
Tesnilni materiali za kovinske navojne zveze v stiku s plini 1., 2. in 3. družine ter vročo vodo - 3. del: Nesintrani PTFE trakovi

Sealing materials for metallic threaded joints in contact with 1st, 2nd and 3rd family gases and hot water - Part 3: Unsintered PTFE tapes

Dichtmittel für Gewindeverbindungen in Kontakt mit Gasen der 1., 2. und 3. Familie und Heißwasser - Teil 3: Ungesinterte PTFE-Bänder

Matériaux d'étanchéité pour raccords filetés en contact des gaz de la 1ère, 2ème et 3ème famille et de l'eau chaude - Partie 3: Bandes en PTFE non fritté

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EUROPEAN STANDARD

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English version

Sealing materials for metallic threaded joints in contact with 1st, 2nd and 3rd family gases and hot water - Part 3: Unsintered PTFE tapes

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This European Standard was approved by CEN on 1996-11-24. 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, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 108 "Sealing materials and lubricants for gas appliances and gas equipment" the secretariat of which is held by NNI.

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of an identical text or by endorsement, at the latest by June 1997, and conflicting national standards shall be withdrawn at the latest by June 1997.

This European Standard consists of the following parts:

- Part 1: *Anaerobic jointing compounds*
- Part 2: *Non-hardening jointing compounds*
- Part 3: *Unsintered PTFE tapes*

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

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.

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Introduction

This European Standard specifies requirements and test methods for tapes produced from virgin unsintered polytetrafluorethylene (PTFE) for use with metallic threaded joints. It defines two classes of PTFE tapes - mainly differing in thickness and mass per area - for fine (F) and coarse (G) threads.

A universally applicable PTFE tape may be used for all gas, potable water, and hot water installation.

In respect of potential adverse effects of the jointing compounds covered by this European Standard on the quality of water intended for human consumption this Standard provides no information as to whether the jointing compounds may be used without restriction in any of the Member States of the EU or EFTA. The use and characteristics of the jointing compounds should comply with current regulations, where they exist, depending on the acceptance of verifiable European criteria.

Since the application techniques - sometimes due to different pressure limits and safety requirements - differ from country to country, it was rather difficult to harmonize the existing national standards and approval requirements for PTFE tapes. One particular point relates to the adjustment of parts of an installation which sometimes require the assembled taper/parallel threaded joints to be turned back up to an angle of 45°. To ensure that PTFE tapes fulfil this requirement in countries where such handling techniques are used, an additional requirement concerning the turn back test was included and such PTFE tapes are additionally designated with 'Rp'.

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1 Scope

This European Standard specifies requirements and test methods for unsintered polytetrafluorethylene (PTFE) tapes (hereafter referred to as PTFE tapes) which are suitable for sealing threaded metallic joints as specified in ISO 7-1. The PTFE tapes are typically for use in installations for 1st family gases (town gas), 2nd family gases (natural gas) and 3rd family gases (liquefied petroleum gases (LPG)) up to 5 bar and up to 7 bar for hot water of heating systems (Class A) as well as up to 0,2 bar in gas appliances and their auxiliary equipment (Class B). The maximum working pressure covered in this European Standard is 20 bar which is relevant to LPG storage (Class C). The temperature range is limited to -20 °C to 125 °C.

NOTE: For applications outside the scope of this Standard (e.g. compressed gases) the purchaser should consult the manufacturer.

Anaerobic jointing compounds are covered by EN 751-1, non-hardening sealing materials in form of - e.g. jointing compound paste - are covered by EN 751-2.

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.

