Irish Standard
I.S. EN 16701:2014

Energetic materials for defence - Safety, vulnerability - Friability

I.S. EN 16701:2014

Incorporating amendments/corrigenda/National Annexes issued since publication:

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This document is based on:	*Published:*
EN 16701:2014	2014-05-14

This document was published under the authority of the NSAI and comes into effect on:	ICS number:
2014-05-31	71.100.30
	NOTE: If blank see CEN/CENELEC cover page

NSAI
1 Swift Square,
Northwood, Santry
Dublin 9

T +353 1 807 3800
F +353 1 807 3838
E standards@nsai.ie
W NSAI.ie

Sales:
T +353 1 857 6730
F +353 1 857 6729
W standards.ie

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EUROPEAN STANDARD **EN 16701**

NORME EUROPÉENNE

EUROPÄISCHE NORM May 2014

ICS 71.100.30

English Version

Energetic materials for defence - Safety, vulnerability - Friability

Matériaux énergétiques de défense - Sécurité, vulnérabilité - Friabilité

Energetische Wehrmaterialien - Sicherheit, Verwundbarkeit - Sprödigkeit

This European Standard was approved by CEN on 10 April 2014.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (EN 16701:2014) has been prepared by Technical Committee CEN/TC SS C20 “Explosives and firework”, the secretariat of which is held by CCMC.

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of an identical text or by endorsement, at the latest by November 2014 and conflicting national standards shall be withdrawn at the latest by November 2014.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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Introduction

This document is derived from procedure SEN-216-01, promulgated by the Groupe d'Études des Modes Opératoires (French Test Procedures Study Group) in February 2003.

Annexes known as “informative” are given for information purposes. Annexes A to E are informative.

The term friability covers the notions of fragmentation following mechanical stress and burning vivacity of the fragments.

1 Scope

This European Standard describes a method for assessing the deflagration to detonation transition (DDT) risk of an explosive material subjected to a mechanical threat.

Testing applies to any compact solid explosive material.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NF T 70-714, *Energetic materials for defence — Performance — Closed Vessel firing*

3 Test method principle

A cylinder of bare explosive material is projected against a flat steel plate, under normal incidence and according to its axis of revolution.

The friability of the explosive material is characterised as a function of the impact velocity (IV), by the maximum value taken by the dP/dt function derived from the P(t) signal measured by burning the fragments collected following impact at a constant volume in a closed vessel.

All of these operations are generally carried out at ambient temperature, unless otherwise specified.

4 Apparatus

4.1 Launching device

The launching device shall be able to transmit to the sample, without damaging it, a velocity between 70 m/s and at least 200 m/s.

For example, the following pneumatic launch device may be used, which includes (see general diagram in Annex A):

— an air tank with a volume of 3,3 L, consisting of a tube with an inside diameter of 50 mm and outside diameter of 60 mm, equipped with a pneumatic control valve at each end. This tank is connected to a compressed air bottle used for establishing a pressure of 1,2 MPa;

— a launcher tube with an inside diameter between 18,2 mm and 18,6 mm and a length of 1,50 m connected to the pneumatic valve by means of a connection ring.

A gun propellant launch device may also be used; it consists of the following elements:

— a test tube with a calibre 12 cylindrical core (inside diameter between 18,2 mm and 18,6 mm) and 70 mm counter boring, with an effective length of 700 mm;

— a gun propellant cartridge whose description is given in Annex B.

4.2 Fragment collection and impact device

This device includes (see Figure A.1):