

English Version

Explosives for civil uses - Explosives - Part 6:
Determination of the resistance to hydrostatic pressure of
explosives

Explosifs à usage civil - Explosifs - Partie 6:
Détermination de la résistance à la pression
hydrostatique

Explosivstoffe für zivile Zwecke - Explosivstoffe - Teil
6: Bestimmung der Widerstandsfähigkeit von
Explosivstoffen gegen hydrostatischen Druck

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (prEN 13631-6:2021) has been prepared by Technical Committee CEN/TC 321 “Explosives for civil uses”, the secretariat of which is held by UNE.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 13631-6:2002.

In comparison with the previous edition, the following technical modifications have been made:

- a) the main element of the document’s title has been changed from “High explosives” to “Explosives”;
- b) the normative references have been updated;
- c) Clause 4, *Principle*, has been added;
- d) the description of the preparatory steps and for performing the test have been clearly separated;
- e) Annex A, *Range of applicability of the test method*, has been removed;
- f) Annex ZA has been updated.

This document has been prepared under a Standardization Request (M/562) annexed to the Commission Implementing Decision C(2019)6634 final as regards Explosives for civil uses given to CEN by the European Commission and the European Free Trade Association, and supports Essential Safety requirements of Directive 2014/28/EU.

For relationship with Directive 2014/28/EU, see informative Annex ZA, which is an integral part of this document.

EN 13631, *Explosives for civil uses — Explosives*, is currently composed with the following parts:

- *Part 1: Requirements*
- *Part 2: Determination of thermal stability of explosives*
- *Part 3: Determination of sensitiveness to friction of explosives*
- *Part 4: Determination of sensitiveness to impact of explosives*
- *Part 5: Determination of the resistance to water of explosives*
- *Part 6: Determination of the resistance to hydrostatic pressure of explosives*
- *Part 7: Determination of safety and reliability at extreme temperatures*
- *Part 10: Method for the verification of the means of initiation of explosives*
- *Part 11: Determination of the transmission of detonation of explosives*
- *Part 13: Determination of density*

— *Part 14: Determination of the velocity of detonation of explosives*

1 Scope

This document specifies a test method for determining the ability of boosters and explosives to detonate while under hydrostatic pressure. This test method does not apply to black powder.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

prEN 13630-7:2021, *Explosives for civil uses — Detonating cords and safety fuses — Part 7: Determination of reliability of initiation of detonating cords*

prEN 13631-14:2021, *Explosives for civil uses — Explosives — Part 14: Determination of the velocity of detonation of explosives*

prEN 13857-1:2021, *Explosives for civil uses — Part 1: Terminology*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in prEN 13857-1:2021 apply.

4 Principle

Hydrostatic pressure may adversely affect the safety and reliability of explosives in that the explosive may not be initiated or not completely detonate. The test applies the hydrostatic pressure to that level as foreseen by the manufacturer and requires firing of the explosive while the pressure is still applied.

NOTE This method is applicable to boosters and explosives in cartridges and as bulk products intended for use under conditions where hydrostatic pressure may adversely affect their safety and reliability. The method is limited to explosives that are able to detonate without confinement at normal atmospheric pressure.

5 Apparatus

5.1 Firing tube (see Figure 1), made of a material which is able to withstand the maximum hydrostatic pressure applied during the test. The length and the diameter of this tube shall be such that the cartridge and the witness system can be loaded easily. A system for bleeding air shall be provided in the tube or in one of the seals.

5.2 Watertight seal, provided at each end of the firing tube and incorporating watertight openings for the water inlet pipe and the firing line (electrical leads, or shock tube) of the initiating system. When assembled the firing tube and the seals shall be able to withstand the maximum hydrostatic pressure applied during the test.

5.3 Pressure system, to produce the required hydrostatic pressure in the firing tube. An example of such a system is shown in Figure 2.

5.4 Means of initiation, as specified by the explosives' manufacturer.

5.5 Witness system, to confirm the detonation of the cartridge, e.g. equipment for measuring velocity of detonation as specified in prEN 13631-14:2021, or detonating cord or witness plate as specified in prEN 13630-7:2021, 5.3.

5.6 Means of measuring of temperature, with an accuracy of 1 °C.