



# SLOVENSKI STANDARD

## SIST EN 751-2:1997

01-avgust-1997

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### Tesnilni materiali za kovinske navojne zveze v stiku s plini 1., 2. in 3. družine ter vročo vodo - 2. del: Nestrdljivi tesnilni materiali

Sealing materials for metallic threaded joints in contact with 1st, 2nd and 3rd family gases and hot water - Part 2: Non-hardening jointing compounds

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

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

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#### **ICS:**

83.140.50	Tesnila	Seals
91.140.40	Sistemi za oskrbo s plinom	Gas supply systems
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EUROPEAN STANDARD

EN 751-2

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 1996

ICS 21.140; 23.040.80

Descriptors: pipe fittings, gas pipes, water pipes, hot water, threaded fittings, sealing materials, classifications, specifications, tests, effectiveness, marking

English version

**Sealing materials for metallic threaded joints in contact with 1st, 2nd and 3rd family gases and hot water - Part 2: Non-hardening jointing compounds**

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

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

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 non-hardening sealing materials (jointing compounds) for metallic threaded joints. These jointing compounds applied as liquid, gel, paste or tape of non-woven synthetic fibres impregnated with jointing compound paste do at the most only partly harden or cure. This enables the threaded joint to be easily dismantled with commercial tools at ambient temperatures without damage of the threads.

There are three classes of jointing compounds defined by their properties and application range. Class A jointing compounds are suitable for normal installation purposes for 1st, 2nd and 3rd family gases and heating systems. Class B jointing compounds are normally used in gas appliances and their auxiliary equipment, whereas Class C jointing compounds are for use in LPG storage application. Jointing compounds may be suitable for one or more classes.

A universally applicable jointing compound 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 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 is difficult to harmonise the existing national standards and approval requirements for Class A jointing compounds. One particular point relates to the use of sealant supporting bases (e.g. hemp, flax or synthetic fibres). Whilst these should not be used to fill large gaps between bad fitting threads, in some countries they may be used to ensure that the jointing compound remains in its position on the male thread and is not stripped off during assembly of the joint. It will be up to the manufacturer's handling instructions (and the country of use) whether jointing compounds of Class A will be applied with or without such sealant supporting bases. Supporting bases are not used with Classes B and C jointing compounds.

The adjustment of prefabricated parts of an installation requires sometimes the assembled taper/parallel threaded joints to be turned back up to an angle of 45°. To ensure that jointing compounds fulfil this requirement in countries where such handling techniques are used, an additional requirement concerning the turn back test has been included. Such jointing compounds are additionally designated with "Rp".

## 1 Scope

This European Standard specifies requirements and test methods for non-hardening sealing materials (hereafter referred to as jointing compounds) suitable for sealing threaded metallic joints such as those specified in ISO 7-1. These jointing compounds are for use in contact with 1st family gases (town gas), 2nd family gases (natural gas) and 3rd family gases (liquefied petroleum gases (LPG) not including LPG in the liquid form) and hot water of heating systems (Class A), in gas appliances and their auxiliary equipment (Class B) as well as in LPG storage (Class C) according to table 1.

Anaerobic jointing compounds are covered by EN 751-1, non-hardening sealing materials in the form of PTFE-tapes are covered by EN 751-3.

## 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>
ENISO 2160	<i>Petroleum products - Corrosiveness to copper - Copper strip test (ISO 2160:1985, including Corrigendum 1:1993)</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 non-hardening jointing compound** (referred to hereafter as jointing compound):  
Sealing material applied as liquid, gel, paste (normally without the addition of sealant supporting bases) or as tape of non-woven synthetic fibres impregnated with jointing compound to the threads.



**3.2 sealant supporting bases:** Materials (e.g. hemp, flax or synthetic fibres) which may be used in some countries to support jointing compound in large threaded joints and ensure that the jointing compound remains in its position on the male thread and is not stripped off during assembly of the joint.

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

**3.4 batch:** Any quantity of jointing compound manufactured in a single mix at one time.

## 4 Classification of jointing compounds

There are three classes of jointing compounds defined by their properties and application range according to table 1. Jointing compounds may be suitable for one or more classes. The class(es) shall be indicated by the manufacturer.

**Table 1: Classification of jointing compounds**

Class	Fluid	Temperature range °C	Pressure limit bar	Typical application
A,ARp <sup>1)</sup>	1st, 2nd, 3rd <sup>2)</sup> family gases	-20 to 70	5	installation
	hot water	up to 130	7	heating systems
B	1st, 2nd, 3rd <sup>2)</sup> family gases	-20 to 125	0,2	gas appliances
C	3rd family gases	-20 to 70	20	LPG storage
<p>1) Jointing compounds of Class A where limited turning back of taper/parallel (R/Rp) threaded joints is permitted, are additionally be marked with Rp.</p> <p>2) Not including LPG in the liquid phase.</p>				

## 5 Requirements

### 5.1 Requirements to be met by the jointing compound as received

#### 5.1.1 General

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The jointing compound shall be homogeneous and free of lumps when tested in accordance with 7.1.1.1. The solids used in its manufacture shall be thoroughly ground.

Tapes of non-woven synthetic fibres shall be evenly impregnated or coated with jointing compound paste, the mass per area of which when tested in accordance with 7.1.2 of which shall not be lower than 90 % of the value declared by the manufacturer.

The jointing compound shall have good wetting properties necessary for adhesion to metallic surfaces when tested in accordance with 7.2.1.1.



### 5.1.2 Corrosive properties

The jointing compound shall not cause corrosion of aluminium, brass, copper, low carbon steel or zinc surfaces when tested in accordance with 7.1.2. The appearance of copper and brass test strips shall give a classification 3 or less in accordance with EN ISO 2160.

### 5.1.3 Storage properties

The storage life of the jointing compound shall be at least two years in its original unopened container when stored at a temperature less than 25 °C, indicated and declared by the manufacturer.

## 5.2 Requirements to be met by the jointing compound after assembly

### 5.2.1 Sealing properties

When tested in accordance with the methods described in 7.2.1 the jointing compound shall not disintegrate or flow out of the joint and shall not permit any leakage when each test assembly is tested in accordance with 7.2.1.2 to 7.2.1.7 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 Class ARp only)

After adjusting the test assemblies in accordance with 7.2.1.3 the joints 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. Jointing compounds fulfilling this requirement should additionally be marked with Rp.

#### 5.2.1.3 Resistance to gas condensates

The sealing properties of the jointing compound shall not be impaired by liquid hydrocarbon gas condensate when tested in accordance with 7.2.1.4.

#### 5.2.1.4 Resistance to hot water SIST EN 751-2:1997

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The sealing properties of the jointing compound shall not be impaired by hot water when tested in accordance with 7.2.1.5.

#### 5.2.1.5 Resistance to temperature cycling

The sealing properties of the jointing compound shall not be impaired by the temperature cycling test in accordance with 7.2.1.6.