SLOVENSKI STANDARD
oSIST prEN 13857-3:2021

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Eksplozivi za civilno uporabo - 3. del: Informacije, ki jih mora proizvajalec ali njegov pooblaščeni predstavnik posredovati uporabniku

Explosives for civil uses - Part 3: Information to be provided by the manufacturer or his authorised representative to the user

Explosivstoffe für zivile Zwecke - Teil 3: Informationen, die vom Hersteller oder seinem Bevollmächtigten dem Verwender zur Verfügung zu stellen sind

Explosifs à usage civil - Partie 3: Informations à fournir par le fabricant ou par son représentant à l'utilisateur

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This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 321.

If this draft becomes a European Standard, 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.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

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European foreword

This document (prEN 13857-3:2021) 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 13857-3:2002.

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

a) Clause 1 has been updated;

b) Clause 2 has been updated;

c) terms 3.2, 3.3, 3.4 and 3.6 have been added to Clause 3, terms 3.1 and 3.5 have been revised;

d) Clause 4 has been added;

e) Clause 5 has been updated and enlarged;

f) Annexes A, B, C, D and E have been added;

g) 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 13857, *Explosives for civil uses*, is currently composed of the following parts:

— *Part 1: Terminology*

— *Part 3: Information to be provided by the manufacturer or his authorized representative to the user*

1 Scope

This document specifies information to be provided by a manufacturer of explosives for civil uses, or his authorized representative, to the notified body and the user.

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 13631-1:2021, *Explosives for civil uses — Explosives — Part 1: Requirements*

prEN 13631-10:2021, *Explosives for civil uses — Explosives — Part 10: Method for the verification of the means of initiation 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 and the following apply.

3.1
authorized representative
any natural or legal person established within the Union who has received a written mandate from a manufacturer to act on his behalf in relation to specified tasks

3.2
constant-volume explosion state
detonation point of theoretical nature in which the specific volume of the detonation products is that of the unreacted explosive

3.3
gas volume
volume occupied by the detonation product gases, as calculated from the chemical equilibrium composition in the constant-volume explosion state, at a specified condition of temperature and pressure

Note 1 to entry: It is usually given per mass of explosive.

3.4
heat of explosion
energy released in the chemical reaction of the explosive when the composition of the reaction products is that of the constant-volume explosion state

Note 1 to entry: It is usually given per mass of explosive.

3.5
manufacturer
any natural or legal person who manufactures an explosive or has an explosive designed or manufactured, and markets that explosive under his name or trademark or uses it for his own purposes

3.6
specific force
pressure exerted by the detonation gases for a theoretical specific volume of one and assuming that the gases behaved as ideal gas

Note 1 to entry: This is calculated as the result *nRT*, *n* being the number of moles of detonation product gases per unit volume, *R* the universal gas constant and *T* the temperature of explosion.

3.7
user
person or company that obtains explosives from another person or company for further distribution, supply, or use

4 Information to be provided by the manufacturer or his authorized representative to the notified body

4.1 'use-by date'

The manufacturer shall provide a “use-by date” in accordance with 5.2.3.

The manufacturer shall supply background information on the given “use-by date” supporting the time period. Such background information can be scientific evidence, results from accelerated ageing of the explosive, or actual storage of the explosive for the given period and testing done to demonstrate safety and reliability until the end of the storage period.

4.2 Chemical purity

For explosives, which consist of a single chemical compound and are foreseen to be used as such one, the manufacturer shall inform which analytical method has been used to determine the relative content of the compound and by which method the remaining substances can be quantified.

5 Information to be provided by the manufacturer or his authorized representative to the user

5.1 General

The information to be provided by the manufacturer or his authorized representative to the user shall comprise:

— general information on explosives for civil uses (see 5.2); and

— additional information for each product group (see 5.3 to 5.6).

NOTE Other information can also be required under national regulations.

5.2 General information on explosives for civil uses

5.2.1 Information on the suitability of explosives for use in particular conditions

Where the explosive may be used in particular conditions (e.g. underground mines, fire damp, coal dust), or may only be used in particular conditions, this shall be indicated.

The following shall be considered and indicated as applicable:

— whether the explosive is recommended for use above ground only;

— whether the explosive is suitable for use in locations where there may be a flammable dust cloud and/or flammable gas hazard;

— the range of pressures over which the explosive may be used;

— whether the explosive is suitable for use in a moist atmosphere or humid conditions;

— whether the explosive is suitable for use under water, and the hydrostatic pressure, if applicable;

— whether the explosive is designed for further processing only.

