
Pirotehnični izdelki - Drugi pirotehnični izdelki - Kartuše za orodja na smodniški pogon

Pyrotechnic articles - Other pyrotechnic articles - Cartridges for powder actuated tools

Pyrotechnische Gegenstände - Sonstige pyrotechnische Gegenstände - Kartuschen für kartuschenbetriebene handgehaltene Werkzeuge

Articles pyrotechniques - Autres articles pyrotechniques - Cartouches pour outils actionnés par poudre

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ognjemeti

Explosives. Pyrotechnics and
fireworks

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 16264

July 2026

ICS 71.100.30

Will supersede EN 16264:2014

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**Pyrotechnic articles - Other pyrotechnic articles -
Cartridges for powder actuated tools**

Articles pyrotechniques - Autres articles
pyrotechniques - Cartouches pour outils actionnés par
poudre

Pyrotechnische Gegenstände - Sonstige pyrotechnische
Gegenstände - Kartuschen für kartuschenbetriebene
handgehaltene Werkzeuge

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Contents

Page

European foreword	4
1 Scope.....	6
2 Normative references.....	6
3 Terms and definitions	7
4 Apparatus	20
5 Requirements.....	20
5.1 Minimum content of documentation	20
5.2 Conformity to documentation	21
5.3 Dimensions.....	21
5.3.1 General.....	21
5.3.2 Apparatus	24
5.3.3 Procedure	25
5.3.4 Acceptance criteria.....	25
5.4 Pressure testing.....	25
5.4.1 General.....	25
5.4.2 Apparatus	25
5.4.3 Procedure	30
5.4.4 Acceptance criteria.....	32
5.5 Energy testing.....	33
5.5.1 General.....	33
5.5.2 Apparatus	33
5.5.3 Procedure	33
5.5.4 Acceptance criteria.....	35
5.6 Collation test.....	35
5.6.1 General.....	35
5.6.2 Apparatus	36
5.6.3 Procedure	37
5.6.4 Acceptance criteria.....	37
5.7 Residue test.....	37
5.7.1 General.....	37
5.7.2 Apparatus	37
5.7.3 Procedure	46
5.7.4 Acceptance criteria.....	48
5.8 Physical and chemical stability test	48
5.8.1 General.....	48
5.8.2 Apparatus	48
5.8.3 Procedure	48
5.8.4 Acceptance criteria.....	49
5.9 Mechanical conditioning test.....	49
5.9.1 General.....	49
5.9.2 Apparatus	49
5.9.3 Procedure	49
5.9.4 Acceptance criteria.....	49
5.10 Safety test.....	50

5.10.1	General	50
5.10.2	Apparatus	50
5.10.3	Firing unit.....	51
5.10.4	Procedure	53
5.10.5	Acceptance criteria	53
5.11	Maximum content of lead in the primer mix	54
5.11.1	General	54
5.11.2	Procedure	54
5.11.3	Acceptance criteria	54
5.12	Safe disposal	54
6	Categorization.....	54
7	Minimum labelling	55
7.1	Single cartridges	55
7.1.1	General	55
7.1.2	Marking of single cartridges.....	55
7.2	Primary packs.....	55
Annex A	(normative) Testing of cartridges for powder actuated tools	57
Annex B	(informative) Mechanical conditioning test apparatus.....	58
Annex C	(normative) Graphical symbols.....	61
Annex D	(informative) Batch testing of cartridges for powder actuated tools	63
Annex E	(normative) Determination of lead in the primer mix of PAT cartridges.....	65
Annex F	(informative) Recommended energy ranges.....	74
Annex ZA	(informative) Relationship between this European Standard and the essential requirements of Directive 2013/29/EU aimed to be covered	76
Bibliography		78

European foreword

This document (prEN 16264:2026) has been prepared by Technical Committee CEN/TC 212 “Pyrotechnic articles”, the secretariat of which is held by NEN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 16264:2014.

