

Flanges and their joints - Gasket parameters and test procedures relevant to the design rules for gasketed circular flange connections

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 13555:2005 sisaldab Euroopa standardi EN 13555:2004 ingliskeelset teksti.	This Estonian standard EVS-EN 13555:2005 consists of the English text of the European standard EN 13555:2004.
Käesolev dokument on jõustatud 25.01.2005 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.	This document is endorsed on 25.01.2005 with the notification being published in the official publication of the Estonian national standardisation organisation.
Standard on kättesaadav Eesti standardiorganisatsioonist.	The standard is available from Estonian standardisation organisation.

Käsitlusala: This European Standard specifies the design parameters of gaskets and gasket materials required by EN 1591-1 and provides the test procedures for establishing the values of these parameters for inclusion in ENV 1591-2. The testing procedures given might be applicable to gaskets of other shapes and dimensions but this shall be indicated in the report	Scope: This European Standard specifies the design parameters of gaskets and gasket materials required by EN 1591-1 and provides the test procedures for establishing the values of these parameters for inclusion in ENV 1591-2. The testing procedures given might be applicable to gaskets of other shapes and dimensions but this shall be indicated in the report
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ICS 23.040.60, 23.040.80

Võtmesõnad: circular form, fasteners, flanges, locking and locating device, mathematical calculations, measurement, mechanical testing, pipe couplings, pressure testing, ratings, seals, stoppers, testing, thermal expansion coefficient, upsetting tests, up-setting tests

ICS 23.040.60; 23.040.80

English version

**Flanges and their joints - Gasket parameters and test
procedures relevant to the design rules for gasketed circular
flange connections**

Brides et leurs assemblages - Paramètres de joints et
modes opératoires d'essai relatifs aux règles de calcul des
assemblages à brides circulaires avec joint

Flansche und ihre Verbindungen - Dichtungskennwerte und
Prüfverfahren für die Anwendung der Regeln für die
Auslegung von Flanschverbindungen mit runden Flanschen
und Dichtungen

This European Standard was approved by CEN on 27 October 2004.

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.

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 Central Secretariat has the same status as the official versions.

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



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Foreword

This document (EN 13555:2004) has been prepared by Technical Committee CEN/TC 74 "Flanges and their joints", the secretariat of which is held by DIN.

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 2005, and conflicting national standards shall be withdrawn at the latest by June 2005.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

This document provides the test procedures to allow the generation of the gasket parameters to enable the design equations established in EN 1591-1 to be employed. The same test procedures may be used for "Type Testing" of gaskets and gasket materials. These procedures are not for routine quality control purposes.

1 Scope

This document specifies the design parameters of gaskets and gasket materials required by EN 1591-1 and provides the test procedures for establishing the values of these parameters for inclusion in ENV 1591-2.

The testing procedures given might be applicable to gaskets of other shapes and dimensions but this shall be indicated in the report.

Gaskets which are wholly based upon elastomers, or based upon elastomer with the inclusion of particulate fillers or particulate reinforcement, are beyond the scope of this document.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1092-1, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 1: Steel flanges*

EN 1514-1, *Flanges and their joints — Dimensions of gaskets for PN-designated flanges — Part 1: Non-metallic flat gaskets with or without inserts*

EN 1514-2, *Flanges and their joints — Dimensions of gaskets for PN-designated flanges — Part 2: Spiral wound gaskets for use with steel flanges*

EN 1514-3, *Flanges and their joints — Dimensions of gaskets for PN-designated flanges — Part 3: Non-metallic PTFE envelope gaskets*

EN 1514-4, *Flanges and their joints — Dimensions of gaskets for PN-designated flanges — Part 4: Corrugated, flat or grooved metallic and filled metallic gaskets for use with steel flanges*

EN 1514-6, *Flanges and their joints — Dimensions of gaskets for PN-designated flanges — Part 6: Covered serrated metal gaskets for use with steel flanges*

EN 1514-7, *Flanges and their joints — Gaskets for PN-designated flanges — Part 7: Covered metal jacketed gaskets for use with steel flanges*

EN 1591-1, *Flanges and their joints — Design rules for gasketed circular flange connections — Part 1: Calculation method*

ENV 1591-2, *Flanges and their joints — Design rules for gasketed circular flange connections — Part 2: Gasket parameters*

EN 1759-1, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, Class designated — Part 1: Steel flanges, NPS ½ to 24*

EN 1779, *Non-destructive testing — Leak testing — Criteria for method and technique selection*

EN 12560-1, *Flanges and their joints — Gaskets for Class-designated flanges — Part 1: Non-metallic flat gaskets with or without inserts*

EN 12560-2, *Flanges and their joints — Gaskets for Class-designated flanges — Part 2: Spiral wound gaskets for use with steel flanges*

EN 12560-3, *Flanges and their joints — Gaskets for Class-designated flanges — Part 3: Non-metallic PTFE envelope gaskets*

EN 12560-4, *Flanges and their joints — Gaskets for Class-designated flanges — Part 4: Corrugated, flat or grooved metallic and filled metallic gaskets for use with steel flanges*

EN 12560-5, *Flanges and their joints — Gaskets for Class-designated flanges — Part 5: Metallic ring joint gaskets for use with steel flanges*

EN 12560-6, *Flanges and their joints — Gaskets for Class-designated flanges — Part 6: Covered serrated metal gaskets for use with steel flanges*

EN 12560-7, *Flanges and their joints — Gaskets for Class designated flanges - Part 7: Covered metal jacketed gaskets for use with steel flanges*

EN ISO 4287, *Geometrical products specification (GPS) — Surface texture: Profile method — Terms, definitions and surface texture parameters (ISO 4287:1997)*

ISO 554, *Standard atmospheres for conditioning and/or testing — Specifications*

3 Notations

For the purposes of this document, the following notations apply.

Where units are applicable, they are shown in brackets. Where units are not applicable, no indication is given.

α_G	the axial coefficient of thermal expansion of gasket	[K ⁻¹]
e_G	gasket or sealing element thickness	[mm]
Δe_G	change in gasket or sealing element thickness	[mm]
A_G	area of gasket subjected to surface pressure	[mm ²]
d	internal diameter of gasket	[mm]
d_s	internal diameter of area of gasket subjected to surface pressure	[mm]
D	external diameter of gasket	[mm]
D_s	external diameter of area of gasket subjected to surface pressure	[mm]
E_G	the secant unloading modulus of the gasket	[MPa]
L_N	leakage rate class — subscript N indicates the maximum specific leakage rate for that leakage rate class	[mg s ⁻¹ m ⁻¹]
P_{QR}	ratio of gasket surface pressures after & before relaxation	—
Q	surface pressure	[MPa]
Q_A	gasket surface pressure at assembly	[MPa]
$Q_{\min(L)}$	the minimum level of surface pressure required for leakage rate class L on assembly	[MPa]
$Q_{s\min(L)}$	the minimum level of surface pressure required for leakage rate class L after off-loading	[MPa]
$Q_{s\max}$	the maximum surface pressure than can be safely imposed upon the gasket at the service temperature without damage	[MPa]