Toxic fumes as reaction products of explosives can be determined under laboratory conditions in a standardized test setup. These results may assist the assessment of the suitability of an explosive for use in a confined area (e.g. underground mine). A method allowing reproducible and comparable determination of reaction products is given in Annex D.

NOTE National regulations can require additional authorization by a national authority for use of a particular product in certain conditions.

5.2.2 Information on temperature over which the explosive may be used

The range of temperature over which the explosive may be used shall be indicated.

5.2.3 Information on use-by-date

A statement indicating the use-by-date of the explosive (the date up to which the explosive may be used).

5.2.4 Information on storage

The temperature range for storage, which is necessary to observe in order to guarantee safety and reliability of the explosive during the period until the use-by date, shall be indicated.

Examples for the wording of information on storage are as follows:

— “Do not store at temperatures above (below) ..... °C“;

— “Do not store in a relative humidity above .....%“;

— “Store at a range of temperature and/or humidity of …”.

5.2.5 Information on disposal

The manufacturer shall provide information how to handle unused explosives, explosives stored beyond the use-by date, or how to achieve safe disposal of the explosive.

Examples of information on disposal of explosives are as follows:

— "Burn explosive substances in small quantities of … g in an open fire in a suitably designated burning ground."

— "Return unused explosive to the manufacturer."

NOTE National regulations can apply specific provisions for disposal of explosives.

5.3 Additional information on explosives

5.3.1 Information on physical form and dimensions

For bulk explosives or explosives with a foreseen use as substance the manufacturer shall specify physical form as solid or liquid. The physical form may further be specified e.g. as past-like, granular, powder form or consolidated.

For bulk explosives, or for explosives foreseen to be used as substance other than for further processing, the manufacturer shall specify dimensions which need to be met for safe functioning as follows:

— the minimum diameter of the explosive, in millimetres, or

— the minimum thickness of the explosives' layer, in millimetres.

5.3.2 Information on initiation

The manufacturer shall specify a means of initiation, which is needed to safely initiate the explosive, unless the explosive has been designed or defined by the manufacturer to be used only for further processing, where such information is not required.

Examples of information on initiation are as follows:

— "For reliable initiation a detonator with minimum equivalent initiating capability of … has to be used";

— "For reliable initiation detonating cord of minimum equivalent initiating capability of … has to be used";

— "For reliable initiation a booster of minimum equivalent initiating capability of … has to be used".

5.3.3 Information on loading conditions

If the explosive is designed for mechanical loading, this shall be indicated, and the applicable conditions shall be given as limiting values.

Examples of information on loading conditions are as follows:

— a recommended method or procedure for safe loading or pumping of the explosives;

— the maximum pressure for pneumatic loading/pumping of the explosive in MPa (for bulk explosives only).

5.3.4 Information on suitability for use in wet conditions

If the explosive is designed for use in wet or humid conditions in accordance with prEN 13631-1:2021, 4.4, this shall be indicated.

Examples of information on suitability for use in wet conditions are as follows:

— "suitable for use in a moist atmosphere for ... h";

— "suitable for use under water up to a water depth of 20 cm for ... h".

5.3.5 Information on suitability for use under high and low temperatures

If the explosive is designed for use under extreme temperatures[1)] this shall be indicated. Where period during which the explosive may be used at a certain temperature is limited, this information shall also be given, if necessary, for different temperature values.

Examples of information on suitability for use under high and low temperatures are as follows:

— “suitable for use up to a maximum temperature of ... °C for ... min (or h or d)“;

— “suitable for use down to a minimum temperature of ... °C for ... min (or h or d)“.

5.3.6 Information on suitability for use at hydrostatic pressure

If the explosive is designed for use under hydrostatic pressure in accordance with prEN 13631-1:2021, 4.5, this shall be indicated.

An example of information on suitability for use at hydrostatic pressure is as follows:

— “suitable for use up to a maximum hydrostatic pressure of ... MPa for ... min (or h or d)“.

5.3.7 Information on characteristic properties

Bulk explosives shall be characterized by the following information:

— the density, when the explosive is ready for use, or a range for the density;

— the velocity of detonation.

The explosive may, in addition, be characterized by:

— calculation of detonation characteristics and thermodynamic properties. A method for these calculations is proposed in Annex A. A sample calculation is given in Annex B.

5.3.8 Information on chemical purity

Explosives, which are a single chemical compound and with a foreseen use as substance, shall bear information on the relative content of this compound and have information on what constitutes the remaining material.

Examples of such information are:

— “minimum 95 % TNT, rest residues of RDX and HMX”;

— “99,5 % RDX, 0,5 % flowing agent (inert)”.