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

- the scope has been streamlined by deleting several obsolete cartridge *calibres*;
- Clause 2, the decisions of C.I.P. have been listed;
- Clause 3 have been updated. the definition for the energy developed by a cartridge and indicated by colour marking has been harmonized across the document to “energy level”;
- Clause 3, some definitions and symbols have been aligned with those in EN 15895:2025, prEN 16263:2026 [2], and the definitions of C.I.P.;
- Clause 3, the figures have been aligned with those of EN 15895:2025 or modernised;
- 5.4.2.6 and in 5.4.3.5, the description of the procedure for pressure measurement has been improved;
- 5.4.3.5, the use of grease in pressure measurement has been deleted in accordance with the amendments adopted by C.I.P. in 2023;
- 5.6.4, the wording has been corrected to clearly indicated the combined requirements for passing the test;
- 5.7.2, several design drawings have been completed by adding the necessary dimensional tolerances;
- 5.7.3, the prescribed test temperature and humidity ranges have been aligned with those of C.I.P.;
- 5.7.3, the number of test sequences in the residue test have been reduced from three to two;
- 5.7.3, the test procedure has been streamlined to better represent test rigs of different designs;
- 5.8, the test procedures for the high and low temperature stability tests have been redefined;
- the formerly prescribed high temperature pressure test has been deleted;
- 5.11, limit values for the content of lead have been defined for two classes of PAT cartridges, lead-free and leaded;
- 5.12, safe disposal has been added;
- 7.2, the labelling requirements have been streamlined to those not already listed in the Directive;
- Annex C, the symbols used in labelling have been aligned with EN ISO 7010:2020;
- Annex D, batch testing of cartridges for powder actuated tools has been added;

- Annex E, analysis methods for the determination of the content of lead have been added;
- Annex F, recommended energy ranges has been added;
- Annex ZA has been revised.

NOTE Words in italics (apart from document titles) are defined in Clause 3.

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For relationship with EU Legislation, see informative Annex ZA, which is an integral part of this document.

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prEN 16264:2026 (E)

1 Scope

This document defines the procedures for classifying, testing and labelling of cartridges for *powder actuated tools* (PAT cartridges), as defined in Clause 3 of this document.

This document applies to *PAT* cartridges which are all classified as P1.

This document does not apply to pyrotechnic articles containing blasting agents and military explosives except black powder and flash composition.

PAT cartridges contain *pyrotechnic composition(s)* delivering mainly gases, intended to propel a *piston*. The *piston* propels *fasteners* (e.g. nails) or drives hard marking characters into appropriate materials.

This document also applies to *PAT* cartridges sold to persons younger than 18 years, if this is permitted by the Member State due to the low hazard of the *PAT* cartridges.

NOTE *PAT* cartridges can also be used for hard marking tools. Information on cartridge operated fixing and hard marking tools can be found in EN 15895:2025 [1].

This document applies to the cartridges listed in Table 1.

Table 1 — Lists of the established calibres for PAT cartridges

Type	Calibre
Rimfire	5,5/16 (22 NC)
	5,6/16 (22)
	6,3/10
	6,3/12
	6,3/16
	6,8/11
	6,8/18
Centrefire	9 × 17 W

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.

EN 15895:2025, *Powder actuated hand-held fixing and hard marking tools — Safety requirements*

EN ISO 3611:2023, *Geometrical product specifications (GPS) — Dimensional measuring equipment — Design and metrological characteristics of micrometers for external measurements (ISO 3611:2023)*

EN ISO 9237:1995, *Textiles — Determination of permeability of fabrics to air (ISO 9237:1995)*

EN ISO 13385-1:2019, *Geometrical product specifications (GPS) — Dimensional measuring equipment — Part 1: Design and metrological characteristics of callipers (ISO 13385-1:2019)*

EN ISO 7010:2020,¹ *Graphical symbols — Safety colours and safety signs — Registered safety signs (ISO 7010:2019)*

ISO 22863-3:2020, *Fireworks — Test methods for determination of specific chemical substances — Part 3: Lead and lead compounds by atomic absorption*

ISO 22863-5:2021, *Fireworks — Test methods for determination of specific chemical substances — Part 5: Analysis of lead and lead compounds by inductively coupled plasma spectrometry (ICP)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp/>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

acceptance quality limit

AQL

quality level that is the worst tolerable process average when a continuing series of *lots* is submitted for acceptance sampling

3.2

base material

material into which the *fastener* or marking punch is driven

3.3

calibre

designation of a cartridge, normally expressed in the form “body diameter / length”

Note 1 to entry: See Scope for applicable cartridge *calibres*.

3.4

cartridge

device which contains a minor quantity of *primer mix* and a larger quantity of solid *propellant* used to drive the *piston* of a fixing or hard marking tool

Note 1 to entry: See Figure 1.

