

**Plasttorud vedelike teisaldamiseks surve
all. Miner'i seadus. Kumulatiivse kahjustuse
arvutamise meetod**

Plastics pipes for the conveyance of fluids under
pressure - Miner's rule - Calculation method for
cumulative damage

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN ISO 13760:1999 sisaldab Euroopa standardi EN ISO 13760:1998 ingliskeelset teksti.

Käesolev dokument on jõustatud 12.12.1999 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.

Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN ISO 13760:1999 consists of the English text of the European standard EN ISO 13760:1998.

This document is endorsed on 12.12.1999 with the notification being published in the official publication of the Estonian national standardisation organisation.

The standard is available from Estonian standardisation organisation.

Käsitlusala:

Käesolev standard määrab kindlaks meetodi torude maksimaalse lubatud ringpinge arvutamiseks. Ringpinge rakendatakse torudele, mis on allutatud mitmesugustele sisesurvele ja/või temperatuuridele arvatava tööea jooksul. Seda meetodit tuntakse üldiselt Miner'i seadusena. Miner'i seadust tuleb kohaldada igale kahjustusmehhanismile eraldi. See tähendab mehaaniline kahjustus sisesurve tõttu, teised kahjustusmehhanismid, nt oksüdatiivne või dehüdroklorinatiivne degradatiivne kahjustusmehhanism, ignoreeritakse (muidugi eeldades, et interaktiivset mõju pole). Materjali võib kasutada ainult siis, kui on kindel, et see vastab kõigile kahjustusmehhanismi kriteeriumidele.

Scope:

ICS 23.040.20

Võtmesõnad: arvutusreeglid, ebaõnnestumine, lubatud pinge, plasttorud, survetorud, termoplastvaigud, torud, vedelikutorustikud

ICS 23.040.20

Descriptors: Pipes, plastics, Miner's rule, calculation, cumulative damage.

English version

**Plastics pipes for the conveyance of fluids
under pressure**

Miner's rule – Calculation method for cumulative damage
(ISO 13760 : 1998)

Tubes en matières plastiques pour le
transport des fluides sous pression –
Règles de Miner – Méthode de calcul
du cumul des dommages
(ISO 13760 : 1998)

Kunststoffrohre für den Transport von
Fluiden unter Druck – Minersche
Regel – Berechnungsverfahren für
kumulative Schädigungen
(ISO 13760 : 1998)

This European Standard was approved by CEN on 1998-05-13.

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 Central Secretariat or to any CEN member.

The European Standards exist 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 Central Secretariat has the same status as the official versions.

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

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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Foreword

International Standard

ISO 13760 : 1998 Plastics pipes for the conveyance of fluids under pressure – Miner's rule – Calculation method for cumulative damage,

which was prepared by ISO/TC 138 'Plastics pipes, fittings and valves for the transport of fluids' of the International Organization for Standardization, has been adopted by Technical Committee CEN/TC 155 'Plastics piping systems and ducting systems'.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, and conflicting national standards withdrawn, by November 1998 at the latest.

In accordance with the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard:

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

Endorsement notice

The text of the International Standard ISO 13760 : 1998 was approved by CEN as a European Standard without any modification.

1 Scope

This International Standard specifies a method for calculating the maximum allowable hoop stress applicable to pipes exposed to varying internal pressures and/or temperatures during their expected lifetime. This method is generally known as Miner's rule.

It is necessary to apply Miner's rule to each failure mechanism separately. Thus, for mechanical failure due to internal pressure, other failure mechanisms, such as oxidative or dehydrochlorinative degradative failure mechanisms, are to be neglected (assuming, of course, no interaction). A material may be used only when it is proven to conform to all failure mechanism criteria.

NOTE — Miner's rule is an empirically based procedure, and is only a first approximation to reality.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this International Standard. At the time of the publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 10508:1995, *Thermoplastics pipes and fittings for hot and cold water systems*.

3 Symbols and abbreviated terms

For the purposes of this International Standard, the following symbols and abbreviations apply:

a_i	fraction of a year, expressed as a percentage, when referring to set of conditions " i ";
t_i	lifetime under a specified set of conditions " i " ($i = 1, 2, 3$, etc.) expressed in years;
t_m	lifetime at malfunction temperature T_m as defined in ISO 10508;
t_{\max}	lifetime at maximum operating temperature T_{\max} as defined in ISO 10508;
t_o	lifetime at operating temperature T_o as defined in ISO 10508;
t_x	maximum permissible time of use under varying conditions, expressed in years;
TYD	total yearly damage, expressed as a percentage.