5.3.9 Safety warnings

Where the sensitivity to friction and impact are below the values given in prEN 13631-1:2021, 4.2 and 4.3 a safety warning shall be provided by the manufacturer or his authorized representative to the user. Examples of such information are:

— “WARNING: Friction sensitive explosive; avoid friction during all steps of handling - where this is not possible require unmanned operations and take provisions for a possible reaction.”

[1)] See also definition in prEN 13857-1:2021.

— "WARNING: Impact sensitive explosive; avoid impact and mechanical forces during all steps of handling – where this is not possible require unmanned operations and take provisions for a possible reaction."

5.4 Additional information on detonating cords and safety fuses, and on shock tubes not assembled with detonators

5.4.1 Information on suitability for use in wet conditions

If the explosive is designed for use in wet or humid conditions, this shall be indicated.

Examples of information on suitability for use in wet conditions are as follows:

— "suitable for use under water up to a maximum hydrostatic pressure of ... MPa for ... h";

— "suitable for use in wet spaces to be filled with the explosive, if open ends of the cord/fuse in the water are protected against the ingress of water".

5.4.2 Information on suitability for use in high and low temperatures

If the explosive is designed for use under extreme temperatures[1)] this shall be indicated. Where period during which the explosive may be used at a certain temperature is limited, this information shall also be given, if necessary, for different temperature values.

Examples of information on suitability for use in high and low temperatures are as follows:

— "suitable for use up to a maximum temperature of .... °C for ... min (or h or d)";

— "suitable for use down to a minimum temperature of ... °C for ... min (or h or d)".

5.4.3 Information on suitability for use at elevated hydrostatic pressure

If the explosive is designed for use under hydrostatic pressure this shall be indicated.

An example of information on the suitability for use at elevated pressure is as follows:

— "suitable for use up to a maximum static pressure of ... MPa for ...min (or h or d)".

5.4.4 Information for connecting a detonating cord to high explosives or to another detonating cord

If the manufacturer does not foresee connecting a detonating cord to other explosives, this shall be indicated. In the opposite case, the manufacturer shall indicate the conditions, under which the detonating cord may be connected to a high explosive or another detonating cord.

Examples of information for connecting a detonating cord to high explosives or to another detonating cord are as follows:

— the minimum connecting length of different pieces of detonating cord, in millimetres;

— the minimum distance between each branch line, in metres.

Further examples of information for special use detonating cords are:

— information on the use of detonating cords with a low explosives weight in g/m when they are intended as signal conductors only;

— information on the use of detonating cords with a high explosives weight in g/m when they are intended to act as a blasting explosive.

5.4.5 Information on characteristic properties

Properties of the detonating cord, safety fuse, or shock tube, which are of interest to the user for specific application cases shall be given.

Examples of information on characteristic properties are as follows:

— the nominal explosives weight in grams per metre (detonating cords only);

— the nominal velocity of detonation in metres per second (detonating cords only);

— the nominal duration of burning in seconds per metre (safety fuses only);

— the nominal shock wave velocity in metres per second (shock tubes only).

5.5 Additional information on detonators and relays

5.5.1 Information on devices and accessories for reliable and safe function of the detonator or relay

Information on devices and accessories for reliable and safe function of the detonator or relay shall be indicated.

An example of information on devices and accessories for reliable and safe function of the detonator or relay is as follows:

— the type and capacity of all devices and accessories which are essential for reliable and safe function.

5.5.2 Information on initiating capability of the detonator

Information on initiating capability of the detonator shall be indicated.

An example of information on initiating capability of the detonator is as follows:

— “initiating capability equivalent to that of standard reference detonator no. ….”

5.5.3 Information on suitability for use in wet conditions (if applicable)

Information on suitability for use in wet conditions shall be indicated.

An example of information on suitability for use in wet conditions is as follows:

— “suitable for use under water up to a maximum hydrostatic pressure of ... MPa for ... h“.

5.5.4 Information on suitability for use under high and low temperatures (if applicable)

Information on suitability for use under high and low temperatures shall be indicated.

Examples of information on suitability for use under high and low temperatures are as follows:

— “suitable for use up to a maximum temperature of ...°C for ...min (or h or d)“;

— “suitable for use down to a minimum temperature of ...°C for ...min (or h or d)“.

5.5.5 Information on suitability for use at elevated pressures (if applicable)

Information on suitability for use at elevated pressures shall be indicated.

An example of information on suitability for use at elevated pressures is as follows:

— “suitable for use up to a maximum static pressure of ... MPa for ... min (or h or d)“.