ISO 7-1	<i>Pipe threads where pressure-tight joints are made on the threads - Part 1: Dimensions, tolerances and designation</i>
ISO 228-1	<i>Pipe threads where pressure-tight joints are not made on the threads - Part 1: Dimensions, tolerances and designation</i>
EN 437	<i>Test gases - Test pressures - Appliance categories</i>
EN 10242	<i>Threaded pipe fittings in malleable cast iron</i>
prEN 10255	<i>Carbon steel tubes suitable for welding or threading</i>
prEN 12164	<i>Copper and copper alloys - Rod for free machining purposes</i>

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3 Definitions

For the purposes of this European Standard the following definitions apply:

3.1 PTFE tape : Thread sealing tape manufactured from virgin unsintered polytetrafluorethylene (PTFE) without fillers or additives.

3.2 gas family : For further information on types of gases see EN 437.

3.3 batch : Any quantity of PTFE-tapes manufactured in a single mix at one time.

4 Classification of PTFE tapes

There are two classes of PTFE tapes - mainly differing in thickness and mass per area - suitable for fine (F) and coarse (G) threads in accordance with table 1.

Table 1: Classification of PTFE tapes

Class	Thread		Nominal size
F, Frp ²⁾	ISO 7-1	taper/parallel and taper/taper	DN ≤ 10 ¹⁾
G, Grp ²⁾	ISO 7-1	taper/parallel and taper/taper	10 < DN ≤ 50

1) Class F tapes may also be used for other dimensions when the number of turns of the thread is $\geq 7,5 \text{ cm}^{-1}$.

2) PTFE tapes where limited turning back of taper/parallel threaded joints (R/Rp) is permitted, are additionally marked with Rp.

5 Requirements

5.1 Requirements to be met by the PTFE tape as received

5.1.1 General

The PTFE tape shall be free from any inclusions or imperfections visible to the naked eye and shall be free from any surface or edge defects, when tested in accordance with 7.1.1.

5.1.2 Tolerances on tape dimensions

5.1.2.1 Length

The actual length of the PTFE tape, when tested in accordance with 7.1.2.1, shall not be less than that marked on the spool. (standards.itech.ai)

5.1.2.2 Width

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The actual width of the PTFE tape, when tested in accordance with 7.1.2.2, shall not differ from that marked on the spool by more than $\pm 0,5 \text{ mm}$.

NOTE: The preferred width is 12 mm.

5.1.2.3 Thickness

The thickness of the PTFE tape, when tested in accordance with 7.1.2.3, shall not differ from the stated value by more than $\pm 10\%$.

5.1.3 Tolerances on mass per area

The mass per area of the PTFE tape, when tested in accordance with 7.1.3, shall be greater than 90 % of the value declared by the manufacturer.

5.1.4 Residual lubricant content

The residual lubricant content of the PTFE tape, when tested in accordance with 7.1.4, shall not exceed 0,1 % by mass.

5.1.5 Wrapping properties

When wrapped around the specified thread in accordance with 7.1.5, the PTFE tape shall conform to and hold the thread form. The finishing end of the PTFE tape shall remain in position with no tendency to unwind. During wrapping the PTFE tape shall not break, tear, or split.

5.2 Requirements to be met by the PTFE tape after assembly

5.2.1 Sealing properties

When tested in accordance with the methods described in 7.2.1 the PTFE tape shall not permit any leakage, when each test assembly is tested in accordance with 7.2.1.2 to 7.2.1.5 in sequence.

5.2.1.1 Soundness

When pressurized, within 1 h after preparation all the joints in the test assemblies shall not leak, when tested in accordance with 7.2.1.2.

5.2.1.2 Soundness after adjustment (additional requirement for Classes FRp and GRp only)

After adjusting the test assemblies in accordance with 7.2.1.3 the joint of these test assemblies shall not leak when tested in accordance with 7.2.1.2.

NOTE: This additional requirement is only valid for countries in which a limited turning back of prefabricated taper/parallel (R/Rp) threaded joints is permitted. PTFE tapes fulfilling this requirement should additionally be marked with Rp.

5.2.1.3 Resistance to temperature cycling

The sealing properties of the PTFE tapes shall not be impaired by the temperature cycling test in accordance with 7.2.1.4.