¹ As impacted by EN ISO 7010:2020/A1:2020, EN ISO 7010:2020/A2:2022, EN ISO 7010:2020/A3:2022, EN ISO 7010:2020/A4:2023, EN ISO 7010:2020/A5:2023, EN ISO 7010:2020/A6:2023, EN ISO 7010:2020/A7:2024, EN ISO 7010:2020/A8:2024, EN ISO 7010:2020/A9:2025



Figure 1 — Cartridge (example: calibre 6,8/11; external view and section)

3.5

single cartridge

loose cartridge

cartridge that is not mechanically attached to other cartridges and is inserted individually in the *cartridge chamber* (by hand)

3.6

collated cartridge

cartridge that is contained with a number of others in a means of *collation*, e.g. a plastic *collation* strip or a metal disc

3.7

cartridge chamber

essentially cylindrical or slightly conical bore which accommodates the cartridge before ignition; located in the rear end of the *piston guide* of a cartridge operated tool; the dimensions of the *cartridge chamber* correspond to cartridge *calibre*

3.8

powder actuated tool

PAT

tool with a *piston* powered by the hot combustion gases from a cartridge and comprising powder actuated fixing and hard marking tools

[SOURCE: EN 15895:2025, 3.1]

3.9

cartridge case

closed container of essentially cylindrical shape made of metal or plastic forming the outer shell of a cartridge and containing a *primer* or *primer mix* and *propellant*

3.10

cartridge type

set of cartridges defined by specific *calibre* and design, including *pyrotechnic compositions* and tolerances

3.11

centrefire cartridge

cartridge in which the *primer* is located in a *primer cup* (see 3.26)

3.12

coefficient of tolerance

coefficients of tolerance for n measurements with a statistical certainty of 95 % in $K_{3,n}$ 90 % of cases, where $K_{3,10} = 2,36$ for $n=10$

3.13**collation**

means for attaching several cartridges to each other at regular distances

Note 1 to entry: Plastic strips and metal discs are commonly used for *collation*

3.14**combustion chamber**

cavity adjoining to the *cartridge chamber* in which the combustion of the *propellant* takes place and consisting of a bore connecting the *cartridge chamber* with the main cavity of *piston guide*, the free volume of the *piston guide* itself behind the *piston* in its rearmost position, and sometimes a free volume in the concave *piston* head

3.15**crimp**

closed front end of a (metal) cartridge generated by radial deformation of the cylindrical body into tight folds with an essentially star-shaped cross section

3.16**fastener**

object intended for use in a cartridge operated fixing tool

Note 1 to entry: The object can be a nail, a threaded stud or similar object that is driven into the *base material*.

3.17**ignition pin**

steel pin guided in a bore in the breech face igniting the *primer mix* of the cartridge by impacting on the *rim* of the cartridge bottom or centre *primer* cup

3.18**lot**

batch of cartridges of the same type, having homogeneous components, manufactured in series production

3.19**piston**

essentially cylindrical or shouldered element made of annealed steel, freely movable longitudinally in the cylindrical *piston guide* ("barrel") of a cartridge operated tool which is accelerated by the high pressure in the *combustion chamber* at its rear and impacts on the *fastener* or marking head with its tip

3.20**piston guide**

"barrel" of a cartridge operated tool which is essentially the cylindrical bore of a tool and containing the piston

3.21**plunger****slug**

brass or semi hardened steel cylinder used in pressure barrel, having different face dimensions to reproduce the additional volume (V_a), the equivalent to the minimum operational volume of the *combustion chamber* in a tool

Note 1 to entry "Slug" is used as a synonym of "*plunger*" in the context of pressure measurement with a *test barrel*.

prEN 16264:2026 (E)**3.22****primary pack**

package of cartridges of the same *calibre* and energy (colour), offered for retail sale as a single unit

3.23**primer**

cap containing *pyrotechnic composition(s)* for ignition, designed to ignite the *propellant* in a *centrefire cartridge case*

3.24**primer mix**

pyrotechnic composition located in the *rim* of the cartridge or in the centre *primer* which ignites the *propellant* when the *ignition pin* deforms the *rim* of the cartridge or the centre *primer* cup and locally compresses and ignites the *primer mix*

3.25**propellant**

mostly nitrocellulose-based powder which fills the cartridge partly or totally, depending on cartridge energy, the hot combustion gases of which accelerate the piston of a cartridge operated tool

3.26**pyrotechnic composition**

explosive substance or mixture of explosive substances which is designed, on ignition or initiation, to produce heat, light, sound, gas or smoke or a combination of such effects through self-sustained exothermic chemical reactions

