Elastsed tihendid. Materjalinõuded vee- ja kuivendusrakendustes kasutatavatele toruliidete tihenditele. Osa 1: Vulkaniseeritud kumm

Elastomeric seals - Materials requirements for pipe joint seals used in water and drainage applications - Part 1: Vulcanized rubber

EESTI STANDARDI EESSÕNA

Käesolev Eesti standard EVS-EN 681-1:1999 sisaldab Euroopa standardi EN 681-1:1996+A1:1998 ingliskeelset teksti. Käesolev dokument on jõustatud 23.11.1999 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN 681-1:1999 consists of the English text of the European standard EN 681-1:1996+A1:1998. This document is endorsed on 23.11.1999 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.

NATIONAL FOREWORD

Käsitlusala: Käesolev standard määrab kindlaks nõuded materjalidele, mida kasutatakse vulkaniseeritud kummist tihendites: - külma joogivee varustuseks (kuni 50 kraadi C), - kuuma joogivee ja majandusvee varustuseks (kuni 110 kraadi C), - drenaaæivee-, reovee- ja vihmaveesüsteemidele (püsiv vool kuni 45 kraadi C ja lühiajaline vool kuni 95 kraadi C).	**Scope:**

ICS 23.040.80

Võtmesõnad: füüsikalised omadused, kummitooted, kvaliteedikontroll, kõvadus, liigitused, märgistus, pimeäärikud, testimine, tihend, tihendusrõngad, tähistus, veetorustikud, vulkaniseeritud kummi

EUROPEAN STANDARD

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Descriptors: rubber products, vulcanized rubber, water pipelines, seal : stoppers, sealing rings, classifications, hardness, physical properties, tests, quality control, designation, marking

English version

Elastomeric seals - Materials requirements for pipe joint seals used in water and drainage applications - Part 1: Vulcanized rubber

Garnitures d'étanchéité en caoutchouc - Spécification des matériaux pour garnitures d'étanchéité pour joints de canalisations utilisées dans le domaine de l'eau et de l'évacuation - Partie 1: Caoutchouc vulcanisé

Elastomer-Dichtungen - Werkstoff-Anforderungen für Rohrleitungs-Dichtungen für Anwendungen in der Wasserversorgung und Entwässerung - Teil 1: Vulkanisierter Gummi

CEN

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

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Contents

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 208 "Elastomeric seals for joints in pipework and pipelines" 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 October 1996, and conflicting standards shall be withdrawn at the latest by October 1996.

This part is based on ISO 4633 and ISO 9631, bringing these two sets of requirements (for cold and hot water respectively) under one specification. The major changes from ISO 4633 and ISO 9631 have been to incorporate requirements for effect on water quality and ozone resistance. The emphasis in respect of low temperature testing has moved away from hardness measurement to compression set, which is more discriminating.

A European Standard is to be prepared for material effects on water quality and when published it is intended that materials comply with the requirements of that standard.

A European Standard is also to be prepared for microbiological deterioration requirements and when published it is intended that materials comply with the requirements of that standard.

Part 2 has been prepared by CEN/TC 208 in response to requests from CEN/TC 155 for a material specification for thermoplastic elastomer seals for use in conjunction with non-pressure thermoplastic pipe systems.

Part 3 has been prepared in response to those sections of the pipeline industry which employ cellular seals of vulcanized rubber.

Part 4 has been prepared in response to those sections of the pipeline industry which employ cast polyurethane seals.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

0 Introduction

The product (in accordance with this standard) which is in permanent or temporary contact with water, intended for human consumption, does not adversely affect the quality of the drinking water and does not contravene the EC Directives and EFTA Regulations on the quality of drinking water.

1 Scope

This Standard specifies requirements for materials used in vulcanized rubber seals for:

1) cold potable water supply (up to 50 °C);

2) hot potable and non-potable water supply (up to 110 °C);

3) drainage, sewerage and rainwater systems (continuous flow up to 45 °C and intermittent flow up to 95 °C);

The different designations of seals specified are defined according to their type, application and requirements (see table 4)

General requirements for finished joint seals are also given; any additional requirements called for by the particular application are specified in the relevant product standards taking into account that the performance of pipe joints is a function of the seal material properties, seal geometry and pipe joint design. This standard should be used where appropriate with product standards which specify performance requirements for joints.

This Standard is applicable to joint seals for all pipeline materials, including iron, steel, clay, fibre cement, concrete, reinforced concrete, plastics and glass-reinforced plastics.

It is applicable to elastomeric components of composite or non composite seals. In case of composite seals for materials of hardness ranges from 76 IRHD to 95 IRHD the requirements for elongation at break, compression set and stress relaxation apply only when the material is participating in the sealing function, or the long term stability of the seal.

Joint seals made with an enclosed void as part of their design are included in the scope of this European Standard.

2 Normative references

This European Standard incorporates by dated or undated references, 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.

ISO 37	Rubber, vulcanized or thermoplastic - Determination of tensile stress - strain properties
ISO 48	Rubber, vulcanized ot thermoplastic - Determination of hardness (hardness between 10 IRHD and 100 IRHD)
ISO 188	Rubber, vulcanized - Accelerated ageing or heat-resistance tests
ISO 471	Rubber - Times, temperatures and humidities for conditioning and testing
ISO 815	Rubber, vulcanized or thermoplastic - Determination of compression set at ambient, elevated or low temperatures
ISO 816	Rubber, vulcanized - Determination of tear strength of small test pieces (Delft test pieces)
ISO 1431-1	Rubber, vulcanized or thermoplastic - Resistance to ozone cracking Part 1 : Static strain test
ISO 1629	Rubber and latices - Nomenclature
ISO 1817	Rubber, vulcanized - Determination of the effect of liquids
ISO 2285	Rubber, vulcanized or thermoplastic - Determination of tension set at normal and high temperatures
ISO 2859-1	Sampling procedures for inspection by attributes - Part 1 : Sampling plans indexed by acceptable quality level (AQL) for lot-by-lot inspection
ISO 3302	Rubber - Dimensional tolerances for use with products
ISO 3384	Rubber, vulcanized or thermoplastic - Determination of stress relaxation in compression at ambient and at elevated temperatures
ISO 3387	Rubbers - Determination of crystallization effects by hardness measurements
ISO 3951	Sampling procedures and charts for inspection by variables for percent nonconforming

ISO 4661-1	Rubber, vulcanized or thermoplastic - Preparation of samples and test pieces Part 1 : Physical tests
ISO 9691:1992	Rubber - Recommendations for the workmanship of pipe joint rings - Description and classification of imperfections
EN ISO 9002	Quality Systems - Model for quality assurance in production and installation
EN 45011	General criteria for certification bodies operating product certification
EN 45012	General criteria for certification bodies operating quality system certification

3 Classification

Six classes of materials for pipe joint seals are specified in table 2, and 5 classes of materials in table 3.

A nominal hardness shall be specified within the ranges in table 1.

Table 1: Hardness classification

Hardness class	40	50	60	70	80	90
Range of hardness, IRHD	36 to 45	46 to 55	56 to 65	66 to 75	76 to 85	86 to 95

4 Requirements

4.1 Materials

4.1.1 General

The materials shall be free of any substances which may have a deleterious effect on the fluid being conveyed, or on the life of the seal, or on the pipe or fitting. Elastomeric components of composite seals not exposed to the contents of the pipeline are not required to meet clause 4.1.2.

4.1.2 Effect on water quality

For cold and hot potable water applications, the materials shall not impair the quality of the water under the conditions of use. The materials shall comply with the national requirements in the country of use.