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Vervangt NEN-EN 437:1994; NEN-EN 437:1994/A1:1997; NEN-EN 437:1994/A2:1999; NEN-EN 437:2000 Ontw.

Nederlandse norm

# **NEN-EN 437** (en)

Proefgassen - Proefdrukken -  
Toestelcategorieën

Test gases - Test pressures - Appliance categories

ICS 27.060.20; 91.140.40

juni 2003

Als Nederlandse norm is aanvaard:  
- EN 437:2003, IDT

Normcommissie 349 193 "Aardgas"

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Voor de in deze norm vermelde normatieve verwijzingen bestaan in Nederland de volgende equivalenten:

<u>vermelde norm</u>	<u>Nederlandse norm</u>	<u>titel</u>
EN ISO 3166-1:1997	NEN-EN-ISO 3166-1:1997	Codes voor de weergave van landnamen en hun onderverdelingen - Deel 1: Landencodes (en)
ISO 6976:1995	NEN-ISO 6976:1996	Aardgas - Berekening van de verbrandingswarmte, de stookwaarde, de dichtheid, de relatieve dichtheid en de Wobbe-index uit de samenstelling (en)

Voorbeeld

Preview



English version

## Test gases - Test pressures - Appliance categories

Gaz d'essais - Pressions d'essais - Catégories d'appareils

Prüfgase - Prüfdrücke - Gerätekategorien

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Preview



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Management Centre: rue de Stassart, 36 B-1050 Brussels

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## Foreword

This document EN 437:2003 has been prepared by Technical Committee CEN/TC 238 "Test gases, test pressures and categories of appliances", the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by November 2003, and conflicting national standards shall be withdrawn at the latest by November 2003.

This document replaces EN 437:1993.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports the requirements of 2.2 of the "Gas Appliances" Directive (90/396/EEC).

Annex A is normative. Annexes B, C and D are informative.

EN 437 is intended to provide all the CEN Technical Committees preparing standards on gas appliances with definitions for test gases, test pressures and categories of appliances for use by these committees within the limits of the scope defined in clause 1.

Similarly, it is emphasized that distributors of 2<sup>nd</sup> family gases using pressure couples should restrict themselves to their use in the normal manner but may, in exceptional circumstances and for short periods, use gases of the lowest Wobbe index at the lowest pressure, under conditions in which the safety of the appliance has to be ensured.

The standard seeks to clarify the present situation with respect to test gases, test pressures and appliance categories.

The concern for clarity has led to the elucidation of numerous categories and national situations or conditions. The complexity of the standard is likely to increase as new members join the Union.

This revised standard incorporates the two previously published amendments and includes new appliance categories, the reason for which does not lie essentially with new gas resources but with new technical developments for appliances.

This revised standard can still be considered an important stage in the harmonization of test gases, test pressures and appliance categories and the quality of information on gas usage in Europe.

This standard does not give any information relating to Malta which was not a CEN member at the time of the CEN enquiry.

On the other hand, the standard applies to Hungary, a country whose national body is an affiliate member of CEN.

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

## 1 Scope

This standard specifies the test gases, test pressures and categories of appliances relative to the use of combustible gases of the first, second and third families. It serves as a reference document in the specific standards for appliances that fall within the scope of the Council Directive on the approximation of the laws of Member States concerning gas appliances (90/396/EC).

The standard makes recommendations for the use of the gases and pressures to be applied for the tests. The full procedure will be given in the corresponding appliance standards.

NOTE The test gases and the test pressures specified in this standard are in principle intended to be used with all the appliances in order to establish conformity with the corresponding standards.

However, the use of some test gases and test pressures may not be appropriate in the following cases:

- appliances with nominal heat input greater than 300 kW;
- appliances constructed on site;
- appliances in which the final design is influenced by the user;
- appliances constructed for use with high supply pressures (notably direct use of the saturated vapour pressure).

In these cases, the specific appliance standards may specify other test conditions in order to establish compliance with their requirements.

## 2 Normative references

This 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 standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN ISO 3166-1:1997, *Codes for the representation of names of countries and subdivisions – Part 1: Country codes.*

ISO 6976:1995, *Natural gas – Calculation of calorific value, density, relative density and Wobbe index from composition.*

## 3 Terms and definitions

For the purposes of this standard, the following terms and definitions apply:

### 3.1

#### **gas appliance**

appliance burning combustible gases

NOTE For the purposes of this standard the term "gas" means "combustible gas", i.e. any fuel that is in the gaseous state at a temperature of 15 °C, and under a pressure of 1 bar.

### 3.2

#### **test gases**

gases intended for the verification of the operational characteristics of appliances using combustible gases. They consist of reference gases and limit gases

### 3.3

#### **reference gases**

test gases with which appliances operate under nominal conditions when they are supplied at the corresponding normal pressure



**3.4****limit gases**

test gases representative of the extreme variations in the characteristics of the gases for which appliances have been designed

**3.5****test pressures**

gas pressures used to verify the operational characteristics of appliances using combustible gases. They consist of normal and limit pressures

NOTE The gas pressures used are expressed in millibars (mbar) 1 mbar =  $10^2$  Pa

**3.6****normal pressure**

$p_n$   
pressure under which the appliances operate in nominal conditions when they are supplied with the corresponding reference gas

**3.7****limit pressures**

maximum pressure:  $p_{max}$ ; minimum pressure:  $p_{min}$   
pressures representative of the extreme variations in the appliance supply conditions

**3.8****pressure couple**

combination of two distinct gas distribution pressures applied by reason of the significant difference existing between the Wobbe indices within a single family or group in which

- the higher pressure corresponds only to gases of low Wobbe index ;
- the lower pressure corresponds to gases of high Wobbe index.

**3.9****reference conditions**

these correspond to 15 °C, 1 013,25 mbar, unless otherwise specified

**3.10****relative density**

$d$   
ratio of the masses of equal volumes of dry gas and dry air under the same conditions of temperature and pressure: 15 °C or 0 °C and 1 013,25 mbar

**3.11****calorific value**

quantity of heat produced by the complete combustion, at a constant pressure equal to 1 013,25 mbar, of a unit volume or mass of gas, the constituents of the combustible mixture being taken at reference conditions and the products of combustion being brought back to the same conditions

A distinction is made between:

- the gross calorific value  $H_g$ : the water produced by combustion is assumed to be condensed;
- the net calorific value  $H_i$ : the water produced by combustion is assumed to be in the vapour state

NOTE The calorific value is expressed:

- either in megajoules per cubic metre ( $\text{MJ/m}^3$ ) of dry gas under the reference conditions;
- or in megajoules per kilogram ( $\text{MJ/kg}$ ) of dry gas.

**3.12****Wobbe index**

gross Wobbe index  $W_g$ ; net Wobbe index  $W_i$

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