3.27**rim**

circumferential outward bulge at the rear end of a cartridge generated by axial deformation of the hemispherical end of the punch-drawn metal blank

3.28**rimfire cartridge**

cartridge in which the *primer mix* is located in the *rim* of the *cartridge case*

3.29**test barrel**

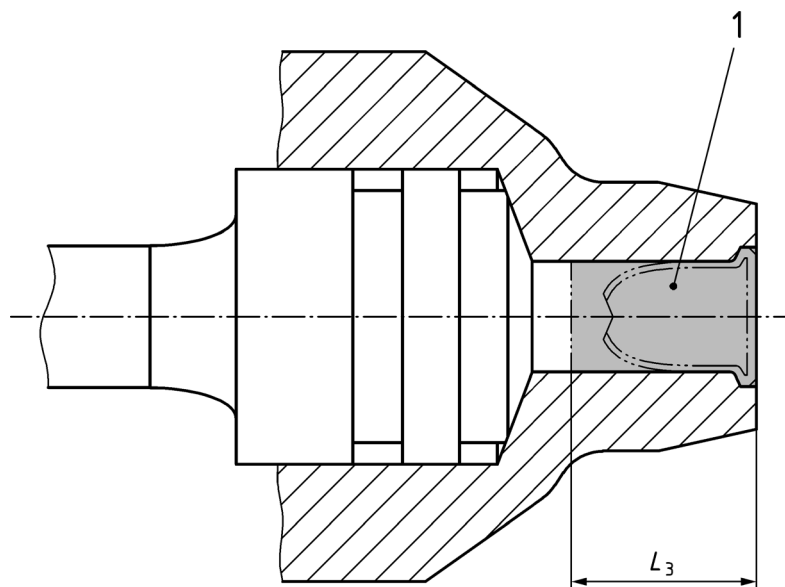
test equipment used to measure the gas pressure and energy of *PAT* cartridges

3.30**minimum volume**

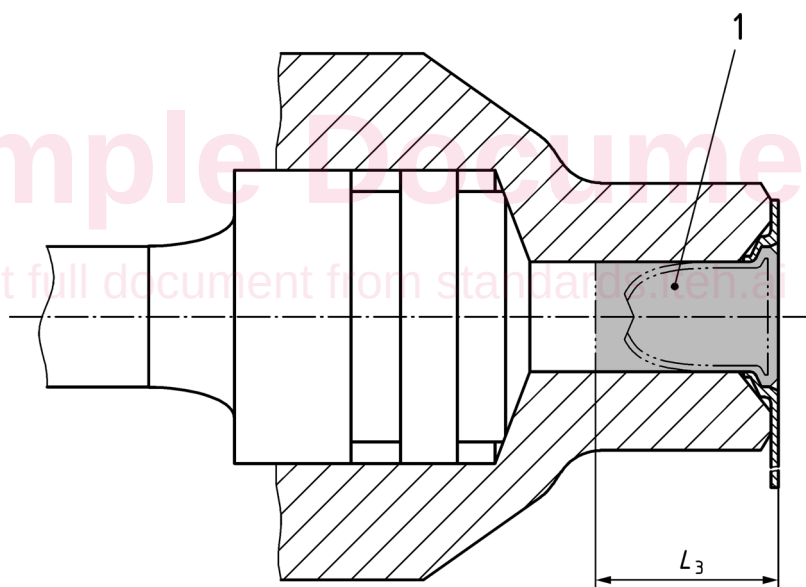
V_{ET}

volume of the smallest technically possible *cartridge chamber* for a given *calibre* and maximum length of the open cartridge (L_3)

