

**Tsiviilkäibes olevad lõhkeained.
Püssirohud ja raketipüssirohud. Osa 4:
Põlemiskiiruse määramine
normaalsetes keskkonnatingimustes**

Explosives for civil uses - Propellants and rocket propellants - Part 4: Determination of burning rate under ambient conditions

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 13938-4:2004 sisaldab rahvusvahelise standardi ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 27.04.2004 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 13938-4:2004 consists of the English text of the international standard .</p> <p>This document is endorsed on 27.04.2004 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala: This European Standard describes a method for the determination of burning rate under ambient conditions for propellants and black powders.</p>	<p>Scope: This European Standard describes a method for the determination of burning rate under ambient conditions for propellants and black powders.</p>
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ICS 71.100.30

Võtmesõnad: detonation, electrical, environmental condition, explosives, igniters, ignitor, inflammable matters, materials testing, mining, non-electrical, propellants, rocket propellant, safety, specimen preparation, stability, testing, testing devices, transition time

ICS 71.100.30

English version

**Explosives for civil uses - Propellants and rocket propellants -
Part 4: Determination of burning rate under ambient conditions**

Explosifs à usage civil - Poudres propulsives et propergols
pour fusées - Partie 4: Détermination de la vitesse de
combustion dans les conditions ambiantes

Explosivstoffe für zivile Zwecke - Treibladungspulver und
Raketentreibstoffe - Teil 4: Bestimmung der
Brenngeschwindigkeit bei Umgebungsbedingungen

This European Standard was approved by CEN on 1 October 2003.

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 Management Centre 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 Management Centre has the same status as the official versions.

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



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Foreword

This document EN 13938-4:2003 has been prepared by Technical Committee CEN /TC 321, "Explosives for civil uses", the secretariat of which is held by AENOR.

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 2004, and conflicting national standards shall be withdrawn at the latest by June 2004.

This document 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).

For relationship with EU Directive(s), see informative annex ZA, which is an integral part of this document.

This European Standard is one of a series of standards with the generic title "*Explosives for civil uses – Propellants and rocket propellants*". The other parts of this series are listed below:

- prEN 13938-1 Part 1: Requirements.
- prEN 13938-2 Part 2: Determination of resistance to electrostatic energy.
- EN 13938-3 Part 3: Determination of deflagration to detonation transition.
- prEN 13938-5 Part 5: Solid rocket propellants. Determination of voids and fissures.
- prEN 13938-6 Part 6: Solid rocket propellants. Guide for the determination of integrity of inhibitor coatings.
- prEN 13938-7 Part 7: Determination of the properties of black powder.

Annex A is informative.

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 European Standard specifies a method for the determination of burning rate under ambient conditions for propellants and black powder.

It is applicable to propellants and black powder in their original form up to a grain size of 8 mm.

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 (including amendments).

EN ISO/IEC 17025; *General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025:1999)*.

EN 13857-1; *Explosives for civil uses - Part 1: Terminology*.

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 13857-1 and the following apply.

3.1

burning rate

velocity at which the flame propagates through the sample along the trough

4 Principle

The test sample is loaded into a trough and the sample is ignited at one end by means of a hot wire. The time of flame propagation through the sample along the trough is measured and the burning rate is calculated.

5 Apparatus

5.1 Trough, (see Figure 1), consisting of a half cylinder ($2\,000 \pm 1$) mm long with a diameter of ($20,0 \pm 0,8$) mm, hollowed out from a stainless steel block. The block is marked at 2 positions, A and B, at distances of (400 ± 1) mm and ($1\,900 \pm 1$) mm from the end where the ignition is to take place, respectively. A 2 mm thick stainless steel plate is welded to each end of the trough to close off the ends.

The trough shall be horizontal when set on its support.

5.2 Hot wire, as ignition device, consisting of a Ni/Cr wire, diameter ($0,40 \pm 0,05$) mm, length (15 ± 1) mm, heated by a current of 4 A.

5.3 Timing device, consisting of a manual stopwatch with a scale division of 0,1 s or a recording chronograph activated by suitable detectors located at marks A and B. Black powder shall be tested using a recording chronograph.