

**Tsiviilkäibes olevad lõhkeained.  
Püssirohud ja raketipüssirohud. Osa 5:  
Tühemike ja pragude  
kindlaksmääramine**

Explosives for civil uses - Propellants and rocket propellants - Part 5: Determination of voids and fissures

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 13938-5:2004 sisaldab Euroopa standardi EN 13938-5:2004 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 23.11.2004 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 13938-5:2004 consists of the English text of the European standard EN 13938-5:2004.</p> <p>This document is endorsed on 23.11.2004 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><b>Käsitlusala:</b></p> <p>This European Standard specifies a method for checking small rocket motors for voids and fissures and provides a guide to non-destructive testing (NDT) methods for detecting voids and fissures in other solid rocket propellants.</p>	<p><b>Scope:</b></p> <p>This European Standard specifies a method for checking small rocket motors for voids and fissures and provides a guide to non-destructive testing (NDT) methods for detecting voids and fissures in other solid rocket propellants.</p>
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**Võtmesõnad:** defects, g, inflammable matters, infra-red, macroscopic analysis, materials testing, mining, propellants, radiography, rocket propellant, safety, specimen preparation, testing, testing devices, ultrasonic frequencies, ultrasonics, visual inspection (testing), x-rays

ICS 71.100.30

English version

Explosives for civil uses - Propellants and rocket propellants -  
Part 5: Determination of voids and fissures

Explosifs à usage civil - Cordeaux détonants et mèches  
lentes - Partie 5: Propergols solides pour aut propulsion -  
Guide pour la détermination des vides et des fissures

Explosivstoffe für zivile Zwecke - Treibladungspulver und  
Raketentreibstoffe - Teil 5: Bestimmung von Lunkern und  
Rissen

This European Standard was approved by CEN on 21 June 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 13938-5:2004) 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 February 2005, and conflicting national standards shall be withdrawn at the latest by February 2005.

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 document 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
- EN 13938-4 Part 4: Determination of burning rate under ambient conditions
- EN 13938-6 Part 6: Guide for the determination of integrity of inhibitor coatings
- EN 13938-7 Part 7: Determination of properties of black powder

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

The presence of excessively large or numerous voids or fissures in solid rocket propellant can result in dangerously high pressures due to increased propellant burning surfaces. The maximum size and number of voids and fissures permitted in a solid rocket propellant to ensure safe functioning are therefore an essential part of the acceptance criteria for the product. For small rocket motors this can be achieved by burning them in the way they are designed for and measuring the thrust continually. Significant voids and fissures can be recognized by a sudden increase of thrust.

## 1 Scope

This document specifies a method for checking small rocket motors for voids and fissures and provides a guide to non-destructive testing (NDT) methods for detecting voids and fissures in other solid rocket propellants.

## 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 13857-1:2003, *Explosives for civil uses - Part 1: Terminology*

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

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13857-1:2003 and the following apply.

### 3.1

#### **small rocket motor**

rocket motor which does contain not more than 100 g of solid rocket propellant(s)

### 3.2

#### **NDT method**

discipline applying a physical principle in non-destructive testing

NOTE An example of an NDT method is ultrasonic testing.

### 3.3

#### **NDT technique**

specific way of utilising an NDT method

NOTE An example of an NDT technique is immersion ultrasonic testing.

### 3.4

#### **NDT procedure**

orderly sequence of rules, which describes step by step how and in which sequence a NDT technique should be applied to a specific field

### 3.5

#### **void**

unintended inclusion of a gas bubble

### 3.6

#### **fissure**

unintended longitudinal discontinuity in the propellant material