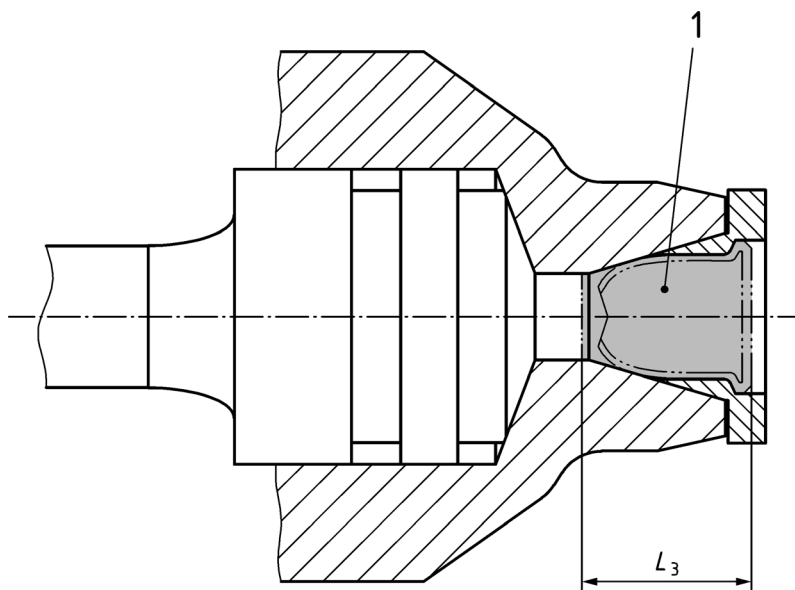
Note 1 to entry: See Figure 2.



**a) minimum volume of the cartridge chamber (V_{ET})
(tool for single cartridges)**



**b) minimum volume of the cartridge chamber (V_{ET})
(tool for cartridges collated in disks)**



**c) minimum volume of the cartridge chamber (V_{ET})
(tool for cartridges collated in strips)**

Key

1 *minimum volume of the cartridge chamber (V_{ET})*

L_3 *maximum length of the open cartridge*

NOTE V_{ET} and L_3 are constant values for each *calibre* and are laid down in Table 2 and Table 3.

Figure 2 — Minimum volume of the cartridge chamber (V_{ET})

3.31

total volume

V_C

<cartridge> total volume of maximum cartridge as presented in Figure 3 in accordance with Table 2

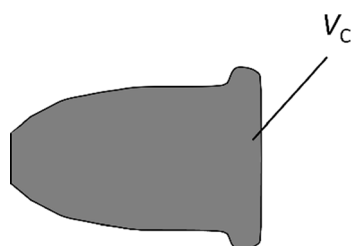
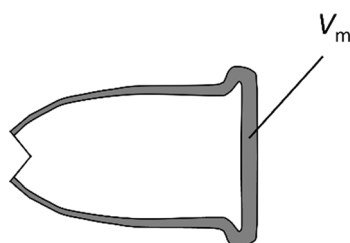


Figure 3 — V_C

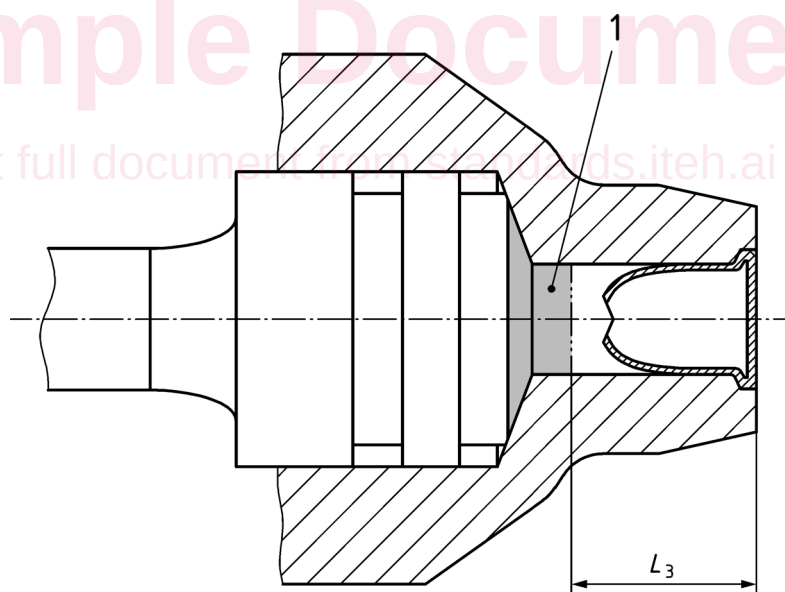
3.32**volume of the material of the case** V_m

volume of the material of the case (without *primer mix* where *rimfire cartridges* are concerned, with *primer* where *centrefire cartridges* are concerned) as presented in Figure 4

**Figure 4 — V_m** **3.33****additional volume** V_a

volume consisting of the volume of the *combustion chamber* with the *piston* in its extreme top position and the open volume in the piston head, if any

Note 1 to entry: See Figure 5.



**a) Additional volume (V_a) (tool for single cartridges)
(see Table 2 for L_3)**