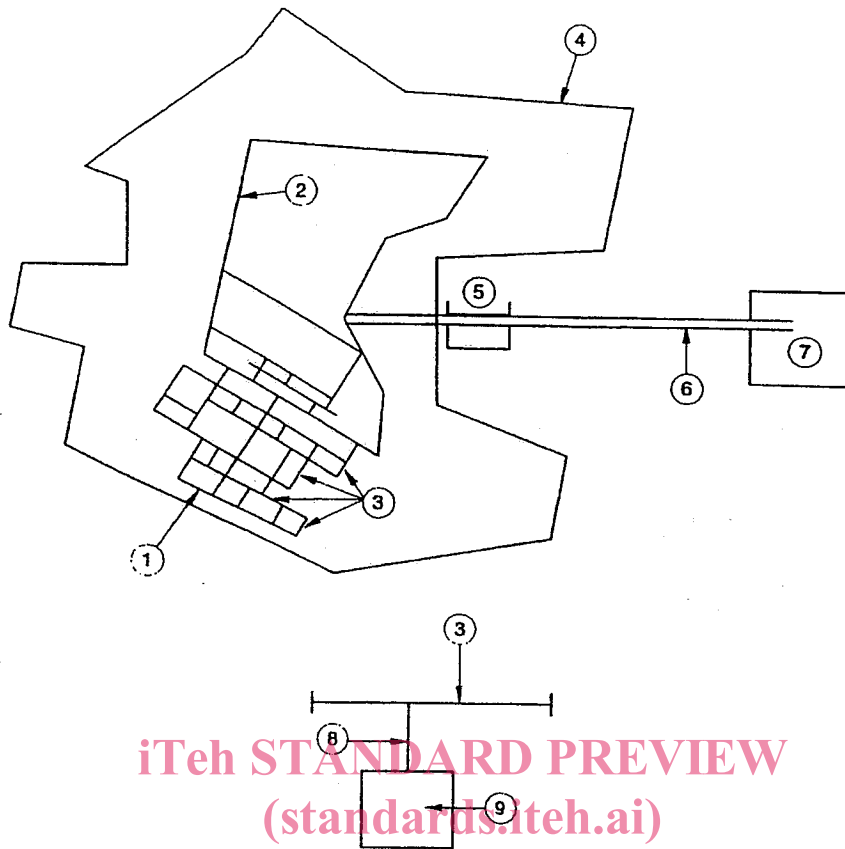
plant or system, such as additional pumps or duplicate mains, installed to provide secondary means for the supply of services in the event of failure or malfunction of the normal operating unit

3.2.12**trunk main**

water main which interconnects source(s), treatment works, reservoir(s) and/or supply areas, normally without direct consumer connection(s)

3.2.13**water distribution system**

part of the water supply system comprising pipelines, service reservoirs, pumping stations and other assets by which water is distributed to the consumers. It begins at the outlet from the water treatment works (or source, if there is no treatment) and ends at the point of connection to the consumer's installation (see Figure 2)



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Key

- 1 Network
- 2 Principal main
- 3 Local main
- 4 Supply area
- 5 Service reservoir (may be present)
- 6 Trunk main
- 7 Source or treatment works
- 8 Service pipe
- 9 Consumer

Figure 2 – Example of a water distribution system**3.3 Components****3.3.1****accessories**

components, other than pipes, fittings or valves, which are used in a pipeline, glands, bolts, locking rings for joints, ferrules

3.3.2**adjustable joint**

joint which permits significant angular deflection at the time of installation but not thereafter

3.3.3**coating**

additional material applied to the external surface of a component to protect it from corrosion, mechanical damage or chemical attack

3.3.4**ferrule**

component used to connect a service pipe to a main, usually capable of shutting off the flow of water to the service pipe

3.3.5**fitting**

component, other than a pipe, which allows pipeline deviation, change of direction or bore. In addition, flanged-socketted pieces, flanged-spigot pieces and collars/couplings are also defined as fittings

3.3.6**flexible joint**

joint which permits significant angular deflection, both during and after installation and which can accept a slight offset of the centre line

3.3.7**flexible pipe**

pipe whose load carrying capacity is limited by deformation (diametral deflection and/or strain) under load to the ultimate design criteria without breaking or overstressing (flexible behaviour)

3.3.8**joint**

connection between the ends of two components including the means of sealing

3.3.9**lining**

additional material applied to the internal surface of a component to protect it from corrosion, mechanical damage or chemical attack

3.3.10**pipe**

component of uniform bore, normally straight in axis, having e.g. socket, spigot or flanged ends

3.3.11**pipe barrel**

cylindrical part of the pipe with a uniform cross section excluding socket and spigot where appropriate

3.3.12**rigid joint**

joint that does not permit significant angular deflection, either during or after installation

3.3.13**rigid pipe**

pipe whose load carrying capacity is limited by breaking without significant deformation of its cross section (rigid behaviour)

3.3.14**semi-rigid pipe**

pipe whose load carrying capacity is limited either by deformation/overstressing (flexible behaviour) or by breaking (rigid behaviour) depending on its ring stiffness and/or the conditions of installation

3.3.15**valve**

component isolating or controlling flow and pressure, e.g., isolating valve, control valve, pressure reducing valve, air valve, non-return valve, hydrant